Final Master Thesis

Project Title:

Implementation of an ERP-system to the company Sysperto GmbH
Implementación de un sistema ERP a la empresa Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management

EAE Business School
Universidad Rey Juan Carlos (URJC)

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Executive Summary

The implementation of an ERP-system is seen as “a big investment project for an enterprise” and it is been said that “90 per cent of ERP projects are late or over budget” (Shi-Ming Huang, 2004, p. 681) (Guo Chao Peng, 2009, p. 926). Having this in mind, the present master thesis is dedicated to the initiating and planning processes of the project for the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees, in order to have a successful investment project for this SME company staying within schedule, budget and scope. The overall aim of the project is to achieve several economic advantages through a higher efficiency with the ERP-system leading to the chance of further growth and the increase in sales and the market share. Therefore, the following document starts with the project initiation through the project charter and business case, including for example the value chain and SWOT as well as the financial feasibility analysis, which overall led to the “go-decision” for the project. Subsequently this document continues with the planning process and includes therefore the overall project management plan consisting of the management plans for the knowledge areas of Project Scope, Schedule, Cost, Quality, Risk, Communication, Stakeholder, Procurement and Integration Management. The planned golden triangle of the project is shown in the following:

![Golden Triangle Diagram]

This golden triangle is expanded and supported by the already stated additional knowledge areas (e.g. Quality, Risk, Stakeholder) to reach the overall success of the project.

Keywords: Business Case, Project Charter, Project Management Plan, Implementation ERP-system, IT-sector
La implementación de un sistema de ERP se considera como "un gran proyecto de inversión para una empresa" y se dice que "el 90 por ciento de los proyectos ERP se retrasan o superan el presupuesto" (Shi-Ming Huang, 2004, p. 681) (Guo Chao Peng, 2009, p. 926). Teniendo esto en cuenta, la presente tesis de maestría está dedicada a los procesos de iniciación y planificación del proyecto para la implementación de un sistema ERP a la empresa Sysperto GmbH, una empresa alemana de servicios informáticos con 20 empleados, para tener un proyecto de inversión exitoso para esta empresa PYME que se mantenga dentro del cronograma, presupuesto y alcance. El objetivo general del proyecto es lograr varias ventajas económicas a través de una mayor eficiencia con el sistema ERP, lo que conduce a la posibilidad de un mayor crecimiento y al aumento de las ventas y la cuota de mercado. Por lo tanto, el siguiente documento comienza con el inicio del proyecto a través de la carta del proyecto y la justificación de negocio, incluidos, por ejemplo, la cadena de valor y SWOT, así como el análisis de factibilidad financiera, que en general condujo a la decisión de proceder para el proyecto. Posteriormente, este documento continúa con el proceso de planificación e incluye, por lo tanto, el plan general de gestión del proyecto, que consiste en los planes de gestión para las áreas de conocimiento del alcance del proyecto, cronograma, costo, calidad, riesgo, comunicación, partes interesadas, adquisiciones y gestión de la integración. El triángulo de oro planeado del proyecto se muestra a continuación:

Este triángulo de oro está expandido y respaldado por las áreas de conocimiento adicionales ya establecidas (por ejemplo, Calidad, Riesgo, Partes interesadas) para alcanzar el éxito general del proyecto.

Palabras claves: justificación de negocio, carta del proyecto, plan general de gestión del proyecto, Implementación de un sistema ERP, sector informático
Introduction

The present document illustrates the detailed description and elaboration of two of the five groups of Project Management Processes, Project Initiation and Planning, according to the PMBOK for the project of the implementation of an ERP-system to the company Syspertó GmbH. This is performed as a Final Master Thesis Project in the Master Program of Project Management at EAE Business School Madrid. Therefore, this whole document follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI). By this means, the project is based on the waterfall methodology.

The overall objective of the project is the implementation of an ERP-system to the company Syspertó GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

Therefore, the Project Management Team starts this project with the Initiation Process, including the overall analysis and development for the Business Case and the Project Charter. The Business Case provides the overall background information for the project, which describes the frame and situation for the project and is aimed to support the final decision for the project approval. The Project Charter provides the high-level information about the project and illustrates the final approval document for the project.

After the project approval from the project’s client, who is the owner and manager of the company, the project management team was assigned to this project and continued with the second Project Management Process Group, the Planning. The Planning Process Group is dedicated to the development of the overall Project Management Plan which consists out of overall nine knowledge areas for this project. The overall plan covers the knowledge areas for Project Scope, Schedule, Cost, Quality, Risk, Communication, Stakeholder and Procurement Management as well as part of the Project Integration Management knowledge area through the Change Management.

The development of those two Project Management Processes is aimed to support the following project process groups of Execution, Monitoring and Control as well as Closing.

Keywords: Project Initiation, Project Planning, Business Case, Project Charter, Project Management Plan, Implementation, ERP-system, IT-sector, IT-services
# Table of Contents

(overall document)

## I. Project Initiation

1. Project Charter 7
2. Business Case 13

## II. Project Planning

Project Management Plan composed by:

1. Project Scope Management Plan 70
2. Project Schedule Management Plan 162
3. Project Cost Management Plan 221
4. Project Quality Management Plan 248
5. Project Risk Management Plan 298
6. Project Communication Management Plan 338
7. Project Stakeholder Engagement Plan 365
8. Project Procurement Management Plan 389
9. Project Change Management Plan 446
I. Project Initiation

Corresponding project documents:

1. Project Charter

2. Business Case
Project Charter

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### Document version and change history

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</tbody>
</table>
Table of Contents

Objective or brief Justification of the Project.................................................................1
Project Description ...........................................................................................................1
High-level Requirements..................................................................................................1
High-level Risks ..............................................................................................................2
Project Scope ..................................................................................................................2
Project Cost .....................................................................................................................3
Project Schedule ............................................................................................................4
Main Stakeholders of the Project....................................................................................4
Approval..........................................................................................................................4
PROJECT CHARTER

Project Title: Implementation of an ERP-system to the company Sysperto GmbH
Date: 11th December, 2018
Project Sponsor: Owner and CEO of Sysperto GmbH, Andreas Zieher
Project Client: Sysperto GmbH

Objective or brief Justification of the Project

The overall objective is the implementation of an ERP-system to a company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The overall aim of the project is to achieve economic advantages for the company such as higher transparency through an improved information management, shorter offer and delivery times, lower administrative and IT-costs as well as a higher customer satisfaction leading to the chance of increasing the sales and the market share.

Project Description

The project contains the following main steps:

- analysis of current processes and infrastructure,
- resulting restructuring of current processes and development of new business processes according to ITIL processes,
- definition of the ERP-system needs and requirements,
- overall evaluation of the available ERP-systems for the company,
- implementation of ticket-system and online-shop,
- final implementation of the ERP-system,
- training of the employees.

High-level Requirements

The high-level requirement of the project is the overall implementation of the ERP-system in order to achieve improved and more efficient business processes for the value creation of the company. Therefore, this implementation first requires the analysis and restructuring from the business processes, afterwards the evaluation and selection of the appropriate ERP-system,
subsequently the implementation of the ticket-system and the online-shop and the final implementation of the ERP-system itself. Moreover, this implementation requires detailed training for the employees in order to ensure the right and adequate use of the system. In regards to the selection of the ERP-system and the implementing company, the project client has mentioned his preference for the company Acmeo GmbH, which has to be validated within the project. With meeting those requirements, this is aimed to achieve the requirements of a higher accessibility and availability of information and knowledge in real-time within the company, higher transparency of information, integration of all business processes, increased efficiency and productivity through faster offer and delivery times, lower administrative and IT-costs as well as a higher customers satisfaction. For example, the system is proposed to support the employees in the quoting process by providing a facilitated and faster way of working. This would help the company to improve and gain more market share.

**High-level Risks**

The implementation of an ERP-system involves several risks. The management of the following identified risks is crucial for the overall success of the implementation.

1. Financial risk
2. Cost and time-consumption of the implementation
3. Acceptance of employees
4. Training for employees
5. Definition of processes
6. Evaluation and decision for the ERP-system
7. Customization of the ERP-system for the company
8. Migration of the data
9. Influence on daily business
10. Environmental and market changes

**Project Scope**

The main deliverables of the project are:

- **Implementation of ERP-system:** successful and efficient implementation of the ERP-system in order to achieve an improvement of the company’s overall operations.

The ERP-system covers all functional areas of the company such as:

- warehouse management,
- customer relationship management,
- finance and invoicing,
- logistic and stock management,
- service and support.

- **Improvement of Business Processes**: analysis, development, simplification, and restructuring of business processes to adapt and optimize for the ERP-system as well to achieve economic advantages

- **Increase of the availability of information and knowledge**: accessibility, integration, and availability of existing data, information and knowledge within the company

- **Implementation of additional, supporting systems**: evaluation and implementation of supporting systems such as the online-shop and the ticket-system

- **Establishment of training plan**: clear communication and training for the employees in regard to the changes and the system usage/operation itself

### Project Cost

The overall estimated project costs are composed of the following elements:

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<th>Component</th>
<th>Estimated Costs (€)</th>
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<tr>
<td><strong>LICENSE/EQUIPMENT/MATERIAL COSTS</strong></td>
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<tr>
<td>ERP-system</td>
<td></td>
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<tr>
<td>Licenses</td>
<td>33,000</td>
</tr>
<tr>
<td>System development and architecture</td>
<td>6,500</td>
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<tr>
<td>System implementation</td>
<td>15,000</td>
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<tr>
<td>Training</td>
<td>3,000</td>
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<tr>
<td><strong>Ticket system</strong></td>
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<tr>
<td>Licenses + interface to ERP-system</td>
<td>16,000</td>
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<tr>
<td>Installation</td>
<td>1,000</td>
</tr>
<tr>
<td>Training</td>
<td>500</td>
</tr>
<tr>
<td><strong>Online-shop</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td><strong>WORKING HOURS</strong></td>
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<tr>
<td>Project Management</td>
<td>129,570</td>
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<tr>
<td>Process Improvement &amp; Restructuring</td>
<td>37,980</td>
</tr>
<tr>
<td>ERP-selection</td>
<td>17,200</td>
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<tr>
<td>Implementation (only internal; provider costs – see above)</td>
<td>45,210€</td>
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<tr>
<td>End-user Training</td>
<td>8,880</td>
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<tr>
<td>Reserves</td>
<td>38,685</td>
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<tr>
<td><strong>Overall estimated costs</strong></td>
<td>362,525</td>
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<td>Annual Updating/Services (per year)</td>
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Project Schedule

The total duration of the project is estimated to 18 months. Therefore, the main milestones of the project are:

1. Project Management (18 months (8 months project initiating + planning))
2. Analysis of the existing business processes (5 weeks)
3. Restructuring business processes (3 months)
4. Evaluation of the available ERP-systems (6 weeks)
5. Implementation of a ticket-system and an online-shop (6 weeks)
6. Implementation of ERP-system (6 weeks)
7. Training of employees (1 month)

Main Stakeholders of the Project

The main identified stakeholders for this project are:

- Owner and CEO, Andreas Zieher (also representing the project sponsor and client)
- IT service manager, Andreas Domke
- Employees of the company (20 employees)
- Project Management Team
- IT-company implementing the ERP-system (e.g. Acmeo GmbH and/or Neumaier AG) (representing the preferred supplier from the project client)
- Financial Institution (e.g. LBBW-Bank)
- Government (state Baden-Württemberg providing a subsidy for digitalization)
- Tax consultant and accountant
- Customers of the company

Approval

_______________________ ____________________
Sponsor Project Managers
Business Case

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Abstract

The present paper illustrates the Business Case for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Business Case follows the explanations and contents of a Business Case in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

Taking into account that, according to the literature, the implementation of an ERP-system illustrates “a big investment project for an enterprise” (Shi-Ming Huang, 2004, p. 681) and that “90 per cent of ERP projects are late or over budget” (Guo Chao Peng, 2009, p. 926) (Shi-Ming Huang, 2004, p. 681) this demonstrates why the application of Project Management skills and knowledge is crucial for this kind of project.

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The overall aim of the project is to achieve economic advantages for the company such as higher transparency and availability of information through an improved information management, shorter offer and delivery times, lower administrative and IT-costs as well as a higher customer satisfaction leading to the chance of increasing the sales and the market share.

The project contains the following main steps:
- analysis of current processes and infrastructure,
- resulting restructuring of current processes according to ITIL processes,
- definition of the ERP-system needs and requirements,
- overall evaluation of the available ERP-systems for the company,
- implementation of ticket-system and online-shop,
- final implementation of the ERP-system,
- training of the employees.
For providing the economic feasibility study through the Business Case for the project, the following paper first describes the business context of the project as well as the business need and the project justifications. Subsequently, the strategic context, the main stakeholders as well as the as-is and to-be model are developed. Furthermore, the smart objectives and high-level requirements of the project and the optimal solution are described. To complete the business case, the master schedule and master budget, the risks and the measurement systems are outlined. To conclude the Business Case, the go/no-go decision for the project is described taking into account the analysis and explanations outlined before.

Keywords: Business Case, PESTLE-analysis, SWOT-analysis, Project justification, As-Is-Model, To-Be-Model, Financial Feasibility Calculations, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract .............................................................................................................................. II
List of Figures .................................................................................................................... VI
List of Tables .................................................................................................................... VI
1. Purpose, Methodology and Structure of the Business Case Document ....................... 1
2. Description of the Business Context ........................................................................... 1
   2.1. Description of the Company Sysperto GmbH ....................................................... 1
   2.2. PESTEL Analysis ............................................................................................... 2
   2.3. Porter’s 5 Forces ............................................................................................... 5
   2.4. Value Chain ...................................................................................................... 8
   2.5. SWOT Analysis ............................................................................................... 12
3. Requester & Project Request ('Ticket') ..................................................................... 13
4. Business Need and Project Justification ................................................................... 14
5. Strategic Context ..................................................................................................... 16
6. Identification and Analysis of main Stakeholders....................................................... 17
7. Diagnosis of the AS-IS model .................................................................................. 20
8. Definition of the TO-BE model .............................................................................. 22
9. Establishment of the smart Objectives of the Project .............................................. 23
10. Identification and Definition of high-level Requirements ....................................... 24
    10.1. Business ......................................................................................................... 24
    10.2. Product .......................................................................................................... 24
    10.3. Project .......................................................................................................... 25
11. Identification and Comparative Analysis of Options/Alternatives.............................. 25
12. Selection and Description of the Optimal Solution .................................................. 27
13. Master Schedule ..................................................................................................... 29
14. Master/Gross Budget .............................................................................................. 29
    14.1. Analyzed Cost Pools that could be Affected .................................................. 31
    14.2. Description, Explanations and Assumptions in regard to the Saving Calculations. 31
    14.3. Strategical Business Decision ....................................................................... 32
IV
14.4. Savings through ERP-system and Ticket-system Implementation .......................... 33
14.5. Financial Feasibility Calculations ........................................................................ 34
15. Risk Identification and Assessment .......................................................................... 35
16. Definition of Indicators, Measurement Systems, Targets and Control Thresholds ..... 42
17. Conclusions ............................................................................................................. 43
References ....................................................................................................................... VII
List of Figures

Figure 1 - Digital Economy Index (Dr. Sabine Graumann, 2017, p. 10) ........................................3
Figure 2 - Digital Index by Sector (Dr. Sabine Graumann, 2017, p. 14) .......................................4
Figure 3 - Stakeholder Matrix (Thompson, 2016) ................................................................19
Figure 4 - As-Is model .............................................................................................................21
Figure 5 - To-Be model ..........................................................................................................23
Figure 6 - Understand the vision of the ERP (Professional Advantage, 2018) .......................28
Figure 7 - Gross Schedule ....................................................................................................29
Figure 8 - Payback (discounted) .........................................................................................35
Figure 9 - Payback (not discounted) ....................................................................................35

List of Tables

Table 1 - SWOT analysis ......................................................................................................12
Table 2 - Stakeholder analysis ............................................................................................18
Table 3 - Overall estimated costs (Acmeo Systemhaus Software, 2018) .............................30
Table 4 - Saving calculations (I) ........................................................................................33
Table 5 - Saving calculations (II) .........................................................................................33
Table 6 - Saving calculations (III) .......................................................................................33
Table 7 - Financial Feasibility Calculations ......................................................................34
Table 8 - Financial KPI results ...........................................................................................34
Table 9 - Probability-Matrix ...............................................................................................39
Table 10 - Impact-Matrix .....................................................................................................39
Table 11 - Risk assessment for ERP-system implementation ............................................41
1. Purpose, Methodology and Structure of the Business Case Document

“The business case is a documented economic feasibility study used to establish the validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities” (Project Management Institute, 2017, p. 30).

The business case identifies the reasons a project will be undertaken, and the benefits and objectives wanted at the project’s end. For decision-makers and managers, it is a good management tool to decide if it is profitable to go on with the project or not, and it also helps with the on-going decisions throughout the life of the project (Business Case Methodology, 2018).

The business case has to offer and list several aspects:
- The identification of the needs: identifying the problem or the opportunity, explain why a specific project is needed and describing the scope and the stakeholders involved in the project (Project Management Institute, 2017, p. 31).
- The analysis and evaluation of the situation: the analysis of the existing processes and operations, including the strategies of the company, and how the project will affect and impact the current organizational capabilities, the evaluation of alternative options, the identification of the potential risks and critical success factors and how to manage them (Project Management Institute, 2017, p. 31).
- Evaluation and recommendations: the description of the optimal option, the benefits that would be brought by the chosen option, the measurement of the success of the project, and the evaluation of the alignment of the results and outputs of the project and its initial objectives (Project Management Institute, 2017, p. 32).

2. Description of the Business Context

For describing the business context from the company Sysperto GmbH the following paragraph first describes the company itself. Afterwards, the macro- and microenvironment of the company is described in more detail applying the PESTEL and the Porter’s Five Forces analysis as well as the value chain analysis for the company and concludes with a SWOT analysis.

2.1. Description of the Company Sysperto GmbH

Sysperto GmbH is a German company within the IT-sector acting as an IT-system house. This means that the company is offering software and hardware solutions customized for several
other companies from different sectors. Moreover, doing business as a system house means that the company is offering ready-for-use IT complete solutions. The company represents an IT-service provider acting as an intermediary between the users and the producers of IT soft- and hardware. Therefore, the products sold to the market can be seen as the overall IT-services the company is offering. The services include all the steps offered by an IT-system house from the selling of IT hard- and software, the overall implementation of a ready-for-use IT complete solutions, the customization of IT hard- and software to a company, the development, implementation and update service for IT hard- and software as well as the overall IT-consulting in regard to business process improvements. The company’s unique selling point is the offer of a 360-degree IT-service that is customized to the needs of each customer.

The company represents a smaller company with 20 employees that was founded three years ago. In its closer business environment are several competitors but there are also some close regions with fewer competitors. The service from the company experiences an increasing demand, as well as the market, has an increasing growth rate, change and importance because the IT-infrastructure of companies represents a big part of the value creation from companies and also an important point to achieve competitive advantage and process improvement (Wirtschaft digital Baden-Württemberg, 2018).

2.2. PESTEL Analysis

The PESTEL helps to analyse and monitor the macro-environmental factors on the performance of Sysperto GmbH as an organization. It gives a clear understanding of related external factors. PESTEL is an acronym that stands for Political, Economic, Social, Technological, Environmental and Legal factors. The analysis is being used as a frame and below the relevant macro-environmental trends are summed up that have either a positive or negative effect on Sysperto GmbH as an organization.

Political

When analysing the political force, it is important to have a look at the government stability, bureaucracy, regulation and the tax policy (Jurevicius, 2013). “Germany is a parliamentary democracy” consisting of the “Bundestag, Bundesrat, the Federal President, the Federal Government and the Federal Constitutional Court” (FAZIT Communication GmbH, 2019). In this context, Sysperto GmbH is facing an interesting advantage, due to the reason that the government has established a grant for the digitization: "Initiative Wirtschaft 4.0", the subsidiary is part of the nationwide digitation strategy "digital @ bw". The Ministry of Economics, Labour and Housing Baden-Württemberg will provide grants to concrete projects for the implementation of new digital solutions in production and processes, products and services.
Sysperto GmbH in this context could receive a subsidiary in order to repay the subsidy with 10 per cent of the loan amount (Wirtschaft-digital-bw, 2017).

**Economic**

The influencing economic factors are the growth rate, inflation rate, interest and exchange rate, unemployment trends and labour costs (Jurevicius, 2013). Germany is seen as a highly developed nation with huge industrial capability. Furthermore, Germany illustrates the world’s fourth largest economy (GDP $3.700.000 million) making it to be one of the most important markets in the EU and it is also a leading exporter of machinery, vehicles, chemicals, household equipment and benefits from a highly skilled labour force (Amadeo, 2018). Sysperto GmbH is facing a steadily increasing market with the potential to grow. Through the chart below, the level of digitalisation among large, mid-sized and small companies is explained. The digitalisation process will improve during the years in all the levels. Besides Germany would pursue a digital path for all the company at any level. For that reason, the requirements of IT-services during the year will improve, creating the request of consulting and implementation for the IT-service company as Sysperto GmbH (Dr. Sabine Graumann, 2017).

![Figure 1 - Digital Economy Index (Dr. Sabine Graumann, 2017, p. 10)](image)

**Social**

The social factors are health consciousness, education level, attitude towards import goods and service, attitude towards work, leisure, work and retirement, lifestyle, religion and beliefs, age distribution and life expectations as well as the average disposable income level (Jurevicius, 2013). Also known as socio-cultural factors, these are the areas that involve the shared belief and attitudes of the population. Society’s culture and way of doing things impact the environment
where the company is operating. Germany is a great social environment to help the growth of Sysperto GmbH. The unemployment rate of all those aged 25 to 64 years in Germany (3.5%) was below the OECD average of 5.8% in 2017 (Destatis, 2018). Compared with their parents’ generation, young people in Germany tend to achieve a higher level of educational attainment. Results of 2017 micro census show that 29% of the 30 to 34-year olds had a higher education degree (Destatis.de, 2018).

**Technological**

In general, for the technological factors the basic infrastructure level, rate of technological change, spending on R&D, technology incentives, access to the newest technology and the internet infrastructure and penetration can be analysed (Jurevicius, 2013).

The IT-sector is subject to digital change itself because the requirements of the sector’s customers also changed significantly in recent years. Today, through the exchange of data among each other, organisations are shifting their IT-infrastructure into the cloud, and businesses sell their goods not only from stationary shops, but increasingly also through online platforms. The consequence is an updating of the existing technologies to make progress and adapt the IT-service company to modern developments in order to respond effectively to the market (Wirtschaft digital Baden-Württemberg, 2018).

One of the key factors for the IT-service company is in particular to measure every single step. Digitalisation also leads to the fact that the IT-sector should re-orientate and develop their business models further in order to access and survive in competition. The chart below illustrates a clear explanation of the speed in digitalisation in Germany: The IT-companies are the most digitalised, for that reason they lead the market. Sysperto GmbH is collocated in this sector and it has the possibility to bring a better service in the next years through digital investment in order to improve the exciting processes (Wirtschaft digital Baden-Württemberg, 2018).

![Digital Index by Sector](image)

*Figure 2 - Digital Index by Sector (Dr. Sabine Graumann, 2017, p. 14)
Environmental

Environmental factors that affect a business are for example weather and climate change, laws regulating pollution, attitude towards green or ecological products and attitude towards renewable energy (Jurevicius, 2013).

Talking about the environmental conditions, at this moment the company is not perceiving a high influence from the environmental factors as for example the weather and climate change does not directly influence their business. In regard to the attitude towards green and ecological products, Sysperto GmbH can notice a trend in the increasing awareness of its customers for energy efficient IT-hardware and equipment. Moreover, the demand for having a paperless office increases the desire from companies for IT-tools and systems that support a paperless office.

Legal

The legal factors that can be analysed in general are the antitrust law, discrimination law, consumer protection and e-commerce, employment law and data-protection (Jurevicius, 2013).

The General Data Protection Regulation as known as “GDPR” went into effect May 25, 2018, and it changed the way organizations approach data privacy and data protection. For Sysperto GmbH this is a great opportunity to offer a new service to align business practices with customer needs by putting the customers first and upgrading their security and data management practices (Gawron, 2018). Moreover, they also have to consider the GDPR for their business operations and systems in order that they comply with it constantly.

2.3. Porter’s 5 Forces

Applying Porter’s five forces model, it illustrates how the external forces act on the company Sysperto GmbH and define its competitiveness and position in the market.

According to Porter, it is essential for a company’s strategic thinking to be aware of the five forces and to know how these forces act within the industry and in which way they influence the company (Porter, 1999, p. 102). Therefore, this model helps to analyse the industry of a company in order to identify the attractiveness of the industry as well as the opportunities and threats (Porter, 1999, pp. 103-104). A company’s goal should be to “find a position in the industry where his or her company can best defend itself against these forces or can influence them in its favour” (Porter, 1999, p. 103).

Threat of new Entrants

The threat of new entrants influences the profit potential of an industry (Porter, 2008, p. 26). When analysing the threat of new entrants, it is important to look at the barriers to entry such
as supply-side economies of scale, demand-side benefits of scale, customer switching costs, capital requirements, incumbency advantages independent of size, unequal access to distribution channels and restrictive government policy as well as the expected retaliation from potential entrants in regard of the expected actions of the incumbents (Porter, 2008, pp. 26-29).

Sysperto GmbH is a small company operating in the service market, in particular, its business is focused on services and consulting. The possibility for new entrants is quite high because this kind of company does not require big investment but Sysperto GmbH has the right and good knowledge of IT-services in order to penetrate the market. New companies usually focus on bringing innovation at lower price, as the IT-service market is known for its fast development and innovation. It is a big threat to Sysperto GmbH if the customers can find innovative services at a lower price, especially when the company does not have a big customer base. Sysperto has to come over these challenges in order to keep growing and developing in the IT-market.

**Threat of Substitutes**

A substitute is a product or service that offers the same or similar function by a different means to the customer (Porter, 2008, p. 31). The threat of substitute can be analysed by looking at the price-performance trade-off the other product is offering and the switching costs for buyers and influences the industry’s profitability (Porter, 2008, p. 31).

The threat of substitutes is a mid-level threat for Sysperto GmbH because the customers’ companies may find more profitable to recruit and develop the IT-department inside their company instead of hiring Sysperto GmbH for the installation of IT-infrastructures and maintenance services. However, the clients of Sysperto still need professional services from professional experts in the IT-services.

**Industry Rivalry**

The industry rivalry can be seen in different ways such as “price discounting, new product introductions, advertising campaigns, and service improvements” (Porter, 2008, p. 32). The industry’s rivalry can be analysed by the intensity of the competition (number of competitors, industry growth, exit barriers) and by the basis of competition (dimensions of price, product features, support services, delivery time, brand image) (Porter, 2008, p. 32). The industry rivalry can be an advantage for the profitability of an industry in case that each company is focusing on a different customer segment and tries to differentiate by another mix of price, product, service and features (Porter, 2008, p. 33).

The competition in the IT-sector is really high, especially in Germany, because of the large number of companies offering their services and expertise. Sysperto GmbH has to face a big and harsh competition not only from the large companies that have a brand recognition and a
large customer base but also from the small and mid-size companies, as they offer the same
services and support at a similar price. Sysperto GmbH is confronted through a competitive
market, which could affect its profitability and its opportunity to grow. In this sense, the company
can focus on differentiation and improve its organizational processes such as the integration of an
ERP-system into the company (Fern Fort University, 2018).

**Bargaining Power of Suppliers:**

This is an assessment of how easy it is for suppliers to increase the prices. Factors for this
category are for instance switching costs, differentiation of products, buyer information
availability, power of distribution channels, network effects and bargaining leverage (Porter, 2008,
p. 29).

Generally, the bargaining power of suppliers for IT-services company is a mid-level
threat because there are many suppliers of IT soft- and hardware. Sysperto GmbH can rely on,
giving the company the ability and the opportunity to choose between multiple suppliers.

However, powerful suppliers, having the best quality materials needed for the IT-services,
can use their bargaining power to demand a higher price from the company which will lead to a
lower profitability for Sysperto GmbH (Fern Fort University, 2018).

**Bargaining Power of Buyers:**

This category is an assessment of how easy it is for buyers to drive prices down. The
factors are for example the number of buyers in the market, importance of each individual buyer
to the organisation and cost to the buyer of switching from one supplier to another (Porter, 2008,
p. 30).

The bargaining power of buyers is quite high for Sysperto GmbH, because, first of all,
the customers, by natural instinct, want the best services and offers at the lowest price possible
(Fern Fort University, 2018). Second of all, the company does not have a large base of customers
which means, retaining them is fundamental and important for the good growth of the business,
and this fact, gives the customers a strong bargaining power over the company.

Sysperto GmbH can narrow this threat by building a good relationship with the customers
through the Customer Relationship Management (CRM), to improve the customer services in
order to retain the current clients and attract the new ones. It will result in lowering the bargaining
power of the buyers by building a large customer base, which will have a positive impact on the
company’s growth (Fern Fort University, 2018).
2.4. Value Chain

For describing the business context of the project also the value creation process within the company is crucial for the overall understanding of the project’s environment. Therefore, in the next paragraph, the theory of Porter’s Value Chain is applied to the company.

According to Porter, the value creation of a company is divided in primary and supporting activities and those value activities from a company are subdivided into nine generic categories (Michael E. Porter, 1985). “Primary activities are those involved in the physical creation of the product, its marketing and delivery to buyers, and its support and servicing after sale. Support activities provide the inputs and infrastructure that allow the primary activities to take place.” (Michael E. Porter, 1985). A company’s value chain is a system of interdependent activities which are linked to each other.

The primary activities are inbound logistics, operations, outbound logistics, marketing and sales and service. Secondary activities are procurement, human resources management, technological development and infrastructure (Michael E. Porter, 1985).

Initially, Porter’s value chain was developed for manufacturing which means when applying this model to the service sector there can be several difficulties or changes necessary, but it is still possible.

Primary Activities:

Inbound Logistics

The inbound logistics refer to the first primary activity of the value chain and describes the “relationships with suppliers and include all the activities required to receive, store, and disseminate inputs” (Institute for Manufacturing - University of Cambridge, 2016). For the company Sysperto GmbH, the receiving and storing of the IT-hardware (such as computers, laptops, servers, etc.) is the most important aspect for their inbound logistics. Therefore, they have several partnerships with IT-distributors and intermediaries that act as suppliers in order to purchase the requested hardware for the Sysperto GmbH customer.

Operations

The second primary activity are the operation activities and therefore is referred to “all the activities required to transform inputs into outputs (products and services)” (Institute for Manufacturing - University of Cambridge, 2016). As the company Sysperto GmbH is mainly an IT-service provider, there are no classical manufacturing operation activities. The company’s product portfolio offers a 360-degree IT-service. This includes the following main areas (Sysperto GmbH, 2018, p. 4):
- Managed Services (e.g. Monitoring & IT-controlling, IT-services & support, cloud services)
- Company Analysis and Assessment (e.g. internal processes & IT-systems and infrastructure, data protection, digital corporate appearance)
- Consulting and Definition of the catalogue of measures (e.g. conception digital strategy plan, use-case-workshops, measure prioritization)
- Definition of solutions and implementation (e.g. Web and corporate design, IT-security and data protection, server, backup and cloud solutions, social media, search-engine-optimization)

Therefore, all IT-services offered by the company involve analysis and consulting activities for the customer. Furthermore, the customization and installation of IT-hardware and software is another main operation activity (Sysperto GmbH, 2018, p. 4).

**Outbound Logistics**

The primary activity of outbound logistics “include all the activities required to collect, store, and distribute the output” (Institute for Manufacturing - University of Cambridge, 2016). For Sysperto GmbH this activity mainly refers to the final implementation and delivery of the offered IT-solution to the customer. Before the offered IT-service is implemented and installed at the customer’s office, the company is doing all necessary hardware customizations and installations of the required software on the hardware so that the whole package of soft- and hardware can be delivered at once.

**Marketing and Sales**

Marketing and sales are defined as another primary activity and include all the activities to “inform buyers about products and services, induce buyers to purchase them and facilitate their purchase” (Institute for Manufacturing - University of Cambridge, 2016). For marketing channels, Sysperto GmbH uses several channels such as their website, social media, personal sales, printed ads in newspapers and magazines, printed media, flyers and banners, direct mailing, business cards, search engine marketing and word-of-mouth recommendation. Especially the word-of-mouth recommendation illustrates a very important channel for Sysperto GmbH as the company noticed from their past operations that companies value a trustful and reliable IT-service provider. Due to that, via word-of-mouth recommendation, they already received a lot of customer requests and orders. In order to facilitate the purchase for customers, as a part of the ERP-system implementation project the company also wants to implement an online-shop to reach more customers and facilitate the decision process for the desired hard- and software as well the IT-service.
Service

The last primary activity is referred to the service and “includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered” (Institute for Manufacturing - University of Cambridge, 2016). As Sysperto GmbH is an IT-service provider, the service aspect is very crucial for them. Besides offering the 360-degree service portfolio, their main goal is to deliver an outstanding and reliable service to their customer in all IT-service aspects (Sysperto GmbH, 2018, p. 4). Therefore, they also implemented the managed service concept to their portfolio. Managed service refers to the circumstance that a third-party is responsible for the management and the functionality of a company’s services and equipment in regard to their computers, network and software (WebFinance Inc. - Business Dictionary, 2018). Examples for this service are “[the] remote monitoring and management of servers, desktops and mobile devices” (TechTarget, 2018). The company is therefore charged typically on a monthly basis for the provided service with a certain fee (TechTarget, 2018). This allows companies to focus on their core competencies of their business and to have a predictable price for the monthly IT-costs (TechTarget, 2018). The managed service offer from Sysperto GmbH clearly illustrates their focus on the value chain primary activity of service. Components of their managed service are monitoring & IT-controlling, IT-service & support, license management, cloud services as well as IT- and data security (Sysperto GmbH, 2018, p. 4). They divide their managed service products into the four areas of desktop, smartphone, server and firewall management (Sysperto GmbH, 2018, p. 7). It allows the company to have a constant monthly order base and income.

Support activities:
Procurement

The secondary activity of procurement defines “the acquisition of inputs, or resources, for the firm” (Institute for Manufacturing - University of Cambridge, 2016). In regard to Sysperto GmbH, this includes their overall purchasing process for the hard- and software. Examples therefore are but not limited to laptops, computers, servers, software licenses (e.g. Microsoft Office, …) and IT-equipment (electric wires, keyboards, …).

Human Resource Management

Human Resource Management as a secondary activity “consists of all activities involved in recruiting, hiring, training, developing, compensating and (if necessary) dismissing or laying off personnel” (Institute for Manufacturing - University of Cambridge, 2016). As the company is seen as a SME, they are very dependent on their employees. Most of the employees have direct contact with the customer and due to that they have specialised knowledge about each customer’s
situation. Furthermore, the customers value having a specific and continuous contact person also because trust and reliability are very important in this sector. Due to those reasons, in regard to the HR management from Sysperto GmbH, the employee’s motivation and satisfaction is very crucial. Therefore, the aspects of developing and compensating the employees take a big part for the HR management. They offer their employees commissions and profit sharing. In regard to the recruiting and the hiring of employees, the company is looking for specialised people from the IT-sector who have knowledge and experience within this sector. The implementation of the ticket-system as a part of the ERP-system implementation is also aimed to support the HR management.

**Technological Development**

The secondary activity of technological development “pertains to the equipment, hardware, software, procedures and technical knowledge brought to bear in the firm's transformation of inputs into outputs” (Institute for Manufacturing - University of Cambridge, 2016). This activity mainly refers to the company’s IT-infrastructure. Due to the fact that the company itself is an IT system house and IT service provider, Sysperto GmbH has a deep knowledge for this secondary activity as it illustrates their core business. A lot of the hard- and software products they are selling to their customers, find application within the company itself also in order to have knowledge and understanding of the application of those products within the daily business of the company. In order to do the installation and updates for the customer’s IT hard- and software, the company has several specialized IT-equipments. Therefore, for example, the company has computers with both operating systems (Windows and Mac) in order to be able to serve all customers.

**Infrastructure**

The infrastructure as a secondary activity “serves the company's needs and ties its various parts together, it consists of functions or departments such as accounting, legal, finance, planning, public affairs, government relations, quality assurance and general management” (Institute for Manufacturing - University of Cambridge, 2016). The main activities in regard to the company’s infrastructure are their accounting and financing department as well as the general management. Some of those activities are also outsourced or supporting services from outside are requested by the company for example to tax consultants and accountants as well as to legal consultant. The ERP-system is aimed to connect those functions and departments in an efficient way.
2.5. SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Strong service orientation for customers</td>
<td>- Financial background</td>
<td>- The German government established a grant to support the company’s digitalization for SME.</td>
<td></td>
</tr>
<tr>
<td>- Huge portfolio with 360-degree services</td>
<td>- Strong competitive pressure from bigger IT system houses</td>
<td>- Expand portfolio: GDPR (New European Law in regard to the data security)</td>
<td>- New competitors with competitive prices</td>
</tr>
<tr>
<td>- High flexibility because of</td>
<td>- Lower market share</td>
<td>- Exploit the new funds that Germany has given to help potential companies in the digitization of their business</td>
<td></td>
</tr>
<tr>
<td>- Flat hierarchies</td>
<td>- High service and offer request cannot be met because of missing capacity</td>
<td>- High rate of social and technical change</td>
<td>- High rate of social and technical change</td>
</tr>
<tr>
<td>- Fast decision-making routes</td>
<td>- Consistent and efficient processes missing in some value activities as well as expensive and time-consuming processes</td>
<td>- Increasing German government regulation</td>
<td>- Increasing German government regulation</td>
</tr>
<tr>
<td>- Young, motivated employees/teams</td>
<td></td>
<td>- Potential threats of competition from new and existing businesses in the industry - this includes the potential for larger franchises to enter the market</td>
<td></td>
</tr>
<tr>
<td>- Specialized employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Loyalty and trust of customers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 - SWOT analysis
3. Requester & Project Request ('Ticket')

1. Name and Title of the Requester:
   Owner and CEO of the company (Andreas Zieher)

2. Description of the Request:
   Process improvement in order to face new business needs

3.0 Description of the Problem:
   Sysperto GmbH has experienced a fast growth within the first three years of operations. Therefore, it may be facing a problem to handle the number of new clients under the point of view of project management, time management, efficiency and productivity.

3.1 Opportunity:
   - Change the existing process management to fulfil the future workload
   - Control time management
   - Collect all the (information) management software of the company in one single system
   - Changing the billing system from hours billing to the managed-service solution
   - Implementing an online-shop that includes the articles from the ERP-system

3.2 Constraints (Sanna Laukkanen, 2007):
   - Decreased flexibility
   - Funds
   - Participation from different organizational functions
   - Criticality of the changes imposed by the ERP-system to the company as a risk factor in ERP implementation
   - Importance of improvements in operational efficiency
   - Importance of cost reductions
   - Importance of new ways of conducting business enabled by the system

4. Ideas for the Solution:
   - CRM functionality
   - ERP-system for each department
   - No ERP-system
   - ERP-system focuses on the critical departments (Panorama Consulting Solutions, 2016)

5. Reason for the Request (expected Business Value):
   Improvement of Business Processes, increasing the availability of information and knowledge, implementation of additional, supporting systems (more details in the next Chapter 4).

13
4. Business Need and Project Justification

The project illustrates an opportunity for Sysperto GmbH as the overall projects’ objective is to achieve process improvement through the new ERP-system in order to gain several economic advantages such as higher transparency through improved information management, higher accessibility and availability of information and knowledge in real-time within the company, shorter offer and delivery times, lower administrative and IT-costs as well as a higher customer satisfaction leading to the chance of increasing the sales and the market share. Due to that, the project arises out of the business need of an opportunity. There is no existing main problem, threat or urgent need entitling the project.

Therefore, the need for action emerges out of the demand and desire to improve the company’s processes and way of working after a few years of operations. As the company has experienced a fast growth in the first three of their operations, some business processes were just implemented or created due to an already existing demand for it and therefore, less time was available to design them in a holistic view. Moreover, up to now the company uses several tools for the collection, processing and saving from information and knowledge. That is the reason that there is no single tool or system, where everything is collected and available. So far, everything is divided through several tools and systems. Moreover, it also depends on each employees’ personal preferences and way of working of using which system.

Another factor, leading to the desire of an ERP-system within the company, is the circumstance that the company is changing its operations from hours billing to Managed Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes and the owner and CEO decided to analyse the option of an ERP-system implementation.

The factors of the company leading to the decision of the ERP-system implementation align with the literature. For example, Shi-Ming Huang et. al. says that the “ERP has become the core competition ability of the enterprises.” (Shi-Ming Huang, 2004, p. 681). According to Shi-Ming Huang “[the] flexibility to reduce the inventory and to decrease the cost during the operation process has become the major tasks of enterprises” (Shi-Ming Huang, 2004, p. 681). Therefore, Shahin Dezdar names several benefits of an ERP-system such as reduced inventory, faster information transactions, better financial management, tight supply-chain links, reduced transportation and logistics costs, improved responsiveness to customers, increased flexibility, increased productivity, and the groundwork for e-commerce and make tacit knowledge explicit” (Shahin Dezdar, 2011, pp. 919-920). Additionally, Hassan R. HassabElnaby agrees that companies make use of information systems to “improve or maintain their competitiveness” especially within a “highly competitive global business environment” in order to “improve customer service, shorten cycle times, and reduce cost” (Hassan R. HassabElnaby, 2012, S. 618). Moreover, the ERP-system supports and improves the decision-making process “by providing
The business need of the project leads to several main stakeholders that are affected by the project. The main identified stakeholders for this project are:

- Owner and CEO, Andreas Zieher (also representing the project sponsor)
- IT service manager, Andreas Domke
- Employees of the company (20 employees)
- Project Management Team
- IT-company implementing the ERP-System (e.g. Acmeo GmbH and/or Neumaier AG) (representing the preferred supplier from the project client)
- Financial Institution (e.g. LBBW-Bank)
- Government (state Baden-Württemberg providing a subsidy for digitalization)
- Tax consultant and accountant
- Customers of the company

Chapter 6 describes the affected stakeholders in more detail.

From the described business need, the following project scope and project deliverables can be derived:

- **Implementation of ERP-system**: successful and efficient implementation of the ERP-system in order to achieve an improvement of the company’s overall operations and processes.

  The ERP-system covers the areas of:

  - warehouse management,
  - customer relationship management,
  - finance and invoicing,
  - logistic and stock management,
  - service and support.

- **Improvement of Business Processes**: analysis, development, simplification, and restructuring of business processes to adapt and optimize for the ERP-system as well to achieve several economic advantages such as faster offer and delivery times, faster reaction to customer requests, lower administrative and IT-costs, more productive way of working for the employees, etc.

- **Increase of the availability of information and knowledge**: accessibility and availability of existing information and knowledge within the company
- Implementation of additional, supporting systems: evaluation and implementation of supporting systems such as the online-shop and the ticket-system
- Establishment of a training plan: clear communication and training for the employees in regard to the changes

5. Strategic Context

The project is perceived as a strategic project as it is aimed to support the company’s strategic goals for the next five years. Those strategic goals are, among others, the increase of their profitability, the strengthening of their competitive position in the market as well as the increase of the market share through a higher customer satisfaction.

Mission:
Sysperto GmbH is dedicated to offering a 360-degree IT-service portfolio to its customers in order to provide each customer an individualized and outstanding IT-service experience in every sense and for every need. Enthusiastic and pleased customers are the aim and the scale for the success of our work (Sysperto GmbH, 2018, p. 3).

Vision:
Sysperto GmbH is aimed to become the preferred choice as IT-service leader, expert and partner by striving to have sustainable, fair and based on trust business relationships with all customers and partners (Sysperto GmbH, 2018, p. 3).

Values:
Sysperto GmbH bases its business on four main values (Sysperto GmbH, 2018, p. 3):
- Service orientation: Sysperto GmbH chooses to deliver an outstanding service in every sense
- Reliability: Sysperto GmbH strives to be the preferred, reliable IT-service partner and expert in every sense
- Trust: Sysperto GmbH sees mutual trust as a basis for successful business relationships
- Enjoyment: Sysperto GmbH wants to deliver the IT-service through its motivated and delighted employees

As Sysperto GmbH is perceived as a SME, they can be seen as a single-business company. This leads to the decision that their corporate business strategy is equal to their business level strategy. Applying Porter’s Generic Competitive Strategies to Sysperto GmbH it can be said that they have selected a differentiation focus to achieve a strategic competitive advantage. The company differentiates itself from its competitors by its 360-degree service orientation and not through low prices. Moreover, it focuses its business on customers that want to receive their IT-
services in a holistic and sustainable way and therefore Sysperto GmbH is offering its managed
service system.

The strategic organizational objectives of the company are (Sysperto GmbH, 2018, p. 3):
- Customers and service objectives:
  o Maintain and enhance outstanding customers service
  o Improve service orientation for new and existing customers
  o Gain new customers and market share through outstanding service
- Financial objectives:
  o Increase financial efficiency by increasing the overall profitability through
    ▪ Decreasing of the expenses by 10%
    ▪ Increasing net profits by 8% annually
- Operational objectives
  o Increase profitability and efficiency through the use of new technologies and systems

To conclude, the strategic context of the company is aligned to an outstanding service orientation.
Aligned with this strategic context, the project of the ERP-system implementation would strongly
support those strategic goals.

6. Identification and Analysis of main Stakeholders

Management of stakeholder interests is vital for the success of any Firm. The stakeholders
of Sysperto GmbH include all the parties that can have a positive or negative impact on the
organization. These are the actors that are affected by the organization’s performance, activities
and policies. The identification of the stakeholders is described in the following table:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Specified</th>
<th>Interests/expectations/orientations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner and CEO (Andreas Zieher)</td>
<td>Project sponsor and client</td>
<td>Profit increase, process improvement, value creation</td>
</tr>
<tr>
<td>IT-service manager (Andreas Domke)</td>
<td>Support/Consultant for owner</td>
<td>Process management improvement, increase of customer satisfaction</td>
</tr>
<tr>
<td>Employees of the company</td>
<td>They will benefit the project; final end-user of the project</td>
<td>Reduction in working hours, efficiency, satisfy personal requests</td>
</tr>
<tr>
<td>Project Management Team</td>
<td>Responsibility for overall the project</td>
<td>Completion of the project, full implementation</td>
</tr>
</tbody>
</table>
### Table 2 - Stakeholder analysis

To identify the importance of stakeholders, a stakeholder matrix has been created. This matrix consists of two axes, power/influence and interest. The Y axis is represented by power and/or influence. Power is the authority to change the behaviour of others and encourage them to do things that they might not do otherwise. Influence is the ability to alter other people’s perceptions of a situation. The X axis is represented by the ‘interest’ stakeholders have by the upcoming ‘organizational change’ (Thompson, 2016). Some may be interested in what is going to happen, while others may care less. The position that allocates the stakeholders on the grid shows the actions for Sysperto GmbH that need to be taken:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Specified</th>
<th>Interests/expectations/orientations</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Company (outsource)</td>
<td>Provider of the ERP-system implementation</td>
<td>Satisfy the client through the full implementation of the ERP-system</td>
</tr>
<tr>
<td>Financial Institution</td>
<td>LBBW-Bank</td>
<td>The bank expect that Sysperto GmbH will pay the loan on time.</td>
</tr>
<tr>
<td>Government (state Baden-Württemberg)</td>
<td>Providing a subsidy for digitalization</td>
<td>Project’s completion under terms agreed</td>
</tr>
<tr>
<td>Tax Consultant and accountant</td>
<td>Consultant</td>
<td>Evaluate the capability of the project, process monitoring</td>
</tr>
<tr>
<td>Clients of the company</td>
<td>Beneficiary of the project</td>
<td>Convenience, customer satisfaction and high-quality service</td>
</tr>
</tbody>
</table>
Positioning the stakeholders on the grid, gives a perception how they act, subsequence which actions should be undertaken. Here below the classification of divided per area according to Thompson (Thompson, 2016):

- **High power, highly interested people (Manage Closely):** Close attention to make them satisfied and involved.

- **High power, less interested people (Keep Satisfied):** Create interest for those stakeholder’s in order to keep them on track.

- **Low power, highly interested people (Keep Informed):** These actors are not to be underestimated for their power. They may really contribute aiding with relevant details to all the length of the project.

- **Low power, less interested people (Monitor):** For these actors make sure to keep them updated and monitored during the project (Thompson, 2016).
7. Diagnosis of the AS-IS model

The diagnosis of the AS-IS model is used to provide a clear definition and understanding of the current situation of the business processes within a company in which the project is based (Brandenburg, 2018).

The value creation processes and activities of the company are described in detail in Chapter 2.4. Derived from those value activities and the current processes, for the company Sysperto GmbH their current AS-IS model can be outlined in the following way. This AS-IS model focuses on the process for a new customer. Besides this process for new customers, there is also the possibility of a process for an existing customer that has a specific service request for example for an update.
Figure 4 - As-Is model
8. Definition of the TO-BE model

Despite the big investment needed for an ERP-system, not making the implementation would lead to a huge loss of opportunities. Thanks to its benefits, an ERP-system improves the company’s performance and brings to the organization an important competitive advantage by improving many areas of business (WorkWise Software, 2018).

A framework of ERP-system benefits has been created by Shang & Saddon (2000) to bring into light the short and long-term benefits of the post-implementation of the ERP-system. In the following, there are different benefits according to their functional area (Staehr, Shanks, & Seddon, 2012):

1. **Operational Improvement**

   The operational aspect is improved by the ERP-system, as it helps to reduce the cost and time of operations and processes. It also improves the productivity of work, the data quality and the customer’s service (Staehr, Shanks, & Seddon, 2012).

2. **Managerial Improvement**

   Regarding the management part, ERP-systems organizes the resource management, lead and help with the decision-making and improve performance control (Staehr, Shanks, & Seddon, 2012).

3. **Strategic Improvement**

   The ERP implementation supports the fast growth of the company thanks to its ability to adapt to changes and expansions, to encourages on innovation and because of giving the opportunity to create an e-commerce or an online-shop (Staehr, Shanks, & Seddon, 2012).

4. **IT-infrastructure Dimension**

   The IT-costs are going to decrease significantly as all the company will work with only one system and also the flexibility of the IT-infrastructure will increase (Staehr, Shanks, & Seddon, 2012).

   In another perspective, the ERP-system allows the implementation of new applications as the system accepts easily and fluently the integration of other applications like the online-shop and the ticket-system.

Those benefits are going to be integrated into the to-be model of the company’s processes. The development of the to-be model is one part of the project as it refers to the analysis and the restructuring of the existing business processes. Those are necessary steps before implementing the ERP-system. Therefore, a detail description of the to-be model at the current stage is not possible, as the detailed analysis during this project phase is necessary. At the current stage it can be said that the to-be model of the company’s processes will be divided into three possible paths after receiving the customer’s request. The reason therefore is, that it is a big difference for the
company whether the request is from a new customer or an existing customer. Moreover, it is also important to distinguish between a request from an existing customer that wants to have a new IT-service or whether he wants to have an IT-service support for its existing IT-product from Sysperto GmbH. Additionally, also the channel through which the company receives the customer’s request is going to be changed through the project. So far, the company receives the offer requests through phone or mail. With the implementation of the online-shop within the ERP-system implementation, this will offer a new contact channel. Due to that, the start of the company’s to-be model processes could look like the following:

![Figure 5 - To-Be model](image)

### 9. Establishment of the smart Objectives of the Project

SMART is an acronym used to guide the goal setting. To make sure the goals are clear and reachable, each one should be: Specific (simple, sensible, significant), Measurable (meaningful, motivating), Achievable (agreed, attainable), Relevant (reasonable, realistic and resourced, results-based), Time-bound (time-based, time-limited, time/cost limited, timely, time-sensitive) (Mindtools, 2016).

**SPECIFIC:** Implementing an ERP-System for Sysperto GmbH, which also incorporates a ticket-system and an online-shop, will enable the company to be internally more efficient and proactive with their clients in order to deliver a competitive service.

**MEASURABLE:** After the project completion, the benefits can be measured mainly through the time savings (of the improved business processes and operations) and sales increases. The project will be performed through:

- Time deliverable
- Complete implementation of all systems
- Task management
- Complete overview of the cost management
- Complete implementation of the others system (all-in-one)
- Savings

ACHIEVABLE: The complete implementation of the ERP-system and the internal process restructure are the main objectives that the team is expected to pursue in order to accomplish the project. Similar projects for customers were already performed so that the company believes that this is achievable.

REALISTIC: The project has the objective to improve the internal processes in order to deliver a better competitive service. The project team has the aim to implement as much as they can align the project objectives with the company objectives. The analysis, several best practices, experiences and the fact, that most of the companies at least once during their business life-time implement an ERP-system, lead to the perception that the project is realistic.

TIME-BOUND: The implementation is estimated to be complete on time following the project master schedule of 18 months.

10. Identification and Definition of high-level Requirements

10.1. Business

The high-level requirements from the business in regard to the project focus on the overall implementation of the ERP-system in order to achieve improved and more efficient business processes for the value creation of the company. Therefore, this implementation first requires the analysis and restructuring from the business processes, afterwards the evaluation of the appropriate ERP-system, subsequently the implementation of the ticket-system and the online-shop and the final implementation of the ERP-system itself. Moreover, this implementation requires detailed training for the employees in order to ensure the right and adequate use of the system. When those requirements are met, this is aimed to achieve the requirements of a higher accessibility and availability of information and knowledge in real-time within the company, higher transparency of information, integration of all business processes, increased efficiency and productivity through faster offer and delivery times, lower administrative and IT-costs as well as a higher customers satisfaction.

10.2. Product

The requirements of the product, meaning the ERP-system, are that it provides a stable and clear base for the company’s processes. It is crucial that the ERP-system includes all the existing information, data and knowledge from the company.
This leads to the requirement that all the existing data have to be migrated carefully into the new system. Moreover, the system has to work directly after the go-live in a perfect way. Additionally, the system has to reflect the company’s processes and ways of working. To sum this up, the requirement for the product is that the ERP-system supports the company’s operations perfectly.

10.3. Project

The main requirement of the project is the successful completion within the main constraints of scope, time, budget and quality. Especially the cost factor is very important as this also illustrates one of the main risks (refer to Chapter 15). According to the literature “90 per cent of ERP projects are late or over budget” (Guo Chao Peng, 2009, p. 926). Due to that, it is very important that the project is managed by take this insight into account. Another project requirement is that all project management activities do not affect the daily operations meanwhile.

11. Identification and Comparative Analysis of Options/Alternatives

Before choosing a final and suitable solution, companies have to do comparative studies in order to evaluate the advantages and disadvantages of each solution (Project Management Institute, 2017, p. 31).

1. Do nothing (In-House system):

The company should consider the option of doing nothing in regard to the implementation of an ERP-system and analysing its impact of this alternative on the business.

The company will then continue to perform with its in-house system without changing anything. Regarding the cost aspect, this alternative seems the best, especially because ERP-systems are known by the high cost of implementation and the need to some changes in the company’s processes. This could be a decision for the short and mid-term (Panorama Consulting Solutions, 2013).

However, for the long-term strategy, it will have a negative impact on the business such as big losses due to the time-consuming processes, the communication and data-sharing between each department will be harder as the data and information keep growing, leading to misunderstandings and losses of customers due to the overwhelming work of the employees and the absence of a proper solution for time optimization (Panorama Consulting Solutions, 2013).
This solution will not generate any savings for the company. While operating with the existing in-house system, the growth of the company will face a large demand of recruitment and the need of new offices. There is a potential risk that the company will be inefficient in the long-term view.

2. Outsourcing:

Outsourcing could also be an alternative for Sysperto GmbH. The company could hire a subcontractor company that would be in charge of the overall management of all IT-related processes and all administrative departments such as finance, IT and human resources, while Sysperto GmbH would only focus on its core business of the IT-services for its customers.

This option would optimize time for the company and therefore reduce the costs generated by the department meant to be outsourced. Moreover, this would enable the development and the quality improvement of the core activities of the organization.

Nevertheless, this option will not be appropriate for the company, because it does not match with the mission and vision of Sysperto GmbH as an IT-service company itself.

3. Implementation of an ERP-system:

The ERP-system reduces the risk of possible errors or duplications of functions and data transferring in many departments and helps the organization operate in a better way which leads to its growth in the market (TechTarget, 2018).

The ERP-solutions provides the opportunity of time and cost saving. The project client assumes and expects that employees will operate tasks in less time compared to the current situation without an ERP-system. This provides unoccupied capacity to the company. Therefore, it represents a huge financial resource saving because there is no need for recruitment (salary savings) or for a larger office while the company grows and expands in the market.

3.1. Core ERP-system components:

When deciding to implement an ERP-system, companies must consider the core components of the ERP-system that illustrate modules and parts of the system that target the different functional areas (TechTarget, 2018).

According to Mary E. Shacklett the typical factors considered as core system components are purchasing and procurement, finance, human resources and Customer-Relationship-Management (Mary E. Shacklett, 2017).

3.2. Types of ERP-Systems:

However, there are many types of ERP-systems, the analysis and the evaluation of each one of them is as follows:
**ERP on-premise:**

On-premise systems are historically known with the rate of success of their implementation process. This system is easily implemented into the companies and it accepts many forms of change because it is not difficult to customize. However, there are some inconveniences of the ERP on premise systems as it is an old technology and is quite poor in terms of functionality and cost. Furthermore, it can be affected by cyber-attacks (Elizabeth Quirk, 2018).

**Cloud technologies:**

Cloud technologies are tempting as a solution because they have the abilities and responsiveness of new software, the accessibility from multiple terminals that add productivity, a high level of security and the good cost-benefit. However, this system does not easily accept changes (Elizabeth Quirk, 2018).

**Hybrid ERP-system:**

Hybrid ERP-systems illustrate an option between the cloud-based systems and the on-premise systems. It is resulting in having smoother processes in a really secure and safe environment, having also a better visibility of the processes in the system and it has a good cost of the system implementation compared with the on-premise option and the cloud system option. The hybrid system does not require important skills to operate it, so the time and cost of the training are lower (Elizabeth Quirk, 2018).

### 12. Selection and Description of the Optimal Solution

After an analysis of the potential alternatives, the option that suits the enterprise best and allows it to improve its processes, structure and data-sharing system is the implementation of the ERP-system. The ERP-system’s main objectives are not only to improve the business in several operational factors and to provide time and money savings, but also unify the company into one system, under a clear and common vision (Achrefo MH, 2014).
In addition to the factors noted previously and leading to choose the implementation of an ERP-system, other factors affect the choice, such as:

- Improving operation processes
- Providing real-time and fast information
- Increasing efficiency
- Providing accurate one-source data
- Increasing the collaboration, transparency and communication between departments
- Helping to save time and money

Despite the high cost of the software, the hard implementation, the required training of the employees, the continuous maintenance and also the time of the complete implementation with all its phases, the ERP-system helps the growth of the company as well as it provides good management of the business functions in order to have a competitive advantage among other companies.

Based on the factors and criteria analysed, the best option is the implementation of a Hybrid ERP-system thanks to its ability to adapt to changes inside a company, its visibility and transparency, its affordable cost and the easy training required for the employees, which leads to low training time and cost.
13. Master Schedule

The total duration of the project is estimated to 18 months. Therefore, the main milestones of the project are:

1. Project Management (18 months (8 months project initiating + planning))
2. Analysis of the existing business processes (5 weeks)
3. Restructuring business processes (3 months)
4. Evaluation of the available ERP-systems (6 weeks)
5. Implementation of a ticketing system and an online-shop (6 weeks)
6. Implementation of ERP-system (6 weeks)
7. Training of employees (1 month)

According to those milestones, the gross schedule can be mapped as follows:

![Figure 7 - Gross Schedule](image)

14. Master/Gross Budget

The income for the project is earned by the process (especially time) improvements the ERP-system is aimed to bring with it. The overall goal of having the ERP-system for the company is the chance of having improved processes that especially influence the time consumption of process tasks. For example, the ERP-system facilitates the offer writing process and reduces the time needed for it. While spending less time for one offer, the rest of the time can already be spent for the next offer. This illustrates a higher efficiency and profitability and in overall the higher possibility of doing more customer orders and serving more customers. This leads to the conclusion that the expected higher future incomes (resulting out of the improvements by the ERP-system) represent the generated cash flows out of the project. The money entry schema can be seen by the order intakes and the corresponding revenues out of the order that can be generated out of the improved and faster business processes.

The main sources of funding are internal equity, a government subsidy and a bank loan. The project’s budget is estimated to 362,525€ (refer to the table below).
The project scope gives access to a government subsidy that is granted to SME under 100 employees that are implementing IT-solutions and improvements of IT-security to their business (Ministerium für Wirtschaft, 2018). The project has to lead to a digitizing progress/advancement within the company. The subsidy is granted for projects with a budget between 10,000€ and 100,000€. The subsidy is linked to a loan. For project with a budget between 10,000€ and 50,000€ the company receives a repayment bonus of 5,000€. For projects with a budget between 50,000€ and up to 100,000€ the reductions is equal to 10% of the overall budget (Ministerium für Wirtschaft, 2018). The repayment bonus equals a reduction of the debt meaning that the company does not have to repay the whole loan amount (Ministerium für Wirtschaft, 2018).

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LICENSE/EQUIPMENT/MATERIAL COSTS</strong></td>
<td></td>
</tr>
<tr>
<td>ERP-system</td>
<td></td>
</tr>
<tr>
<td>Licenses</td>
<td>33,000€</td>
</tr>
<tr>
<td>System development and architecture</td>
<td>6,500€</td>
</tr>
<tr>
<td>System implementation</td>
<td>15,000€</td>
</tr>
<tr>
<td>Training</td>
<td>3,000€</td>
</tr>
<tr>
<td><strong>Ticket-system</strong></td>
<td></td>
</tr>
<tr>
<td>Licenses + interface to ERP-system</td>
<td>16,000€</td>
</tr>
<tr>
<td>Installation</td>
<td>1,000€</td>
</tr>
<tr>
<td>Training</td>
<td>500€</td>
</tr>
<tr>
<td><strong>Online-Shop</strong></td>
<td>10,000€</td>
</tr>
<tr>
<td><strong>WORKING HOURS</strong></td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>129,570€</td>
</tr>
<tr>
<td>Process Improvement &amp; Restructuring</td>
<td>37,980€</td>
</tr>
<tr>
<td>ERP-selection</td>
<td>17,200€</td>
</tr>
<tr>
<td>Implementation (only internal; provider costs – see above)</td>
<td>45,210€</td>
</tr>
<tr>
<td>End-user Training</td>
<td>8,880€</td>
</tr>
<tr>
<td>Reserves</td>
<td>38,685€</td>
</tr>
<tr>
<td><strong>Overall estimated costs</strong></td>
<td>362,525€</td>
</tr>
<tr>
<td>Annual Updating/Services (per year)</td>
<td>12,000€</td>
</tr>
</tbody>
</table>

*Table 3 - Overall estimated costs (Acmeo Systemhaus Software, 2018)*

Besides showing the cost that will come with the project, hereafter the description and the calculation for the savings due to the project will be outlined. As already stated at the beginning of this chapter, the generated cash flows out of the project are the expected higher
future incomes through the process improvement that leads to higher efficiency, profitability, and customer satisfaction.

14.1. Analyzed Cost Pools that could be Affected

As the company is an IT-service provider, the salary/personnel costs of the employees illustrate the biggest cost factor according to their balance sheet (82% of the total costs). Therefore, it is very important and beneficiary that the major saving out of the project will be reached for this cost pool as the main identified savings come out of the work reduction for the employees working hours.

Another cost pool is the rental costs with 3% out of the total costs. As the company currently has a really good office in regard to the location, costs (compared to the market prices per square meter), room division and furnishing, from an economic and overall viewpoint it would not be beneficiary to move to another office if the company would choose the option to reduce people. Even if the company would choose to reduce the people for now after the ERP-system implementation, it would then provide the company more space for future growth and expansion. Due to this, this cost pool won’t be analyzed further in regard to the savings out of the ERP-system implementation.

The cost pool of advertising and travel expenses represents 4.5% of the total costs for the company at the current point. It is assumed that there will be no change in the advertising costs as the company will continue with its current marketing strategy even if the ERP-system implementation will increase the customer satisfaction and improve the word-of-mouth channel. In regard to the travel expenses it is assumed that there also will be no change. Even if it is expected that the company will increase its sales and customer base, this will be balanced by the increase of managed services, making it not necessary that the IT-technicians travel to the customer.

A smaller cost pool is the vehicle expenses (1% of the total costs) that will be affected by the ERP-system implementation. Due to the change from the current IT-service portfolio to a managed-service portfolio from the company through the ERP-system implementation, it can be assumed that less IT-experts/technicians have to be on-site at the customer. Herewith, less vehicles are necessary, illustrating another saving point. However, as the company continues offering their 360-degree-service, they still need to be available for the customer on site as well.

14.2. Description, Explanations and Assumptions in regard to the Saving Calculations

- Several work steps/process steps will be saved through the new ERP-system. Herewith, the employees work more efficiently and effectively. Consequently, for example the customers receive their offers faster. Additionally, the ticket-system informs the customer
sooner about the completed work steps and status reports about the current progress of the IT-request/problem. This overall leads to a higher customer satisfaction and decreases the risk of losing a customer.

- The new ERP-system reduces the administrative work for the IT-technicians (such as system changes, research, etc.). As a result, each IT-technician can process more IT-tickets/requests per day (illustrating more productive working hours), thus supporting the customer better and faster.

- Faster and improved processing of customer claims and complaints are achieved through a structured and accurate database (registration of customer data, serial numbers, license information, customer card, etc.) including also an interface to the wholesale/distributor.

- Vehicle and travel expenses can be saved, as with the system migration approximately 30% (assumption) of the service-cases can be solved through the remote-support. The reason for this is that through the new ERP-system more customers can be connected to the managed-service-system as all the processes are optimally linked and combined between the managed services, the ticket-system and the ERP-system (coordinated workflows, complete documentation of sold systems, verification of serial numbers, claims management, usage of FAQ-database, pro-active monitoring of customer systems)

- General calculation formula for the saving calculation:
  
  o Saving per employee per day of 3.5h * Number of employees * working day * average hourly rate

- The saving of the freed employees’ capacity is used to increase the sales

- The sales increase is aimed to help in achieving a higher market share and competitive advantage. Moreover, it is assumed that it enables new customer segments and more requests from new customers through recommendations from existing, satisfied customers as their customer satisfaction will increase through more efficient and faster work steps and less administrative effort.

14.3. **Strategical Business Decision**

The increase of productivity and herewith the decrease of the required working hours from the employees through the ERP-system implementation leads to two different options. The first option would be that the company decreases its current number of employees. The other option would be that the company keeps all of the current employees and uses the freed/released capacity in order to generate more sales. Considering the company’s strategy (refer to the Business Case Chapter 5 “Strategic Context”), the company chooses the second option of remain unchanged the number of employees and that the freed/released capacity of the employees is used
for new projects and new customers in order to achieve a sales increase. This sales increase can be calculated by the average sales per IT-technicians and the saving time. Moreover, another reason for this decision is that the new implemented online-shop will lead to an increase in requests through this channel. Therefore, the freed capacities of the employees have to be used for example to fulfill a potential request flood.

14.4. Savings through ERP-system and Ticket-system Implementation

Based on those explanations and assumptions, the following calculations are made in order to calculate the potential cost saving and out of this derived the potential increase of sales through the ERP-system implementation. As the salary/personnel costs represent the highest cost pool with 82% of the total costs, the following calculations concentrate on this cost pool. For a detailed view of the calculations, please refer to the appendix.

Table 4 - Saving calculations (I)

<table>
<thead>
<tr>
<th>Description</th>
<th>IT-Service-Technician</th>
<th>Administration employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal hourly rate per employee according to task</td>
<td>45,00 €</td>
<td>36,00 €</td>
</tr>
<tr>
<td>Number Employees (m/f)</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Total saving per day</td>
<td>26,25 h</td>
<td>8,75 h</td>
</tr>
<tr>
<td>Total saving per year (212 days)</td>
<td>5.565,00 h</td>
<td>1.855,00 h</td>
</tr>
<tr>
<td>Total saving per year according to taks</td>
<td>250.425,00 €</td>
<td>66.780,00 €</td>
</tr>
<tr>
<td><strong>pot. total cost saving per year</strong></td>
<td></td>
<td><strong>317.205,00 €</strong></td>
</tr>
</tbody>
</table>

Table 5 - Saving calculations (II)

<table>
<thead>
<tr>
<th>Description</th>
<th>IT-Service-Technician</th>
<th>Administration employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales per year</td>
<td>2.095.175,01 €</td>
<td></td>
</tr>
<tr>
<td>Sales per employee/per year (average 13 instead of 15 employees)</td>
<td>161.167,31 €</td>
<td></td>
</tr>
<tr>
<td>Sales per hour/per employee/per year</td>
<td>95,03 €</td>
<td></td>
</tr>
<tr>
<td>Total saving per year through ERP-system per employee</td>
<td>371,00 h</td>
<td></td>
</tr>
<tr>
<td>Average, additional sales per employee/per year</td>
<td>35.255,35 €</td>
<td></td>
</tr>
<tr>
<td><strong>pot. total, average additional sales per year</strong></td>
<td></td>
<td><strong>458.319,53 €</strong></td>
</tr>
</tbody>
</table>

Table 6 - Saving calculations (III)
14.5. Financial Feasibility Calculations

Out of the described saving calculations, the further financial feasibility calculations for the project were performed, in order to receive the values for the NPV, IRR and ROI and the payback period.

The CAPEX and the corresponding composition therefore are listed in detail in table 3. Those will be acquired from the provider, who is also implementing the ERP-system to the company. The income is calculated out of the savings estimated out of this project. The project management team assumed with a conservative approach, that the savings per year (please refer for the calculation to table 5 above) will last for five years. Afterwards, the benefits from the ERP-system will be outweighed by other impacts. The differential costs for this project are composed by the project management work. Furthermore, it is important to mention how the Working Capital for this project was calculated. The WC illustrates the 4% revenue out of the sales per year which are estimated according to the calculations in table 6. Based on those data, the Free-Cash-Flow, the NPV, IRR and ROI as well as the Payback are calculated.

The calculations as well as the results are shown in the following:

Table 7 - Financial Feasibility Calculations

<table>
<thead>
<tr>
<th>Financial KPIs</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV</td>
<td>580,749,31 €</td>
</tr>
<tr>
<td>IRR (normal)</td>
<td>63,90%</td>
</tr>
<tr>
<td>IRR (corrected/modified)</td>
<td>29,00%</td>
</tr>
<tr>
<td>ROIn</td>
<td>683,23%</td>
</tr>
<tr>
<td>ROIg</td>
<td>783,23%</td>
</tr>
</tbody>
</table>

Table 8 - Financial KPI results
15. Risk Identification and Assessment

The importance of risk assessment and management for an ERP-system implementation project is discussed in several papers. According to Shi-Ming Huang et. al. one big reason for the failure of ERP-implementation projects is the lack of risk assessment and management (Shi-Ming Huang, 2004, p. 681). Due to that, Zafeiropoulos also says that the “application for managing risks is very crucial for the success of a project such as the implementation of an ERP-system” (Ioannis Zafeiropoulos, 2005, p. 213). The implementation of an ERP-system involves several risks. As a
result, the management of the following identified risks is crucial for the overall success of the implementation.

1. **Financial Risk**
   
The implementation of an ERP-system is in general seen as “a big investment project for an enterprise” (Shi‐Ming Huang, 2004, p. 681). Additionally, due to the fact that Sysperto GmbH is a SME, the implementation of the ERP-system illustrates an even bigger investment because of the estimated project budget of 362,525€. Taking into account that the company wants to finance the project with equity, a loan and a government subsidy, the project will create a higher debt burden for the company putting pressure on the monthly required order intake.

2. **Cost and Time-consumption of the Implementation**
   
Aligned with the financial risk, the ERP-system implementation illustrates a cost but also a time-consuming project for the company. Besides the estimated project costs, the project has an estimated duration of 18 months. This can be seen as another main risk also due to the reason that the literature says that “90 per cent of ERP projects are late or over budget” (Guo Chao Peng, 2009, p. 926) (Shi‐Ming Huang, 2004, p. 681). Higher project costs would illustrate an even higher debt burden and could lead in the worst case to bankruptcy. Whereas a longer time-consumption of the project could have effects on the daily business of the company. Furthermore, it has to be taken into account that the company terminates their existing program licenses for a certain date. If the ERP-system implementation was delayed at this point, this would have a great effect on the company’s operations.

3. **Acceptance of Employees**
   
The company’s employees, illustrating the final end-user of the ERP-system, also have an influence on the project’s success especially in regard to their acceptance. If the change of the system and the new implementation is not accepted and welcomed by the employees, they are reluctant to use the system (Guo Chao Peng, 2009, p. 930) and in the worst case, they would reject working with it, this would also have great effects on the overall company’s operations. Furthermore, the project’s objective of improving the company’s operations and processes through the ERP-system would be missed. Therefore, the project requires the involvement of the employees in the overall process through an effective change management and communication plan.
4. Training for Employees
The training for the employees can be seen as another crucial risk. It is stated in several works of literature, that a lack in the user involvement and insufficient training of the end-user is a big risk for the ERP-system implementation (Shi-Ming Huang, 2004, p. 684) (Guo Chao Peng, 2009, p. 927). Furthermore, besides the importance of user-training and re-skilling also the “lack of analysts with business and technology knowledge” and the risk of “failure to integrate internal and external expertise” have to be taken into account (Shi-Ming Huang, 2004, p. 684). Additionally, the length of the training period for the employees would have an effect on the daily business as during the training time the employees cannot accomplish profitable and productive activities.

5. Definition of Processes
The definition of the processes illustrates the basis and an important fundamental for the ERP-system implementation. ERP projects are perceived as more complex than normal software projects because they consist out of the software projects and additionally the business processes (Shi-Ming Huang, 2004, p. 682). Due to that Shi-Ming Huang et al. also says that “[the] ERP system consists of tightly linked interdependencies of business processes, software systems, and process re-engineering” (Shi-Ming Huang, 2004, p. 682). An inappropriate definition and redesign of the processes would have a great effect on the overall performance and usefulness of the system and therefore, this risk has to be managed closely as well.

6. Evaluation and Decision for the ERP-system
The step of the evaluation and decision for the ERP-system is seen as one of the big milestones for the project especially because at this point the final decision for one specific ERP-system is made. All the decision factors especially those of the process analysis have to be taken into account in order to make the decision for the most appropriate system. Therefore, several factors could influence the decision in a wrong way, leading to another risk.

7. Customization of the ERP-system for the Company
The customization of the ERP-system for the company is a crucial requirement. The system has to reflect the company’s processes in that way that they are most productive, efficient and perfectly supported through the system. According to Shi-Ming Huang, the “failure to support cross-organization design” in regard to the organizations fit as well as the “lack of integration between enterprise-wide systems” are big risks for the ERP-system implementation (Shi-Ming Huang, 2004, p. 684). Moreover, the software system design has the risk of being “unable to comply with the standard which ERP software supports” (Shi-Ming Huang, 2004, p. 684).
8. **Migration of the Data**

The migration of the existing data, information and knowledge of the company into the ERP-system is a compelling point during the implementation as those (historical) data reflect the company’s overall knowledge and base for doing their operations. For example, if during the migration of the data some customer data, the database for the purchasing articles, the historical data for the material requirements planning or some articles from the digital inventory would get lost, this would affect the overall operations to a great extent.

9. **Influence on daily Business**

Any change in the time or costs plan as well as the requirements of the ERP-system would influence the overall daily business. The influence of the cost and time factor with its influence on the daily business are already mentioned in risk 1 and 2. Moreover, the implementation of the ERP-system will change the overall way of working and operations of the company. If part of the changes would not apply to the real business operations, the overall daily business would be affected as well.

10. **Environmental and Market Changes**

The overall potential changes in the environment and the market from the company illustrate a very broad risk as there are several diverse influence factors. Those are but not limited to the change in the customer’s needs, bankruptcy of the main customers or a main supplier/distributor, customers switching to the competitors, new competitors entering the market, new political laws and regulations (e.g. data security and protection, labour laws, etc.), loss of supporting experts such as tax consultant and accountant etc. In general, an unstable business environment but especially any influences on the company implementing the ERP-system to Sysperto GmbH would have a great effect on the project.

According to the PMBOK (Project Management Institute, 2017, p. 445/446), there are five main ways to manage risks:

- Acceptance (accepting that it might happen and decide to deal with it if it does);
- Avoidance (changing of the plans completely to avoid the risk);
- Transference (transferring the impact and management of the risk to someone else);
- Mitigation (limiting the impact of the risk);
- Exploitation (maximizing the chance that the risk happens, in order to exploit it).
### Likelihood of Occurrence

5 = > 76% probability of occurrence  
4 = 51% to 75% probability of occurrence  
3 = 26% to 50% probability of occurrence  
2 = 11% to 25% probability of occurrence  
1 = < 10% probability of occurrence

*Table 9 - Probability-Matrix*

### Risk Impact

5 = Project failure  
4 = Significant time delay (btw 61 and 90 days) or significant profit reduction (>51%)  
3 = Moderate time delay (btw 31 and 60 days) or moderate profit reduction (26-50%)  
2 = Low time delay (btw 11 and 30 days) or low profit reduction (6-25%)  
1 = Very little/null time delay (10 days or less) or very little/null benefits reduction (5% or less)

*Table 10 - Impact-Matrix*

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk</th>
<th>Probability</th>
<th>Impact</th>
<th>Measure</th>
<th>Actions to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Financial risk</td>
<td>4</td>
<td>3</td>
<td>Transference</td>
<td>Agreeing on a fix-price offer for the ERP-system implementation</td>
</tr>
<tr>
<td>b.</td>
<td>Cost and time-consumption of the implementation</td>
<td>4</td>
<td>4</td>
<td>Mitigation</td>
<td>Having an appropriate project management</td>
</tr>
<tr>
<td>c.</td>
<td>Acceptance of employees</td>
<td>2</td>
<td>5</td>
<td>Mitigation</td>
<td>Involvement of the employees in the overall project especially in the restructuring of the processes, applying change management and communication plan</td>
</tr>
<tr>
<td>d.</td>
<td>Training period for employees</td>
<td>3</td>
<td>5</td>
<td>Acceptance</td>
<td>Employees training is crucial and important for the later use – therefore acceptance if training period extends</td>
</tr>
<tr>
<td>e.</td>
<td>Definition of processes</td>
<td>4</td>
<td>3</td>
<td>Mitigation</td>
<td>Detailed process analysis applying several methods for achieving a process improvement</td>
</tr>
<tr>
<td>f.</td>
<td>Evaluation and decision for the ERP-system</td>
<td>3</td>
<td>5</td>
<td>Avoidance</td>
<td>Deep and broad analysis of the available systems</td>
</tr>
<tr>
<td>g.</td>
<td>Customization of the ERP-system for the company</td>
<td>3</td>
<td>5</td>
<td>Transference</td>
<td>Transferring the customization to the ERP-system implementing company also with the agreement on post-implementation changes</td>
</tr>
<tr>
<td>h.</td>
<td>Migration of the data</td>
<td>3</td>
<td>5</td>
<td>Mitigation</td>
<td>Backup of available data, knowledge and information before the implementation</td>
</tr>
<tr>
<td>i.</td>
<td>Influence on daily business</td>
<td>4</td>
<td>5</td>
<td>Mitigation</td>
<td>Besides strict project management plan especially for time also involving the employees during the overall project</td>
</tr>
<tr>
<td>j.</td>
<td>Environmental and market changes</td>
<td>4</td>
<td>4</td>
<td>Acceptance</td>
<td>Continuous analysis and observation of the environment in order to be able to forecast and oversee significant changes and trends</td>
</tr>
<tr>
<td>k.</td>
<td>Software system design/customization</td>
<td>3</td>
<td>4</td>
<td>Mitigation</td>
<td>Establishing quality gates that cannot be passed during the project as well as no project closing when requirements are not met.</td>
</tr>
<tr>
<td></td>
<td>Knowledge and expertise from end-users</td>
<td>3</td>
<td>5</td>
<td>Transference</td>
<td>Consultancy company will execute the training session with a specialized trainer and an IT-expert. Employee surveys are used afterwards to check employees' perception.</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------</td>
<td>---</td>
<td>---</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>m.</td>
<td>Stability of system performance</td>
<td>4</td>
<td>3</td>
<td>Transference</td>
<td>The ERP-system implementing consultancy company ensures the stability of system performance as fixed in the contract.</td>
</tr>
<tr>
<td>n.</td>
<td>Support from the owner</td>
<td>2</td>
<td>5</td>
<td>Prevention</td>
<td>Clear requirement definition, traceability and controlling with the owner at the beginning with several meetings. Continuously involvement of the owner in the project.</td>
</tr>
<tr>
<td>o.</td>
<td>ERP-system scope definition</td>
<td>3</td>
<td>3</td>
<td>Prevention</td>
<td>Establishing a quality gate after the ERP-system requirements definition phase that cannot be passed when requirements are not met.</td>
</tr>
<tr>
<td>p.</td>
<td>Key user/expert availability</td>
<td>3</td>
<td>2</td>
<td>Prevention</td>
<td>Establishing a human resource schedule plan including the definition of proxies.</td>
</tr>
<tr>
<td>q.</td>
<td>Cyber attack</td>
<td>2</td>
<td>2</td>
<td>Prevention</td>
<td>Strong firewall and security measurements established before the implementation.</td>
</tr>
</tbody>
</table>

*Table 11 - Risk assessment for ERP-system implementation*
16. Definition of Indicators, Measurement Systems, Targets and Control Thresholds

There are many ways to measure and to control the success of the implementation of the ERP-system. For this project, the focus will be on the Critical Success Factors (CSF) and Key Performance Indicators (KPI).

CSFs are the factors leading to the success of the project, while KPIs are the impact of the undertaken actions and decisions (Charlie Gilkey, 2012).

1. Critical Success Factors (CSFs):

Critical Success Factors are the factors that affect the efficiency and performance of a project specifically and the organization in general. To reach the overall goals and objectives, activities related to CSF have to be performed brilliantly, efficiently and in the high-quality way (Business Dictionary, 2018).

CSFs are the different areas where a high-level of efficacy and good management is required in order to have a successful implementation of the ERP-system (Bhatti T. R., 2005).

In the following, these are the most important CSFs that guarantee the success of the implementation of the ERP-system into the company according to Bhatti T. R. in the report of the Second International Conference on Innovation in Information Technology, the principal areas of the CSFs (Bhatti T. R., 2005).

- Project Management
- Business Process Reengineering
- User training and education
- Technological infrastructure
- Change management
- Management of Risk
- Top Management Support
- Effective Communication
- Teamwork and composition
- User Involvement
- Use of consultants
- Goals and Objectives
2. Key Performance Indicators (KPIs):

A Key Performance Indicator (KPI) is an indicator demonstrating how organizations succeed to reach the goals and objectives targeted. Focusing on the overall performance of the company, the KPIs that are described by Susan J. Owens (Susan J. Owens, 2017) are as following:

1. Standardized and aligned business processes
2. Closing the gaps
3. Customer satisfaction
4. Organizational harmony
5. Employee surveys

Those mentioned CSFs and KPIs can be used to measure the overall success and performance of the project.

17. Conclusions

To conclude this Business Case, the following paragraph outlines the go/no-go decision for the described project based on the presented analysis and information.

On the one side, especially the description of the business context through the analysis of the PESTEL, Porter’s 5 Forces, the Value Chain as well as the SWOT have shown that there are several internal and external factors influencing the business from Sysperto GmbH in both, a positive and a negative way. Therefore, the description of the business need with the illustrated opportunity of achieving several improvements already addresses the economic benefits expected out of the project. Those benefits are, but not limited to, the higher transparency through an improved information management, the higher accessibility and availability of information and knowledge in real-time within the company, shorter offer and delivery times, lower administrative and IT-costs as well as a higher customer satisfaction leading to the chance of increasing the sales and the market share. Those benefits would support and align with the company’s strategy context. Moreover, the implementation of the ERP-system would help the company to potentiate its strengths and to enhance the opportunities as well as to reduce the described weaknesses and to neutralize the threats.

On the other side, besides those benefits, also several risks are outlined that the project would bring with it. When talking about the risks, especially the financial risk has to be mentioned as the estimated costs and necessary budget of the project with 362,525€ can be perceived as a really high investment for a SME with 20 employees. Moreover, the risk of the overall time- and
cost consumption of the project, the acceptance of the employees as well as environmental changes have to be considered.

When balancing those benefits and risks, it can be said that the projected benefits outweigh the risk as long as the risks are monitored and measured closely through the whole project. Therefore, the application of the knowledge and skills in accordance to the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) are crucial in order to achieve a successful project for the implementation of the ERP-system.

Due to that, the present Business Case concludes with a “go-decision” for the project.
References


II. Project Planning

Project Management Plan composed by:

1. Project **Scope** Management Plan
2. Project **Schedule** Management Plan
3. Project **Cost** Management Plan
4. Project **Quality** Management Plan
5. Project **Risk** Management Plan
6. Project **Communication** Management Plan
7. Project **Stakeholder** Engagement Plan
8. Project **Procurement** Management Plan
9. Project **Change** Management Plan
Introduction

The second part of this Final Master Thesis document illustrates the Project Planning Process Group which is dedicated to the development of the overall Project Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. It follows the previously performed and described Project Initiation Process Group, which is aimed to provide the base through the Business Case and the Project Charter.

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The Project Management Plan follows the explanations and contents in accordance to the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI). Therefore, the overall plan covers the knowledge areas for Project Scope, Schedule, Cost, Quality, Risk, Communication, Stakeholder and Procurement Management as well as part of the Project Integration Management knowledge area through the Change Management. With this, the Project Management Team conducted an overall and holistic planning for the project, starting with the Golden Triangle and supplementing it through the other knowledge area planning’s. Consequently, the Project Management Plan is aimed to help the Project Management Team to execute, monitor and control all areas within the project in a holistic approach.

For the last two Management Plans the team decided to choose and focus on the Procurement and Change Management Plan, instead of developing the Resources and/or Configuration Management Plan due to several reasons. Nevertheless, the Project Management Team is aware of the importance of both plans.

To justify the selection of the Project Procurement Management Plan, it is first important to mention that one of the main deliverables of this project – the implementation of the ERP-system and the additional systems – will be purchased from an external provider. Therefore, it is crucial for the overall project success that there is a detailed planning and understanding how the procurement for this project will be conducted, following which steps and requirements. Due to that, this plan provides an overall flowchart for the procurement process as well as the corresponding templates and a contract draft in order to ensure the appropriate and planned
delivery of this project deliverable. Moreover, the procurement management is also very important as one of the project phases - the ERP-selection - is mainly referring to procurement tasks and knowledge. In addition, it is crucial to validate the requirement from the project client in regard to the preferred supplier Acmeo GmbH through the application of this knowledge area.

In addition to the Project Procurement Management Plan, the team has chosen the Project Change Management Plan. The justification for this selection is based on the fact, that the first project phase, leading to another main project deliverable, is dedicated to the overall business process improvement. This business process improvement illustrates the longest project phase. It is first planned to analyse and restructure the existing business processes and afterwards to develop new processes. The prior analysis and improvement of the business processes is crucial for the ERP-system as with this it even more enhances the productivity and efficiency of the company’s operations. Due to the fact that the overall business process improvement as well as the ERP-system implementation is leading to an overall and significant change within the company, the Project Management Team assumed that this project phase could potentially lead to several, major change requests affecting the overall project. Therefore, it is also perceived as crucial to have an overall and detailed understanding how change requests are going to be handled within the project. Consequently, the Change Management Plan describes the overall change request process, including the Change Control Board and provides the change request template.

With this Project Management Plan the Project Management Team provides a detailed planning document, describing the overall approaches how the project is going to be executed, monitored, controlled and closed in order to ensure the best possible project success and outcome.
Project Scope Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

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Abstract

The present paper illustrates the Project Scope Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Scope Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Scope Management Plan continues the project analysis and development based on the previous analysis for the Project Charter and the Business Case. Those documents illustrate the basis and main inputs for the Project Scope Management Plan. Moreover, this Project Scope Management Plan illustrates the first knowledge area (Project Scope Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Scope Management Plan first provides a theoretical introduction about the Project Scope Management Plan, continues with the Scope Management Plan (in regard to planning and control), as well as the identification of the requirements and out of this the derivation of the Requirements Traceability Matrix. Subsequently, the Project Scope Statement, the Work Breakdown Structure as well as the Work Breakdown Structure Dictionary are defined and generated. With those points, the scope baseline for the project is described and developed at the current point in the planning phase. Each of the outlined parts include a description of the theoretical base as well as the application thereof to the named project.

Keywords: Project Scope Management Plan, Project Scope Statement, Requirements-Traceability-Matrix, Work Breakdown Structure, WBS-Dictionary, Implementation, ERP-system, IT-sector, IT-services
# Table of Contents

Abstract ..................................................................................................................................................... II

List of Figures ........................................................................................................................................ IV

List of Tables .......................................................................................................................................... IV

1. Introduction, Scope and Purpose of the Project Scope Management Plan ............................... 1

2. Scope Management Plan .................................................................................................................... 2

   2.1. Introduction .................................................................................................................................. 2

   2.2. Scope Management Approach ..................................................................................................... 3

   2.3. Scope Definition ............................................................................................................................ 3

   2.4. Controlling and Monitoring the Scope .......................................................................................... 4

   2.5. Validating the Scope ..................................................................................................................... 5

3. Identification of Requirements and Monitoring ........................................................................... 5

   3.1. Business Requirements .................................................................................................................. 7

   3.2. Product Requirements .................................................................................................................. 7

   3.3. Project Requirements .................................................................................................................... 8

4. Requirements Matrix ...................................................................................................................... 8

5. Project Scope Statement .................................................................................................................... 15

   5.1. Project Scope Statement Overview ............................................................................................... 15

   5.2. Product Scope Description .......................................................................................................... 15

   5.3. Project Deliverables ...................................................................................................................... 16

   5.4. Project Acceptance Criteria ......................................................................................................... 17

   5.5. Project Exclusions ......................................................................................................................... 18

   5.6. Project Constraints ....................................................................................................................... 18

   5.7. Project Assumptions ....................................................................................................................... 19

6. Work Breakdown Structure ............................................................................................................. 19

7. WBS Dictionary ................................................................................................................................. 27

8. Conclusions ....................................................................................................................................... 33

References ............................................................................................................................................. V
List of Figures

Figure 1 - Requirements Monitoring and Controlling Activities Diagram ........................................... 6
Figure 2 - Work Breakdown Structure ..................................................................................................... 24
Figure 3 - WBS component "1.1 Business Processes" ........................................................................... 25
Figure 4 - WBS component "1.2 ERP-selection" .................................................................................. 25
Figure 5 - WBS component "1.3 Implementation" ................................................................................ 26
Figure 6 - WBS component "1.4 End-user Training" ............................................................................ 26
Figure 7 - WBS component "1.5 Project Management" ......................................................................... 27
Figure 8 - Elements of a WBS Dictionary ............................................................................................. 28
Figure 9 - WBS Dictionary Template .................................................................................................... 29
Figure 10 - WBS Dictionary - Work Package "1.1.1.1.1. Interviews" .................................................... 30
Figure 11 - WBS Dictionary - Work Package "1.3.1.1. Implementation of ticket-system" .................. 31
Figure 12 - WBS Dictionary - Work Package "1.5.1.2. Business Case" .................................................. 32

List of Tables

Table 1 - Requirements traceability matrix ......................................................................................... 14
1. Introduction, Scope and Purpose of the Project Scope Management Plan

Project scope management is a knowledge area that includes a collection of processes that aim to establish, list and detail all the work needed and only the work needed to complete a project successfully (Project Management Institute, 2017, p. 129). These processes are made in order to manage the project as perfectly as possible and also to manage scope changes if necessary, by making sure that the project will still be on schedule and within the determined budget (PMI, 2019). The important processes that have to be performed and produced are:

- Plan Scope Management: the process of creating a scope management plan in order to describe the definition, the approach, the validation and the controlling of the project and product scope (Project Management Institute, 2017, p. 129).

- Collect Requirements: the process of collecting, documenting and managing the requirements and needs set by the stakeholders, and creating the requirement matrix (Project Management Institute, 2017, p. 129).

- Project Scope Statement (PSS): the process of developing and describing in detail the work needed for the project and outlining its deliverables, acceptance criteria, assumptions and exclusions – illustrating the description of project and product (Project Management Institute, 2017, p. 129).

- Work Breakdown Structure (WBS): the process of organizing the work of the project team in a hierarchical decomposition of the work components in order to achieve the required tasks with a clear understanding of the steps needed to be considered. This process breaks the project deliverables down into, progressively, more manageable components, called work packages at the lowest level (Project Management Institute, 2017, p. 129).

- Scope Validation: “the process of formalizing acceptance of the completed project deliverables” (Project Management Institute, 2017, p. 129).

- Scope Control: the ongoing process of monitoring and reviewing the current situation of the defined scope (product and project) as well as the handling of all changes to the scope baseline (Project Management Institute, 2017, p. 129).

The scope can refer to the product scope; the characteristics of the product and the result brought by the product, while the scope can also refer to the project scope when it is about the work performed to deliver the product (Project Management Institute, 2017, p. 131).

Project scope management has two performing concepts related to the project life-cycle, the predictive life-cycle and the adaptive (agile) life-cycle. In the predictive life-cycle, the project
Scope management processes are performed at the beginning of the project and updated as necessary following the appearance of changes. On the other hand, the adaptive life-cycle focuses on developing the deliverables over multiple iterations where a detailed scope is defined at the beginning of each iteration. The collection/identification of requirements, the project scope statement and the WBS are repeated for each iteration (Project Management Institute, 2017, p. 131). This underlying project will follow the concept of the predictive life-cycle because of the expected low-level of change required in this project.

Knowing that each project is unique, the project management team needs to tailor the application of the project scope management processes (Project Management Institute, 2017, p. 133). Some of the considerations given by the PMBOK Guide (6th edition) are presented below:

- Knowledge and requirement management: considering what guidelines should be established for the requirements and the type of knowledge and requirements management system the company is using.
- Validation and control: considering the current types of validation and control-related procedures of the organization.
- Development approach: considering which approach the company is adopting in managing the project.

2. Scope Management Plan

2.1. Introduction

The Scope Management Plan provides the scope framework for the project. This plan documents the scope management approach, scope definition, controlling and monitoring the scope and finally the validation of it. It provides guidance on the scope management (Project Management Institute, 2017, p. 134).

Sysperto GmbH has recently approved the project of the implementation of a new ERP-system to the company. The objective of this project is to implement an ERP-system to the company which will be used to automate and connect the operational processes and data and also to deliver an overall working platform through different modules related to the company’s areas of work. Therefore, the project includes the restructuring and development of the processes, the actual implementation of the systems (ticket-system, online-shop and ERP-system), as well as the testing and validation of the performance of the ERP-system and the training of the employees.
2.2. Scope Management Approach

Defining and documenting the scope management approach is important to manage successfully a project because it gives and provides a clear understanding of the way how the project’s scope will be performed (Tenessee Business Solutions Methodology, 2014).

Therefore, after the analysis of the information contained in the project charter and the business case, the project management team concluded that the best approach for the overall project scope management is the predictive life-cycle approach (Project Management Institute, 2017, p. 131), because the project is not perceived to face high-level changes as Sysperto GmbH is undertaking the project for a precise and clear result with clearly defined requirements and the company does not expect many changes in the scope.

The scope of the project will be detailed and defined by using the Project Scope Statement (PSS), the Work Breakdown Structure (WBS) and the WBS Dictionary. The project management team will define and document the scope of the project in order to be viewed and approved by Sysperto GmbH’s CEO. All potential arising change requests follow a procedure to be studied to estimate their impact on the project scheduling and budgeting. Afterwards, the request will be validated or rejected (Tenessee Business Solutions Methodology, 2014).

2.3. Scope Definition

The scope for the project is identified in the different detailed processes and deliverables of the project, like the PSS, the WBS and the WBS Dictionary, in order to establish the scope definition and baseline (Project Management Institute, 2017, p. 134).

First of all, and according to the PMBOK, as tools and techniques to define the scope properly, the project management team gathered and analyzed data. This was done by brainstorming sessions as well as collecting, analyzing and reviewing articles from the internet and databases about ERP-system implementations for different areas and companies. This data was then reflected on the specific situation of Sysperto GmbH.

Moreover, specific and expert knowledge and information for defining the scope was collected by contacting and interviewing different members of the project such as the CEO of Sysperto GmbH to know the requirements of the company, the supplier which is the consultant company implementing the ERP-system (Acmeo GmbH Systems Software), to know how the implementation will take place. Furthermore, the project management team consulted different IT-experts and an external consultant (Digital Supply Chain and Marketing Consultant from SAP) to have a better understanding of ERP-systems. These interviews and contacts provided guidance and accurate information for the project. Then, the gathered and analyzed data was discussed and debated by the team in several meetings in order to have a clear vision of the project’s scope to start with the processes for the scope definition.
To define the scope, based on the described applied tools and techniques, the project team developed the following documents:

- The Project Scope Statement (PSS) is a deliverable helping on defining and detailing the scope of the project. It is performed after having a clear idea of the project requirements, phases and processes of the implementation of the ERP-system through the analysis of the project charter and the business case and the meetings held between the project team. The PSS provides clear points of the project, such as the project deliverables, the acceptance criteria, the exclusions of the project’s scope and the assumptions made in order to generate a clear and well-structured scope baseline (Project Management Institute, 2017, p. 154).

- A Work Breakdown Structure is also required to define the scope. First of all, good knowledge and identification of all the phases, sub-phases, deliverables, work packages and activities of the implementation of the ERP-software into the company is required by dividing and sub-dividing these processes. Then, a hierarchical, organized, structured and appropriate decomposition needs to be developed regarding the work components to have a proper and clear decomposition of the project’s scope (Project Management Institute, 2017, p. 156).

- The WBS Dictionary details and supports the information shown by the WBS about the different deliverables and work packages of the project. It is developed by providing a description of each work package of the WBS, such as the description, duration, and costs of each task (Project Management Institute, 2017, p. 162).

2.4. Controlling and Monitoring the Scope

Scope controlling and monitoring is the process of following-up and monitoring the status of the scope. It is mandatory for the success of the project that the scope baseline is maintained throughout the project. The scope controlling provides also proper management of changes when they appear (Project Management Institute, 2017, p. 168).

The project management team has to control and ensure that the scope is well defined and the scope baseline is actually followed, by proceeding to daily monitoring and controlling of the on-going performance of the different activities, deliverables and their quality, checking of the achievement of the milestones and holding weekly checkpoint meetings throughout the ERP-system implementation project life-cycle.
2.5. Validating the Scope

The validation of the scope is the process of acceptance of the achieved deliverables. The benefit of this process is to bring objectivity to the validation and more profitability acceptance of the final product by validating each deliverable (Project Management Institute, 2017, p. 163).

In order to do so, inspections have to be done, such as the examinations and validations to assure that the work and the deliverables meet the requirements and acceptance criteria of Sysperto GmbH. Meetings are also held to discuss the deliverables and a voting is done by the project team and the stakeholders in order to validate the work.

Deliverables that meet the acceptance criteria are approved and signed by Sysperto GmbH, while the ones not meeting the acceptance criteria will be documented with the precise reason or reasons of the non-acceptance in order to be revised and changed.

3. Identification of Requirements and Monitoring

The identification of the requirements starts from identifying and decomposing needs arise into requirements for the stakeholder requirements, business requirements, product requirements and project requirements (Project Management Institute, 2017 p. 140). The requirements must follow some essential rules:

- “Requirements include conditions or capabilities that are required to be present in a product, service, or result to satisfy an agreement” (Project Management Institute, 2017 p. 140).
- Requirements must be measurable, testable and traceable to permit the key stakeholders to validate them.
- Requirements listed must include the capability and expectation of the stakeholders involved to be acceptable
- The “requirements need to be elicited, analyzed and recorded in enough detail (…) to be measured once project execution begins” (Project Management Institute, 2017 p. 140).
- Requirements gathered illustrate the base for the WBS (Project Management Institute, 2017 p. 140)
- “The RTM is also used to verify that all requirements are met and to identify changes to the scope when they occur” (project-management.com, 2018).

Afterwards the monitoring procedure is used to evaluate the accomplishing of the requirements: it consists of the monitoring of those characteristics that capture key performance about the requirements, such as the stakeholders, priority, acceptance criteria, complexity and...
frequency. This gathered information have the aim to aid the traceability and monitoring phase in the project life cycle. The requirements traceability matrix helps with its attributes to monitor and control the product and project scope (Project Management Institute, 2017 p. 34).

Approved requirements are baselined and tracked in order to be assessed for impacts to the project and product. The changes during the process are allowed following the defined change management process. The traceability’s relation allows to understand for each parameter how it could be validated according the metric established and the frequency it must be controlled.

**Figure 1 - Requirements Monitoring and Controlling Activities Diagram**

*Project Management Institute, 2017.*

The monitoring process of the ERP-system implementation will control the requirements through the Traceability Matrix, the Impact Analysis and the Dependency Analysis:

- **Traceability Matrix:** the implementation of the ERP-system will be monitored using a framework that connects product requirements when they are established to the moment they are satisfied. The application of a matrix, which tracks requirements, guarantees that the requirements are delivered when the project is over (Project Management Institute, 2016 p. 48).

- **Impact analysis:** evaluate how a possible changing may impact the value of the business, including the recognition of the risk associated whether it influences the value that will be delivered and continues to address the business need and objectives (Project Management Institute, 2016 p. 47).

- **Dependency Analysis:** With this method the requirements of the implementation are connected, therefore a requirement cannot be satisfied in a solution without the other one being present (Project Management Institute, 2016 p. 44).
3.1. Business Requirements

The high-level requirements from the business in regard to the project focus on the overall implementation of the ERP-system in order to achieve improved and more efficient business processes for the value creation of the company. Therefore, this implementation first requires the analysis and restructuring from the business processes, afterwards the evaluation of the appropriate ERP-system, subsequently the implementation of the ticket-system and the online-shop and the final implementation of the ERP-system itself. Moreover, this implementation requires detailed training for the employees in order to ensure the right and adequate use of the system. When those requirements are met, this is aimed to achieve the requirements of a higher accessibility and availability of information and knowledge in real-time within the company, higher transparency of information, integration of all business processes, increased efficiency and productivity through faster offer and delivery times, lower administrative and IT-costs as well as a higher customers satisfaction.

Therefore, the following business requirements are defined by the project team:

- Future business potential
- Product Traceability
- Efficiency and productivity increase through faster offer and delivery times
- Administrative and IT-costs decrease
- Integration of Sysperto GmbH processes in the ERP-system
- Complete understanding of the ERP-system
- Profitability
- Customer satisfaction improvement
- Business processes restructure for the ERP-system implementation
- Accessibility and availability increase of information and knowledge

3.2. Product Requirements

The requirements of the product, meaning the ERP-system, are that it provides a stable and clear base for the company’s processes. It is crucial that the ERP-system includes all the existing information, data and knowledge from the company.

This leads to the requirement that all the existing data have to be migrated carefully into the new system. Moreover, the system has to work directly after the go-live in a perfect way. Additionally, the system has to reflect the company’s processes and ways of working. To sum this up, the requirement for the product is that the ERP-system supports the company’s operations perfectly.

Therefore, the following product requirements are defined by the project team:

- Responsiveness and speed of user interface
3.3. Project Requirements

The main requirement of the project is the successful completion within the constraints of scope, time, budget and quality. Especially the cost factor is very important as this also illustrates one of the main risks. According to the literature “90 per cent of ERP projects are late or over budget” (Guo Chao Peng, 2009, p. 926). Due to that, it is very important that the project is managed by taking this insight into account.

Therefore, the following project requirements are defined by the project team:

- Implementation of the ticket-system in the ERP system
- Implementation of the online-shop in the ERP system
- Availability of all data and information in the ERP-system
- Guarantee of high-level data security according GDPR
- Acceptance and adaptation to new processes/structure management
- Profitability of product deliverable
- Resource effectiveness
- Accuracy
- Efficiency
- Timeliness
- Correctness
- Financial performance

4. Requirements Matrix

The Requirements Traceability Matrix (RTM) represents a framework which connects the business, product and project requirements from its characteristic to bring it at completion. The application of it supports the goal that each requirement contributes to create value for the project objectives and consequently the project. In the ERP-system implementation, the tracking of requirements throughout the life-cycle of the project itself helps to guarantee that the approved requirements are delivered in the requirements documentation creating a clear picture to structure a change management action (Project Management Institute, 2016 p. 48). The Requirements
Traceability Matrix developed for the project has two main categories: Requirements information and Relation-Traceability in order to distinguish the information which identifies the requirement and its characteristics as well as the relation with the project consequently the WBS.

In the following, the developed RTM is shown – for a detailed view please refer to the appendix. The applied colours for each requirement reflect the colours of the corresponding WBS component.
## Requirements Traceability Matrix

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Responsible</th>
<th>Priority</th>
<th>Requirement Type (Business, Project)</th>
<th>Objective/Description</th>
<th>Stakeholder involved in the requirement</th>
<th>WBS Deliverables</th>
<th>Acceptance criteria</th>
<th>Metric</th>
<th>Frequency</th>
<th>Test Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Future business potential</td>
<td>IT consultancy company, Sysserto GmbH executive members, CEO Sysserto GmbH</td>
<td>High</td>
<td>Business Requirement</td>
<td>Increase the market share through faster business processes in order to allow an optimal operation management leading to a higher customer satisfaction and Sysserto GmbH</td>
<td>Stakeholder Satisfaction</td>
<td>Validation restructuring and perception from the Sysserto GmbH executive members, Sysserto GmbH; Sysserto GmbH CEO</td>
<td>Yes/No or Part of</td>
<td>Once or at completion</td>
<td>Formal request of acceptance</td>
</tr>
<tr>
<td>2</td>
<td>Product traceability</td>
<td>IT Developer</td>
<td>High</td>
<td>Business Requirement</td>
<td>ERP-system that permits the traceability of purchasing and stock IT Developer; Employees of Sysserto GmbH</td>
<td>Stakeholder Satisfaction</td>
<td>Requirement satisfied</td>
<td>Yes/No</td>
<td>Once</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Efficiency and productivity increase through faster offer and delivery times</td>
<td>IT Developer, Project Manager</td>
<td>High</td>
<td>Business Requirement</td>
<td>The implementation of the ERP-system allows to increase the efficiency and productivity of the company offering better internal and external operations Project Manager/Executive members Sysserto GmbH, IT Developer</td>
<td>Stakeholder Satisfaction</td>
<td>Improvement of the productivity and time delivery by 10% within one year after the implementation from Sysserto GmbH</td>
<td>Percentage</td>
<td>Monthly</td>
<td>Evaluating the company’s productivity</td>
</tr>
<tr>
<td>4</td>
<td>Administrative and IT-costs decrease</td>
<td>Project Manager</td>
<td>High</td>
<td>Business Requirement</td>
<td>Lowering the actual costs for administration and IT-costs for the existing projects Project Manager/Executive members Sysserto GmbH, IT Developer</td>
<td>Stakeholder Satisfaction</td>
<td>Chosen the balanced and more profitable ERP-System</td>
<td>Cost saving</td>
<td>Once</td>
<td>Comparing different offers</td>
</tr>
<tr>
<td>5</td>
<td>Integration of Sysserto GmbH processes in the ERP-system</td>
<td>IT Developer, Sysserto GmbH executive members</td>
<td>-</td>
<td>Business Requirement</td>
<td>Processes integrated in the architecture design IT Developer, IT manager Sysserto GmbH, Employees Sysserto GmbH</td>
<td>Stakeholder Satisfaction</td>
<td>100% of the business processes are integrated</td>
<td>Percentage</td>
<td>Once</td>
<td>Control the processes integration</td>
</tr>
<tr>
<td>6</td>
<td>Complete understanding of the ERP-system</td>
<td>Trainer</td>
<td>-</td>
<td>Business Requirement</td>
<td>Clear and precise training for every employee in order to ensure a good understanding of the tools and features of the system is feasible Sysserto GmbH employees</td>
<td>Stakeholder Satisfaction</td>
<td>Result above 70%</td>
<td>Percentage of understanding</td>
<td>Once</td>
<td>Test given to the employees</td>
</tr>
</tbody>
</table>
## Scope Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Requirement Information</th>
<th>Relationship Traceability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ID Number</strong></td>
<td><strong>Requirement</strong></td>
</tr>
<tr>
<td>7</td>
<td>Profitability</td>
</tr>
<tr>
<td>8</td>
<td>Customer satisfaction improvement</td>
</tr>
<tr>
<td>9</td>
<td>Business processes restructuring for the ERP-system implementation</td>
</tr>
<tr>
<td>10</td>
<td>Accessibility and availability increase of Information and knowledge</td>
</tr>
<tr>
<td>11</td>
<td>Responsiveness and speed of user interface</td>
</tr>
<tr>
<td>ID Number</td>
<td>Requirement</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>12</td>
<td>Usability of ERP-system</td>
</tr>
<tr>
<td>13</td>
<td>Integrity</td>
</tr>
<tr>
<td>14</td>
<td>Expandability</td>
</tr>
<tr>
<td>15</td>
<td>Performance stability</td>
</tr>
<tr>
<td>16</td>
<td>Transparency increase</td>
</tr>
<tr>
<td>17</td>
<td>Implementation of the ticket-system in the ERP-system</td>
</tr>
<tr>
<td>18</td>
<td>Implementation of the online-shop in the ERP-system</td>
</tr>
<tr>
<td>Requirement Information</td>
<td>Relationship Traceability</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>ID Number</strong></td>
<td><strong>Requirement</strong></td>
</tr>
<tr>
<td>19</td>
<td>Availability of all data and information in the ERP-system</td>
</tr>
<tr>
<td>20</td>
<td>Guarantee of high-level data security according GDPR</td>
</tr>
<tr>
<td>21</td>
<td>Acceptance and adaptation to new processes/structure management</td>
</tr>
<tr>
<td>22</td>
<td>Profitability of project deliverable</td>
</tr>
<tr>
<td>23</td>
<td>Resource effectiveness</td>
</tr>
<tr>
<td>24</td>
<td>Accuracy</td>
</tr>
<tr>
<td>25</td>
<td>Efficiency</td>
</tr>
<tr>
<td>26</td>
<td>Timeliness</td>
</tr>
</tbody>
</table>
### Table 1 - Requirements traceability matrix

<table>
<thead>
<tr>
<th>ID Number</th>
<th>Requirement</th>
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<th>Priority</th>
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<th>Objective/Description</th>
<th>Stakeholder involved in the requirement</th>
<th>WBS Deliverables</th>
<th>Acceptance criteria</th>
<th>Metric</th>
<th>Frequency</th>
<th>Test Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Correctness</td>
<td>Project Manager</td>
<td>-</td>
<td>Project Requirement</td>
<td>The project works performed correctly fulfilling the defined specifications of the project as well as the project objective</td>
<td>Project Manager, IT manager Sypperto GmbH, CEO</td>
<td>1.5</td>
<td>Satisfaction above 85%</td>
<td>Percentage</td>
<td>After each project phase and three months after the closing of the project</td>
<td>Survey</td>
</tr>
<tr>
<td>28</td>
<td>Financial performance</td>
<td>Project Manager</td>
<td>-</td>
<td>Project Requirement</td>
<td>The project fulfills the financial target according to the estimated project budget</td>
<td>Sypperto GmbH executive members, Project Manager, IT consultant</td>
<td>1.52</td>
<td>Project cost tolerance &lt;10%</td>
<td>Cost</td>
<td>Weekly</td>
<td>Microsoft Project, local</td>
</tr>
</tbody>
</table>
5. Project Scope Statement

Project Title: Implementation of an ERP-system to the company Sysperto GmbH
Date Prepared: 07\textsuperscript{th} January, 2019

5.1. Project Scope Statement Overview

The project scope statement is a document created by the project team early in the project life-cycle to define clearly the boundaries of the project. It is a description of the scope of the project, listing the major deliverables, their acceptance criteria, exclusions, constraints and assumptions. It provides a better understanding of the project among the stakeholders. The project scope statement is important for the success of the project as it guides the project teams’ work during the execution, as it clearly states in detail the scope of the project. Defining in detail the required work and only the required work necessary for the project also helps the project management team to control the overall project scope (Project Management Institute, 2017, p. 154).

5.2. Product Scope Description

The main objective of the product scope description is to describe the characteristics of the product in order to have a better understanding of the project, its aims, its purpose and its needs (Project Management Institute, 2017, p. 154).

The project is about the implementation of the ERP-system, covering all functional areas and processes of the company and includes also the ticket-system and the online-shop.

Therefore, the product is the implemented ERP-system as an overall system representing every aspect and functional area of the organizational system and structure of the company. It automates, links and gathers the processes, functions, operations and data of all the departments and provides real-time access to information in one software in order to be more practical, more efficient and to facilitate the work between the multiple areas and departments of the company. To sum up, the ERP-system illustrates one single and overall database and system in which the management, the processes and the flow of information and operations are represented and facilitated.

This software is a unified package containing different modules relative to different areas of work, like warehouse management, material purchasing, logistic and stock management, inventory control, distribution, product planning, marketing, customer relationship management, accounting, finance and invoicing, human resources as well as service and support (Vangie Beal, 2019).
The objectives of the implemented ERP-system are to improve the overall system of the company, in order to develop and improve the company’s business processes and operations, leading to the achievement of economic and strategic advantages, the enhancement of the efficiency and the increase of the market share to level-up the competitiveness of the organization. The project of the implementation of the ERP-system to Sysperto GmbH is estimated to be accomplished in a period of 18 months, while the estimated cost is set to 362,525 €.

5.3. Project Deliverables

The project deliverables are the actions, tasks and results needed to be performed in order to complete a process or a phase of the project. The deliverables have to be listed and explained in order to be clear for the project team’s work and for the stakeholders as well (Project Management Institute, 2017, p. 154).

The main project deliverables of the implementation of an ERP-system into the company are as following:

➢ **The analysis of the business processes:** The first deliverable of the project is related to the detailed analysis and mapping of the business processes, followed by the restructuring of the processes to adapt and fit the ERP-system. Furthermore, this facilitates the handling of the software by the users, through narrowing the customization needed for the ERP-system and through bringing a smoother, simple and better functioning structure to the enterprise (Vesna Bosilj-Vuksic & Mario Spremic, 2004). The user’s preference is always for a “Vanilla ERP” with minimal customization and uncomplicated options and functions (Anne Parr & Graeme Shanks, 2000).

➢ **Design and construction of the software:** The development of the overall architecture of the ERP-software, the design of the interface and the build-up of the different modules matching the specific needs and requirements of the company, taking into account every aspect in order to prevent any reconfiguration after the implementation is another important deliverable (Kathryn M. Zuckweiler & Fiona Fui-Hoon, 2003).

➢ **Integration of additional, supporting systems:** Another project deliverable is the integration of supporting systems such as the online-shop and the ticket-system as modules of the ERP-system to serve the company’s unique needs.

➢ **Implementation of ERP-system:** One of the main deliverables is the successful and efficient implementation of the ERP-system into the company’s system as a unified package. Proceeding to the installation of the software, the building and programming of the networks needed (Anne Parr & Graeme Shanks, 2000). The implementation chosen is the “big-bang” approach. Since the company is a SME, it is safe to proceed with the big-bang approach, implementing all modules at once, because the company does not
have either a big database or too many departments to consider the implementation in a phased approach. More than that, this approach brings lower cost because it is concluded in a shorter time (Eli Hustad & Dag Olsen, 2013).

- **The migration of data**: The existing data have to be converted and transferred to their correspondent modules in the ERP-system.
- **Adequate testing of the system**: System testing is one of the key elements of the implementation of an ERP-system. The new system should be tested rigorously before the go-live date to prevent any malfunctions that can result and lead to big losses for the company (Vidyaranya B. Gargeya & Cydnee Brady, 2005).
- **Establishment of training plan**: The clear communication and complete training in regard to the changes for the managers and employees during a reasonable period, provided by well informed, skillful and professional trainers is another deliverable.
- **Post-implementation review**: The deliverable of the performance evaluation of the ERP-system in the company to check and evaluate the success of the implementation.
- **Increase the availability of information and knowledge**: The real-time accessibility, integration, and availability of existing data, information and knowledge within the company is perceived as another main deliverable of the project.

### 5.4. Project Acceptance Criteria

The acceptance criteria of the project are the conditions and settings needed to be met and provided before each deliverable can be accepted and delivered (Project Management Institute, 2017, p. 154). Therefore, the acceptance criteria for the project are:

- The successful implementation of the ERP-system into the company without technical problems or complications.
- The ERP-system’s modules and functions fit the company’s core business.
- The good restructuring and re-engineering of the business processes, matching smoothly the company’s business organization and fitting perfectly the new ERP-system implemented.
- The software is proven to be compatible with the company’s current IT-infrastructure.
- The creation and integration of the ticket-system and the online-shop into the ERP-system is configured successfully.
- The testing of the overall ERP-system is positive and does not show any signs of errors or failures.
- The employees should be capable of using the software without any problems, complications or difficulties after the training.
- The acceptance and adaptability of the employees to the new software.
5.5. Project Exclusions

Project exclusions are the actions and the activities which are excluded from the project scope and do not need to be undertaken to assure the successful achievement of the project. It helps, not only in narrowing and reducing the scope, but also knowing what is out of it, leading to the good management and execution of the project (Project Management Institute, 2017, p. 154). As following, the project exclusions identified for the project are:

➢ No changes in the offer and portfolio of the company:
  ▪ The online-shop is seen as a channel and not as a service/portfolio
  ▪ The ERP-system only improves operations and performance, and does not change the company’s core business

➢ No changing of the company’s mission, vision and values, as the ERP-system implementation aims to develop and improve the efficiency of work of the company and is not aimed to change the culture and the principles of the organization.

➢ The process improvement will change the organizations structure but the resulting resource allocation and change of roles and responsibilities is not done within the project.

➢ The implementation of the software does not need a change in the hardware of the company, while the existent IT-infrastructure and terminals are supposed to support the new ERP-system.

5.6. Project Constraints

Project constraints are “an applicable restriction or limitation, either internal or external to the project, that will affect the performance of the project or a process” (Kozy Keneth, 2010).

The following listed constraints are the main constraints of the implementation of an ERP-system project:

➢ Technical IT-architecture: the existence of a software, hardware and networking platform which can support the implementation of the ERP-system as well as the additional applications in the company like the ticket-system and the online-shop. The IT-infrastructure may need some changes in order to proceed to a successful implementation (CJ Stefanou, 2001).

➢ The organizational constraint: the resistance to change and the rigidity of the business processes of the company are very important to the implementation of the ERP-system (CJ Stefanou, 2001).

➢ Financial background of the company: the ERP-system implementation illustrates a high investment, especially for SME (Sanna Laukkanen, 2007 p. 321), with a lot of hidden costs. This factor could be a barrier for a successful ERP-system implementation project.
➢ Skills, experience, knowledge and acceptance of employees working with the new ERP-system (Sanna Laukkanen, 2007 p. 321).
➢ Political law (GDPR), affecting the online-shop as well as the saved data about the customers and the employees.

5.7. Project Assumptions

Project assumptions are the decisions the project team believes to be true, but it may not be, and on which they have a little power and control over. Due to the uncertainty, these assumptions also help to identify risks. Assumptions are repeatedly actualized and updated throughout the project life-cycle. Project deliverables are influenced by the validity of the assumptions. When an assumption is proven to be invalid, the project team needs to identify the change to the deliverables that were depending on the validity of the assumption (Paul Burek, 2006). The assumptions of the project are listed in the following:

➢ The involvement and support of managers and employees in the different processes of the implementation will be achieved by providing advocacy, resources and commitment to the project (Anne Parr & Graeme Shanks, 2000).
➢ The third party of the project, such as vendors or consultants, will help and increase the organization’s skill base (Thomas C. McGinnis & Zhenyu Huang, 2007).
➢ The workforce will have varied talents and levels of experience, this fact enhances the productivity of the work (Meg Fryling, 2007).
➢ The existing IT-infrastructure and platform will successfully support the ERP-system implementation.
➢ The sponsor will support and align with the project during all phases.
➢ The availability of funding for the project will be guaranteed.
➢ The acceptance and adaptation of the software by the users and the acquisition of the necessary skills and competences to perform and handle the software’s functions will be accomplished after the training.

6. Work Breakdown Structure

Creating the Work Breakdown Structure (WBS) is one of the Project Scope Management processes (Project Management Institute, 2017, p. 129) and is referred to as “(…) the process of subdividing project deliverables and project work into smaller, more manageable components” (Project Management Institute, 2017, p. 129). Therefore, the WBS is seen as a “(…) hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the
project objectives and create the required deliverables” (Project Management Institute, 2017, p. 157). The main aim and advantage of this process is to outline and provide an overview and structure of what the project will deliver (Project Management Institute, 2017, p. 156). By creating the WBS all the work from the project is decomposed to the lowest level, which is referred to as a work package (Snyder, 2013, p. 38). A work package groups activities (Project Management Institute, 2017, p. 157) and is defined as “a discrete deliverable that can be decomposed into activities to produce the deliverable” (Snyder, 2013, p. 38). By decomposing the work of the project from the highest level (the project level) to the lower, finer levels of detail, the WBS provides a detailed definition of the work (Project Management Institute, 2017, p. 161) (Snyder, 2013, p. 38).

The inputs for this process are the project management plan (scope management plan), project documents (project scope statement and requirements documentation), the enterprise environmental factors (industry-specific WBS standards) and the organizational process assets (Project Management Institute, 2017, p. 157). Those inputs are used for the creation of the WBS for the underlying project of the ERP-system implementation except in regard to the organizational process assets as there are no relevant organizational process assets available in this organization for this specific project as it is the first time for Sysperto GmbH that the company is implementing an ERP-system.

The recommended tools and techniques from the PMBOK for the creation of the WBS such as the expert judgment and the decomposition by applying different approaches and structures are used for this project (Project Management Institute, 2017, p. 158).

For the expert judgment a detailed internet research as well as an interview with the owner and client were conducted in order to define the requirements and the scope/contents the project has to fulfill. For the decomposition a mixture of the approaches of the top-down and bottom-up approach as well as the organization-specific guidelines and the application of WBS templates were used (Project Management Institute, 2017, p. 159).

For the structure of the WBS as the second level the major phases of the project which can also be seen as subprojects and on the third level the project deliverables are used. Those are also some of the recommended options from the Book of Forms (Snyder, 2013, p. 38).

Moreover, it is also important to mention that the WBS contains elements that will be developed by companies outside the project team based on contracted work. This refers mainly to some of the levels and also the work packages that illustrate work that will be accomplished by the company that is implementing the ERP-system.

The WBS for this project is shown as an outline format and an organizational/hierarchical chart (in the horizontal landscape view) (Snyder, 2013, p. 38). Besides the project specific work, the WBS also illustrates the project management work (Project Management Institute, 2017, p.
161). Furthermore, it is important to mention that not all deliverables/components of this WBS are decomposed to the same level due to different extents and focuses of work (Project Management Institute, 2017, p. 160).

The following WBS illustrates the outline format of the WBS for the project:

1. Implementation of an ERP-system to the company Sysperto GmbH
   1.1. Business Processes
      1.1.1. Analysis of existing business processes
        1.1.1.1. Documentation of the current situation and state in the company
          1.1.1.1.1. Interviews
          1.1.1.1.2. Surveys
          1.1.1.1.3. Flow charts of current processes
        1.1.1.2. Derivation and identification of improvement needs
          1.1.1.2.1. Definition of desired state
          1.1.1.2.2. Gap analysis
        1.1.1.3. Definition of desired processes
          1.1.1.3.1. Research and documentation of “State of the Art” processes
          1.1.1.3.2. Flow charts of desired processes
      1.1.2. Restructuring of business processes
        1.1.2.1. Review of flow charts of desired processes
        1.1.2.2. Creation of organizational change management roadmap
        1.1.2.3. Change of existing processes
        1.1.2.4. Implementation of new processes
      1.1.3. Definition of final business organization processes and structure
        1.1.3.1. Documentation of business process procedure
   1.2. ERP-selection
      1.2.1. Definition of general company’s frame for ERP-system
      1.2.2. Definition of the ERP-system needs and requirements
      1.2.3. Evaluation of the available ERP-systems
        1.2.3.1. Request for offers
        1.2.3.2. Analysis of offers (mainly cost focus)
        1.2.3.3. Multi-criteria analysis
      1.2.4. Final decision-making
   1.3. Implementation
      1.3.1. Implementation of additional systems
1.3.1.1. Implementation of ticket-system
1.3.1.2. Implementation of online-shop

1.3.2. Implementation of the ERP-system
1.3.2.1. Configuration and Development
1.3.2.2. Installation of the software
1.3.2.3. Data Migration
   1.3.2.3.1. Assessment for Data Migration
   1.3.2.3.2. Collection of the data
   1.3.2.3.3. Server Go-Live
1.3.2.4. System and performance testing
1.3.2.5. Go-Live

1.4. End-user Training
1.4.1. End-user training plan
1.4.2. End-user training execution
1.4.3. End-user support

1.5. Project Management
1.5.1. Initiating Process
   1.5.1.1. Kick-off Workshop
   1.5.1.2. Business Case
   1.5.1.3. Project Charter
1.5.2. Planning Process
   1.5.2.1. Scope Management Plan
   1.5.2.2. Schedule Management Plan
   1.5.2.3. Cost Management Plan
   1.5.2.4. Quality Management Plan
   1.5.2.5. Risk Management Plan
   1.5.2.6. Communication Management Plan
   1.5.2.7. Stakeholder Management Plan
   1.5.2.8. Change Management Plan
   1.5.2.9. Procurement Management Plan
   1.5.2.10. Project Management Plan
1.5.3. Executing Process
   1.5.3.1. Project Work Management
   1.5.3.2. Quality Management
   1.5.3.3. Team Development and Management
1.5.4. Monitoring and Controlling Process
1.5.4.1. Change Requests
1.5.4.2. Change Log
1.5.4.3. Risk Monitoring
1.5.4.4. Cost Controlling

1.5.5. Closing Process
1.5.5.1. Lessons Learned
1.5.5.2. Project Closing
The following WBS illustrates the organizational/hierarchical chart format of the WBS for the project (please also refer to the appendix for a detailed view):

Figure 2 - Work Breakdown Structure
Figure 3 - WBS component "1.1 Business Processes"

Figure 4 - WBS component "1.2 ERP-selection"
Figure 5 - WBS component "1.3 Implementation"

Figure 6 - WBS component "1.4 End-user Training"
7. WBS Dictionary

The WBS dictionary includes specific information and details about each component in the WBS in regard to the deliverable, the corresponding activities/tasks, scheduling and cost information. The containing information is developed and collected through different processes. The WBS dictionary is seen as a supporting document for the WBS as it describes the components of the WBS in more detail (Project Management Institute, 2017, p. 162).

According to the PMBOK the information in the WBS Dictionary are:
- “Code of account identifier,
- Description of work,
- Assumptions and constraints,
- Responsible organization
- Schedule milestones,
- Associated schedule activities,
- Resources required,
- Cost estimates,
- Quality requirements,
- Acceptance criteria,
- Technical references, and
- Agreement information” (Project Management Institute, 2017, p. 162).

The “A Project Manager’s Book of Forms” therefore lists several elements and suggests a template based on those elements for the WBS Dictionary (Snyder, 2013, p. 41/42).

<table>
<thead>
<tr>
<th>TABLE 2.10 Elements of a WBS Dictionary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Document Element</strong></td>
</tr>
<tr>
<td>Work package name</td>
</tr>
<tr>
<td>Code of account</td>
</tr>
<tr>
<td>Milestones</td>
</tr>
<tr>
<td>Due dates</td>
</tr>
<tr>
<td>ID</td>
</tr>
<tr>
<td>Activity</td>
</tr>
<tr>
<td>Resource</td>
</tr>
<tr>
<td>Labor hours</td>
</tr>
<tr>
<td>Labor rate</td>
</tr>
<tr>
<td>Labor total</td>
</tr>
<tr>
<td>Material units</td>
</tr>
<tr>
<td>Material cost</td>
</tr>
<tr>
<td>Material total</td>
</tr>
<tr>
<td>Total work package cost</td>
</tr>
<tr>
<td>Quality requirements</td>
</tr>
<tr>
<td>Acceptance criteria</td>
</tr>
<tr>
<td>Technical information</td>
</tr>
<tr>
<td>Agreement information</td>
</tr>
</tbody>
</table>

*Figure 8 - Elements of a WBS Dictionary*

*(Snyder, 2013, p. 41).*
Figure 9 - WBS Dictionary Template
(Snyder, 2013, p. 42).

This template is used and applied for the project. All currently included information in the WBS Dictionary illustrate the information at the current point in time and will be updated progressively with each of the management plans in the planning process group.

As the WBS Dictionary contains this information for all 52 work packages, only three are shown in the following as an example. For the whole WBS Dictionary please refer to the appendix at the end of the scope management plan or the digital appendix.
Figure 10 - WBS Dictionary - Work Package "1.1.1.1. Interviews"
## Scope Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1.1.1.</td>
<td>Define ticket-system requirements</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>40</td>
<td>45€</td>
<td>3.000 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60€</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45€</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1.2.</td>
<td>Analyze available ticket-systems</td>
<td>IT-expert</td>
<td>32</td>
<td>45€</td>
<td>1.440 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1.3.</td>
<td>Select ticket-system (offer)</td>
<td>Project Management Team member; IT-expert</td>
<td>20</td>
<td>45€</td>
<td>1.800 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implement ticket-system</td>
<td>IT-expert</td>
<td>64</td>
<td>45€</td>
<td>2.880 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>17.000 €</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>17.000 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.880 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Ticketing-system is selected carefully according to the requirements and needs and implemented without affecting the company’s daily business and operations -> requirement: usability, availability, stability, efficiency.

**Acceptance Criteria:** Ticketing-system is implemented and ready-to-use/ready to be attached to the ERP-system.

**Technical Information:** Existing IT-infrastructure is used as a basis.

**Agreement Information:** -

*Figure 11 - WBS Dictionary - Work Package "1.3.1.1. Implementation of ticket-system"*
Figure 12 - WBS Dictionary - Work Package "1.5.1.2. Business Case"
8. Conclusions

To conclude, this present document illustrates the whole Project Scope Management Plan, including all components such as the Project Scope Statement, the Requirement Traceability Matrix, the Work Breakdown Structure as well as the WBS Dictionary.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as a base. Moreover, the tools of expert judgment, data analysis, brainstorming and meetings were used for all parts to develop a clear description of the scope of the project of the ERP-system implementation.

The project team performed this first planning process for the knowledge area of Project Scope Management in order to create the Project Scope Management Plan as well as the Scope Baseline. All generated documents and outputs from this planning process will illustrate the input for the next planning processes such as the Schedule Management Plan.

Moreover, the Project Scope Management Plan represents part of the overall Project Management Plan.
References


## Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

## Date Prepared:
08.02.2019 (V3)

### Work Package Name: Interviews

#### Code of Account: 1.1.1.1.1.

### Description of Work:
Conducting interviews with the CEO and the employees in order to collect data and knowledge for the creation of a documentation of the current situation and state in the company

### Assumptions and Constraints:
Objective answering of the interview questions by the employees

### Milestones:
1. Preparation of interview questions completed
2. Interviews completed

### Due Dates:
Within the first week => 12.-19.07.2019; parallel with 1.1.1.1.2. Surveys

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor Hours</th>
<th>Rate</th>
<th>Total Cost</th>
<th>Material Units</th>
<th>Material Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1.1.1</td>
<td>Prepare interview questions</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
<td>-</td>
<td>-</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.1.1.1.2</td>
<td>Schedule interviews</td>
<td>Project Management Team assistant</td>
<td>2</td>
<td>30 €</td>
<td>60 €</td>
<td>-</td>
<td>-</td>
<td>60 €</td>
</tr>
<tr>
<td>1.1.1.1.1.3</td>
<td>Conduct interviews</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>540 €</td>
<td>-</td>
<td>-</td>
<td>540 €</td>
</tr>
<tr>
<td>1.1.1.1.1.4</td>
<td>Analyze interviews' answers</td>
<td>Project Management Team</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
<td>-</td>
<td>-</td>
<td>720 €</td>
</tr>
</tbody>
</table>

### Quality Requirements:
Interview questions are carefully selected in order to achieve a good overview of the current processes and perceptions of the employees. => requirement: accuracy, interoperability

### Acceptance Criteria:
- Interviews are only conducted with the objective of receiving an overview of the current processes.
- Interviews questions are selected deliberately in order to gain a broader understanding of the organizations processes

### Technical Information:
MS Office programs are used for the preparation and analysis of the interviews

### Agreement Information:
Interviews are conducted during daily business by the project management team members
# Implementation of an ERP-system to the company Sysperto GmbH

## Work Package Name: Surveys

**Code of Account:** 1.1.1.1.2.

### Description of Work:
Conducting surveys with the employees in order to collect data and knowledge for the creation of a documentation of the current situation and state in the company.

### Assumptions and Constraints:
Objective answering of the survey questions by the employees.

### Milestones:
1. Prepare survey questions and form completed
2. Analyze surveys' answers completed

**Due Dates:** Within the first week => 12.-18.07.2019; parallel with 1.1.1.1.1. Interviews

<table>
<thead>
<tr>
<th>ID</th>
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<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1.2.1</td>
<td>Prepare survey questions and form</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.1.1.2.2</td>
<td>Release survey with deadline to employees</td>
<td>Project Management Team assistant</td>
<td>1</td>
<td>30 €</td>
<td>30 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.1.1.2.3</td>
<td>Collect surveys</td>
<td>Project Management Team assistant</td>
<td>3</td>
<td>30 €</td>
<td>90 €</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.1.1.1.2.4</td>
<td>Analyze surveys' answers</td>
<td>Project Management Team</td>
<td>20</td>
<td>45 €</td>
<td>900 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Quality Requirements:
Surveys are conducted anonymous. => requirement: accuracy, anonymity, confidentiality, integrity

### Acceptance Criteria:
- Surveys are only conducted with the objective of receiving an overview of the current processes
- Surveys are conducted to receive a broader overview and understanding of the organizations' processes

### Technical Information:
As a survey tool "Google Forms" will be used

### Agreement Information:
Surveys are conducted during daily business by the project management team members
### Work Package Name: Flow charts of current processes

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1.1.1.3.1. Create flow charts draft of current processes</td>
<td>Project Management Team member</td>
<td>16 hours @ 45 €/hr</td>
<td>-</td>
<td>720 €</td>
</tr>
<tr>
<td></td>
<td>1.1.1.1.3.2. Review draft of flow charts</td>
<td>Project Management Team</td>
<td>8 hours @ 45 €/hr</td>
<td>-</td>
<td>720 €</td>
</tr>
<tr>
<td></td>
<td>1.1.1.1.3.3. Finalize flow charts</td>
<td>Project Management Team</td>
<td>16 hours @ 45 €/hr</td>
<td>-</td>
<td>720 €</td>
</tr>
</tbody>
</table>

**Total Cost:**

- 720 €
- 720 €
- 720 €

**Total:** 2,160 €

**Assumptions and Constraints:**

Interviews, surveys, and organization's documents provide an appropriate base for the development of the flow charts.

**Milestones:**

1. Flow charts of current processes created

**Due Dates:** 19.-26.07.2019

**Description of Work:**

Based on the conducted interviews, surveys, and existing flow charts and organizations' documentation, flow charts of the current processes are developed.

**Description of Work:**

Based on the conducted interviews, surveys, and existing flow charts and organizations' documentation, flow charts of the current processes are developed.

**Quality Requirements:**

Flow charts are based on the conducted information and follow the same structure and format => requirement: accuracy, uniformity

**Acceptance Criteria:**

Flow charts are only created for project-relevant processes in order to have a clear understanding of the current situation

**Technical Information:**

MS Visio is used for the illustration of the flow charts

**Agreement Information:** -
## Work Package Name: Definition of desired state

### Code of Account: 1.1.1.2.1.

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.2.1.1</td>
<td>Brainstorming of desired state</td>
<td>Project Management Team member &amp; Key Users</td>
<td>8</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.1.1.2.1.2</td>
<td>Structure ideas of desired state</td>
<td>Project Management Team member &amp; Key Users</td>
<td>16</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.1.1.2.1.3</td>
<td>Document desired state</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
</tbody>
</table>

**Assumptions and Constraints:**
- Clear and concise understanding of best/desired state necessary

**Milestones:**
1. Description of desired state completed
   - Due Dates: 26.07.-02.08.2019

**Quality Requirements:** Adequate, coherent and realistic description of the desired state => requirement: accuracy, reality

**Acceptance Criteria:** Clear and illustrative definition of the desired state in order to have a precise understanding of the desired future business processes as the basis for the ERP-system implementation

**Technical Information:** -

**Agreement Information:** -
# Work Package: Gap Analysis

**Code of Account:** 1.1.1.2.2.

**Description of Work:**
Perform a gap analysis by comparing the documented flow charts from the current processes (1.1.1.1.3.) with the previously defined desired state (1.1.1.2.1.) in order to derive the necessary improvement needs.

**Assumptions and Constraints:**
Correct understanding of current and desired state

**Milestones:**
1. Gap analysis completed
2. Identification of necessary changes/improvements completed

**Due Dates:** 02.-09.08.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1.1.2.2.1. Compare current with desired state</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td></td>
<td>1.1.1.2.2.2. Analyze the gap/differences</td>
<td>Project Management Team member</td>
<td>20</td>
<td>45 €</td>
<td>900 €</td>
</tr>
<tr>
<td></td>
<td>1.1.1.2.2.3. Derive the necessary changes/improvements</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>540 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Continuously and detailed comparison => requirement: detail accuracy, reliability

**Acceptance Criteria:** Detailed analysis of the potential improvement needs

**Technical Information:** -

**Agreement Information:** -
### Work Package Name: Research and documentation of “State of the Art” processes

**Code of Account:** 1.1.1.3.1.

**Description of Work:**
Perform a detailed research about "state of the Art" processes, best practices and benchmarks that are linked to the topic of the ERP-systems and document those suggested ways and solutions.

**Assumptions and Constraints:**
Applicable “State of the Art” processes are available.

**Milestones:**
1. Research completed

**Due Dates:** 02.-09.08.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
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<tr>
<td>1.1.1.3.1.1</td>
<td>Do the research</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.1.3.1.2</td>
<td>Collect relevant ideas and best practices</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
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<tr>
<td>1.1.1.3.1.3</td>
<td>Document applicable processes for the company</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:**
Using appropriate research search engines and databases for the collection of “State of the Art” processes and also benchmarking data => requirement: accuracy, comparability

**Acceptance Criteria:**
Collecting recommended solutions, best practices and ideas to improve own processes

**Technical Information:**
Access to research databases

**Agreement Information:** -
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

<table>
<thead>
<tr>
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<th>Material</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.3.2.1</td>
<td>Create flow charts draft of desired processes</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.1.3.2.2</td>
<td>Review draft of flow charts</td>
<td>Project Management Team</td>
<td>8</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.1.3.2.3</td>
<td>Finalize flow charts</td>
<td>Project Management Team</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
</tbody>
</table>

**Assumptions and Constraints:**  
Previous work packages have delivered appropriate documents as a base

**Milestones:**  
1. Flow charts developed
2. 
3. 

**Due Dates:** 09.-16.08.2019

**Quality Requirements:** Flow charts are based on the conducted information and follow the same structure and format => requirement: accuracy, uniformity)

**Acceptance Criteria:** Flow charts are only created for project relevant processes in order to have a clear understanding of the desired situation in which the ERP-system should be implemented

**Technical Information:** MS Visio is used for the illustration of the flow charts

**Agreement Information:** -
**Work Package Name:** Review of flow charts of desired processes  
**Code of Account:** 1.1.2.1.

**Description of Work:** Review the developed flow charts of desired processes to have an understanding of how the business processes have to be restructured

**Assumptions and Constraints:** Previous definition and illustration of the flow charts of the desired processes

**Milestones:**
1. Review completed

**Due Dates:** 16.-23.08.2019

<table>
<thead>
<tr>
<th>ID</th>
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<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.1.1</td>
<td>Review flow charts</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.2.1.2</td>
<td>Derive and collect actions and necessary changes</td>
<td>Project Management Team member</td>
<td>24</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Carefully and completely derive the necessary actions and changes => requirement: accuracy, reliability, portability

**Acceptance Criteria:** Review flow charts in order to have a clear understanding of how the business processes have to be restructured

**Technical Information:** -

**Agreement Information:** -
## Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

## Date Prepared:
08.02.2019 (V3)

### Work Package Name: Creation of organizational change management roadmap

**Code of Account:** 1.1.2.2.

**Description of Work:** Create an organizational change management roadmap

**Assumptions and Constraints:**
Having a clear and overall understanding of all necessary changes

### Milestones:
1. Change management roadmap completed

**Due Dates:** 23.-30.08.2019

<table>
<thead>
<tr>
<th>ID</th>
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<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.2.1.</td>
<td>List all necessary changes</td>
<td>Project Management Team member</td>
<td>16</td>
<td>-</td>
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<td>1.1.2.2.2.</td>
<td>Describe all changes</td>
<td>Project Management Team member</td>
<td>8</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.2.2.3.</td>
<td>Schedule/plan all changes</td>
<td>Project Management Team member</td>
<td>4</td>
<td>-</td>
<td>180 €</td>
</tr>
<tr>
<td>1.1.2.2.4.</td>
<td>Create the roadmap</td>
<td>Project Management Team member</td>
<td>12</td>
<td>-</td>
<td>540 €</td>
</tr>
</tbody>
</table>

### Quality Requirements:
Developing the roadmap by structuring it according to recommended templates => requirement: uniformity

### Acceptance Criteria:
Providing a change management roadmap in order to have a clear structure for the restructuring of the business processes

### Technical Information:
-
<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
<th>Units</th>
<th>Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.3.1.</td>
<td>List all processes that have to be changed</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
<td>-</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.2.3.2.</td>
<td>Schedule the changing of the processes</td>
<td>Project Management Team member</td>
<td>4</td>
<td>45 €</td>
<td>180 €</td>
<td>-</td>
<td>-</td>
<td>180 €</td>
</tr>
<tr>
<td>1.1.2.3.3.</td>
<td>List the procedure of changing the processes</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
<td>-</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.2.3.4.</td>
<td>Perform the process changes</td>
<td>Project Management Team member</td>
<td>120</td>
<td>45 €</td>
<td>5,400 €</td>
<td>-</td>
<td>-</td>
<td>5,400 €</td>
</tr>
<tr>
<td>1.1.2.3.5.</td>
<td>Document the process changes</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
<td>-</td>
<td>-</td>
<td>720 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Change existing processes sustainable => requirement: sustainability

Acceptance Criteria: Clearly definition of how and why the processes are changed in order to achieve which benefit for the ERP-system

Technical Information: -

Agreement Information: -
### Work Package Name: Implementation of new processes

<table>
<thead>
<tr>
<th>Code of Account: 1.1.2.4.</th>
</tr>
</thead>
</table>

**Description of Work:** Implement the new processes that were defined as necessary in the earlier stages

**Assumptions and Constraints:** All required and necessary new processes have be detected and defined in the earlier stages

**Milestones:**
1. New processes implemented

**Due Dates:** 30.08.-29.10.2019

<table>
<thead>
<tr>
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<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.4.1.</td>
<td>List all processes that have to be implemented</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>540 €</td>
</tr>
<tr>
<td>1.1.2.4.2.</td>
<td>Schedule the implementation of the new processes</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.2.4.3.</td>
<td>List the procedure of implementing new processes</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.1.2.4.4.</td>
<td>Perform the implementation</td>
<td>Project Management Team member</td>
<td>160</td>
<td>45 €</td>
<td>7.200 €</td>
</tr>
<tr>
<td>1.1.2.4.5.</td>
<td>Document the process implementations</td>
<td>Project Management Team member</td>
<td>32</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** New processes are implemented carefully and sustainable => requirement: accuracy, sustainability

**Acceptance Criteria:** Clearly definition of how and why the new processes are implemented in order to achieve which benefit for the ERP-system

**Technical Information:** -

**Agreement Information:** -
## Work Package Name: Documentation of business process procedure

### Code of Account: 1.1.3.1.

#### Description of Work: Document the final organization processes and structure after the completed restructuring

#### Assumptions and Constraints:
- Process changes and new implementations from earlier stages were derived completely and carefully

### Milestones:

1. **New Organization processes and structure documented**
   - Due Dates: 29.10.-04.11.2019

### Activities

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.3.1.1</td>
<td>Review the documented process changes</td>
<td>Project Management Team member</td>
<td>8</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.3.1.2</td>
<td>Review the documented process implementations</td>
<td>Project Management Team member</td>
<td>8</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td>1.1.3.1.3</td>
<td>Define and document the new business process procedure</td>
<td>Project Management Team member</td>
<td>24</td>
<td>-</td>
<td>1,080 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td>-</td>
<td>1,080 €</td>
</tr>
</tbody>
</table>

### Quality Requirements:
- Accurate description and illustration of the final and new organizations processes and structure => requirement accuracy, stability

### Acceptance Criteria:
- Reviewing all the completed work from the earlier stages that have an influence on the ERP-system implementation

### Technical Information:
- Using the company's templates and documents/layouts for the documentation

### Agreement Information:
-
### Work Package Name: Definition of general company's frame for ERP-system

**Code of Account:** 1.2.1.

**Description of Work:** Define the general frame for the ERP-system to be implemented

**Assumptions and Constraints:**
- General information regarding the frame can be provided by the company

**Milestones:**
1. General frame described
2. 
3. 

**Due Dates:** 04.-11.11.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1.1.</td>
<td>Define general settings</td>
<td>IT-expert</td>
<td>32</td>
<td></td>
<td>1.440 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td></td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.2.1.2.</td>
<td>Define master data</td>
<td>IT-expert</td>
<td>40</td>
<td></td>
<td>1.800 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td></td>
<td>1.800 €</td>
</tr>
<tr>
<td>1.2.1.3.</td>
<td>Define user role concept</td>
<td>IT-expert</td>
<td>40</td>
<td></td>
<td>1.800 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td></td>
<td>1.800 €</td>
</tr>
</tbody>
</table>

### Quality Requirements:
- Correct and detailed definition of overall/general frame. => requirement: accuracy & detail

### Acceptance Criteria:
- General frame is described in order to know/be aware of the criterias the ERP-system has to fulfill.

### Technical Information:
- 

### Agreement Information:
- 
<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.2.1.</td>
<td>Meeting with CEO to request his needs and requirements for the ERP-system</td>
<td>Project Management Team member; CEO</td>
<td>6</td>
<td>630 €</td>
<td>630 €</td>
</tr>
<tr>
<td>1.2.2.2.</td>
<td>Brainstorming meetings with several employees to collect the needs and requirements</td>
<td>Project Management Team member; employees</td>
<td>40</td>
<td>3.200 €</td>
<td>3.200 €</td>
</tr>
<tr>
<td>1.2.2.3.</td>
<td>Analyze collected needs and requirements</td>
<td>Project Management Team member</td>
<td>24</td>
<td>1.080 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.2.2.4.</td>
<td>Structure and document the needs and requirements</td>
<td>Project Management Team member</td>
<td>16</td>
<td>720 €</td>
<td>720 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Clear, detailed and understandable definition of the needs and requirements => requirement: accuracy, detail

Acceptance Criteria:
- Definition of the needs and requirements illustrates the basis in order to know which features the ERP-system has to contain.
- Approved by the owner/client.
### Work Package Name: Request for offers

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.3.1.1.</td>
<td>Performing a market analysis of potential suppliers</td>
<td>Purchaser</td>
<td>28</td>
<td>40 €</td>
<td>1.120 €</td>
</tr>
<tr>
<td>1.2.3.1.2.</td>
<td>Select potential suppliers</td>
<td>Purchaser</td>
<td>4</td>
<td>40 €</td>
<td>160 €</td>
</tr>
<tr>
<td>1.2.3.1.3.</td>
<td>Create request by describing the content of the desired offer</td>
<td>Project Management Team member; Purchaser</td>
<td>6</td>
<td>45 €</td>
<td>510 €</td>
</tr>
<tr>
<td>1.2.3.1.4.</td>
<td>Send the offer request to the suppliers</td>
<td>Purchaser</td>
<td>2</td>
<td>40 €</td>
<td>80 €</td>
</tr>
</tbody>
</table>

**Assumptions and Constraints:**
- Clear understanding of which features, needs and requirements the ERP-system needs to have.
- Available suppliers.

**Milestones:**
1. Offer requests completed
2.  
3.  

**Due Dates:** 26.11.-02.12.2019

**Technical Information:** Application of companys' existing way of requesting offers.

**Agreement Information:** -
<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.3.2.</td>
<td>Collect all offers</td>
<td>Purchaser</td>
<td>4</td>
<td>40 €</td>
<td>160 €</td>
</tr>
<tr>
<td>1.2.3.2.</td>
<td>Structure all data from all offers in the cost comparison table</td>
<td>Purchaser</td>
<td>16</td>
<td>40 €</td>
<td>640 €</td>
</tr>
<tr>
<td>1.2.3.2.</td>
<td>Analyze the cost comparison</td>
<td>Purchaser</td>
<td>16</td>
<td>40 €</td>
<td>640 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Cost comparison clearly shows differences between offers in regard to the price. => requirement: accuracy, profitability

Acceptance Criteria: Cost comparison includes all data and information from all received offers in a comparable and similar way.

Technical Information: Existing template for cost comparison is used.

Agreement Information: -
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Multi-criteria analysis  
**Code of Account:** 1.2.3.3.

### Description of Work: For all received offers a multi-criteria analysis is conducted.

### Assumptions and Constraints:
Offers are provided by the suppliers in an understandable and comparable way/format.

### Milestones:
1. Multi-criteria analysis of offers completed  
**Due Dates:** 09.-16.12.2019

### ID | Activity | Resource | Labor | Material | Total Cost
---|---|---|---|---|---
1.2.3.3.1. | Collect all offers | Purchaser | 4 | 40 € | 160 € | 160 €
1.2.3.3.2. | Define relevant criteria | Purchaser | 8 | 40 € | 320 € | 320 €
1.2.3.3.3. | Structure data from offers according the criterias | Purchaser | 12 | 40 € | 480 € | 480 €
1.2.3.3.4. | Perform multi-criteria analysis | Purchaser | 16 | 40 € | 640 € | 640 €

### Quality Requirements:
Multi-criteria analysis clearly shows differences between offers in regard to the to the offer factors besides the costs (reputation of the supplier, availability of supplier for implementation date, etc.) => requirement: accuracy, profitability

### Acceptance Criteria:
Multi-criteria analysis includes several relevant criteria and all data and information from all received offers in a comparable and similar way.

### Technical Information:
- 

### Agreement Information:
-
### Work Package Name: Final decision-making

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource Description</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
<th>Units</th>
<th>Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.4.1</td>
<td>Review all performed analysis</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>8</td>
<td>45€</td>
<td>1.200</td>
<td>-</td>
<td>-</td>
<td>1.200 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60€</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45€</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.4.2</td>
<td>Make final decision</td>
<td>Project Management Team member; CEO; CEO; IT-expert</td>
<td>4</td>
<td>45€</td>
<td>420</td>
<td>-</td>
<td>-</td>
<td>420 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60€</td>
<td></td>
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</tr>
</tbody>
</table>

**Assumptions and Constraints:**
All conducted analysis before include all relevant data.

**Milestones:**
1. Final ERP-system selected

**Due Dates:** 16.-17.12.2019

**Quality Requirements:** Careful and detailed review and decision is made. => requirement: accuracy, correctness

**Acceptance Criteria:** Final selection for one of the available ERP-system is made considering all analysis conducted and described criterias.

**Technical Information:** -

**Agreement Information:** -
### Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

### Date Prepared:
08.02.2019 (V3)

### Work Package Name:
Implementation of ticket-system

### Code of Account:
1.3.1.1.

### Description of Work:
Prepare and implement the ticketing-system as an additional system.

### Assumptions and Constraints:
Company's environment, processes and IT-infrastructure is prepared for the implementation.

### Milestones:
1. Ticketing-system implemented

Due Dates: 07.01-19.02.2020 (in parallel with 1.3.1.2. Implementation of online-shop)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
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<tbody>
<tr>
<td>1.3.1.1.1.</td>
<td>Define ticket-system requirements</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>40</td>
<td>60€</td>
<td>3.000 €</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>1.3.1.1.2.</td>
<td>Analyze available ticket-systems</td>
<td>IT-expert</td>
<td>32</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1.1.3.</td>
<td>Select ticket-system (offer)</td>
<td>Project Management Team member; IT-expert</td>
<td>20</td>
<td>45 €</td>
<td>1.800 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1.1.4.</td>
<td>Implement ticket-system</td>
<td>IT-expert</td>
<td>64</td>
<td>45 €</td>
<td>2.880 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Ticketing-system is selected carefully according to the requirements and needs and implemented without affecting the company's daily business and operations => requirement: usability, availability, stability, efficiency

Acceptance Criteria: Ticketing-system is implemented and ready-to-use/ready to be attached to the ERP-system.

Technical Information: Existing IT-infrastructure is used as a basis.

Agreement Information: -
## Work Package Name: Implementation of online-shop

**Code of Account:** 1.3.1.2.

**Assumptions and Constraints:**
- Company's environment, processes and IT-infrastructure is prepared for the implementation.

### Milestones:
1. Online-shop implemented
   - Due Dates: 07.01-10.02.2020 (in parallel with 1.3.1.1. Implementation of ticketing-system)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor Hours</th>
<th>Labor Rate</th>
<th>Labor Total</th>
<th>Material Units</th>
<th>Material Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1.2.1</td>
<td>Define online-shop requirements</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>40</td>
<td>45€</td>
<td>3.000 €</td>
<td>-</td>
<td>-</td>
<td>3.000 €</td>
</tr>
<tr>
<td>1.3.1.2.2</td>
<td>Analyze available online-shop options</td>
<td>IT-expert</td>
<td>32</td>
<td>45€</td>
<td>1.440 €</td>
<td>-</td>
<td>-</td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.3.1.2.3</td>
<td>Select online-shop option (offer)</td>
<td>Project Management Team member; IT-expert</td>
<td>20</td>
<td>45€</td>
<td>1.800 €</td>
<td>-</td>
<td>-</td>
<td>1.800 €</td>
</tr>
<tr>
<td>1.3.1.2.4</td>
<td>Implement online-shop</td>
<td>IT-expert</td>
<td>90</td>
<td>45€</td>
<td>4.050 €</td>
<td>1</td>
<td>10.000 €</td>
<td>14.050 €</td>
</tr>
</tbody>
</table>

**Technical Information:**
- Existing IT-infrastructure is used as a basis.

**Quality Requirements:**
- Ticketing-system is selected carefully according to the requirements and needs and implemented without affecting the company's daily business and operations. => requirement: usability, availability, stability, efficiency

**Acceptance Criteria:**
- Ticketing-system is implemented and ready-to-use/ready to be attached to the ERP-system.

### Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

### Date Prepared:
08.02.2019 (V3)
**Work Package Name:** Configuration and Development  
**Code of Account:** 1.3.2.1.

**Description of Work:** Perform the configuration, development and preparation of the ERP-system to be implemented.

**Assumptions and Constraints:**  
Company's environment, processes and IT-infrastructure is prepared for the implementation.

**Milestones:**  
1. Configuration and development completed  
Due Dates: 19.-27.02.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td>1.3.2.2.1.</td>
<td>Define/design system architecture of ERP-system</td>
<td>IT-expert</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.3.2.2.2.</td>
<td>Customize ERP-system to companys' processes and structure</td>
<td>IT-expert</td>
<td>32</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.3.2.2.3.</td>
<td>Prepare technical infrastructure specification</td>
<td>IT-expert</td>
<td>12</td>
<td>45 €</td>
<td>540 €</td>
</tr>
<tr>
<td>1.3.2.2.4.</td>
<td>Establish the user access and security</td>
<td>IT-expert</td>
<td>4</td>
<td>45 €</td>
<td>180 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** The configuration, development and preparation of the ERP-system is performed precisely. => requirement: accuracy, stability

**Acceptance Criteria:** Configuration and development is completed in order to continue with the installation of the system.

**Technical Information:** Existing IT-infrastructure is used as a basis.

**Agreement Information:** -
## Implementation of an ERP-system to the company Sysperto GmbH

**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Installation of the software

| Code of Account: 1.3.2.2. |

**Description of Work:** Install the ERP-system software on the company’s IT-infrastructure.

**Assumptions and Constraints:**
- Company's environment, processes and IT-infrastructure is prepared for the implementation.

**Milestones:**
- 1. ERP-system software installed

**Due Dates:** 27.02.-05.03.2020

### ID  Activity                                      | Resource | Labor | Material | Total Cost |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td>1.3.2.2.1. Prepare technical installation of ERP-</td>
<td>IT-expert</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.2.2. Execute technical installation of ERP-</td>
<td>IT-expert</td>
<td>24</td>
<td>45 €</td>
<td>1,080 €</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.2.3. Execute technical upgrade of ERP-</td>
<td>IT-expert</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.2.4. Set-up role assignment and authorizations</td>
<td>IT-expert</td>
<td>4</td>
<td>45 €</td>
<td>180 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** The installation of the ERP-system is performed precisely => requirement: accuracy, stability, efficiency

**Acceptance Criteria:** The installation is completed in order to migrate the data.

**Technical Information:** Existing IT-infrastructure is used as a basis.

**Agreement Information:** -
### Work Package Name: Assessment for Data Migration

**Code of Account:** 1.3.2.3.1.

**Description of Work:** Assess the company's frame/conditions as a preparation for the data migration.

**Assumptions and Constraints:**
Company's environment, processes and IT-infrastructure is prepared for the implementation.

**Milestones:**
1. Assessment for data migration completed

**Due Dates: 05.-11.03.2020**

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2.3.1.1.</td>
<td>Prepare data migration workshop</td>
<td>IT-expert</td>
<td>4</td>
<td></td>
<td>180 €</td>
</tr>
<tr>
<td>1.3.2.3.1.2.</td>
<td>Conduct data migration workshop</td>
<td>IT-expert</td>
<td>10</td>
<td></td>
<td>450 €</td>
</tr>
<tr>
<td>1.3.2.3.1.3.</td>
<td>Conduct organizational assessment</td>
<td>IT-expert</td>
<td>16</td>
<td></td>
<td>720 €</td>
</tr>
<tr>
<td>1.3.2.3.1.4.</td>
<td>Conduct infrastructure assessment</td>
<td>IT-expert</td>
<td>14</td>
<td></td>
<td>630 €</td>
</tr>
</tbody>
</table>

**Technical Information:** Existing IT-infrastructure is used as a basis.

**Agreement Information:** -

**Milestones:**
1. Assessment for data migration completed

**Due Dates: 05.-11.03.2020**

**Quality Requirements:** The assessment of the ERP-system is performed precisely and illustrates a good base for the data migration => requirement: accuracy

**Acceptance Criteria:** The assessment is completed to continue with the data migration.
Project Title: Implementation of an ERP-system to the company Sysperto GmbH
Date Prepared: 08.02.2019 (V3)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2.3.2.1.</td>
<td>Collect data from all areas</td>
<td>IT-expert</td>
<td>20</td>
<td>45 €</td>
<td>900 €</td>
</tr>
<tr>
<td>1.3.2.3.2.2.</td>
<td>Create database structure</td>
<td>IT-expert</td>
<td>20</td>
<td>45 €</td>
<td>900 €</td>
</tr>
<tr>
<td>1.3.2.3.2.3.</td>
<td>Migrate data</td>
<td>IT-expert</td>
<td>16</td>
<td>45 €</td>
<td>1.440 €</td>
</tr>
</tbody>
</table>

Quality Requirements: The assessment of the ERP-system is performed precisely and illustrates a good base for the data migration. => requirement: accuracy, completeness

Acceptance Criteria: It is crucial that all existing and available data within the organization are migrated.

Technical Information: Existing IT-infrastructure is used as a basis.

Agreement Information: -

Technical Information: Existing IT-infrastructure is used as a basis.
## Work Package Name: Server Go-Live

### Code of Account: 1.3.2.3.3.

### Description of Work: Perform the server go-live.

### Assumptions and Constraints:
Company's environment, processes and IT-infrastructure is prepared for the implementation.

### Milestones:
- 1. Server go-live completed.

### Due Dates: 20.-23.03.2020

### ID | Activity | Resource | Labor | Material | Total Cost
---|---|---|---|---|---
1.3.2.3.3.1. | Prepare server go-live | IT-expert | 8 | 45 € | 360 € | 360 €
1.3.2.3.3.2. | Perform server go-live | IT-expert | 4 | 45 € | 180 € | 180 €

### Quality Requirements:
Precise and accurate go-live from the server with all data is crucial. This needs to be tracked and documented using checklists. => requirement: accuracy, completeness, availability, stability, efficiency

### Acceptance Criteria:
The go-live from the server with all migrated data is performed in order to do the final testing.

### Technical Information:
Existing IT-infrastructure is used as a basis.

### Agreement Information:
-
### Work Package Name: System and performance testing

**Code of Account:** 1.3.2.4.

**Description of Work:** Final testing of the system and its performance, based on the migrated data on the server.

**Assumptions and Constraints:**
- Company's environment, processes and IT-infrastructure is prepared for the implementation.

**Milestones:**
1. Testing of system is completed.

**Due Dates:** 24.03.-01.04.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2.4.1.</td>
<td>Prepare system and performance test plan</td>
<td>IT-expert</td>
<td>16</td>
<td>-</td>
<td>1.440 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rate 45 €</td>
<td></td>
<td>1.440 €</td>
</tr>
<tr>
<td>1.3.2.4.2.</td>
<td>Define test users</td>
<td>IT-expert</td>
<td>8</td>
<td>-</td>
<td>360 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rate 45 €</td>
<td></td>
<td>360 €</td>
</tr>
<tr>
<td>1.3.2.4.3.</td>
<td>Execute testing activities</td>
<td>IT-experts (2x)</td>
<td>40</td>
<td>-</td>
<td>10.800 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Key-Users (4x)</td>
<td>Rate 45 €</td>
<td></td>
<td>10.800 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Final testing is crucial for the actual work with the implemented ERP-system afterwards as it detects mistakes and problems. Those are documented and corrected. => requirement: accuracy, correctness

**Acceptance Criteria:** The testing is completed when the IT-experts as well as the client has approved the testing results.

**Technical Information:** Existing IT-infrastructure is used as a basis.

**Agreement Information:** -
Project Title: Implementation of an ERP-system to the company Sysperto GmbH  
Date Prepared: 08.02.2019 (V3)  

<table>
<thead>
<tr>
<th>Work Package Name: Go-Live</th>
<th>Code of Account: 1.3.2.5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Work: Perform the server go-live.</td>
<td>Assumptions and Constraints: Company's environment, processes and IT-infrastructure is prepared for the implementation.</td>
</tr>
</tbody>
</table>

Milestones:  
1. Go-live accomplished.  
Due Dates: 02.-06.04.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2.5.1.</td>
<td>Review testing results</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>16</td>
<td>2.400 €</td>
<td>-</td>
</tr>
<tr>
<td>1.3.2.5.2.</td>
<td>Perform go-live</td>
<td>IT-expert</td>
<td>4</td>
<td>33.000 €</td>
<td>33.180 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Precise and accurate go-live from the whole system for all areas/departments from the company and including all data. This needs to be tracked and documented using checklists. => requirement: accuracy, availability, stability, efficiency

Acceptance Criteria: The go-live from the overall ERP-system with all migrated data is performed in order to implement the final product of the project.

Technical Information: Existing IT-infrastructure is used as a basis.

Agreement Information: -
## Work Package Name: End-user training plan

**Code of Account:** 1.4.1.

### Description of Work:
Develop the plan for the end-user training.

### Milestones:
1. End-user training plan created.

### Due Dates: 06.-10.04.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
</tr>
<tr>
<td>1.4.1.1</td>
<td>Conduct learning needs analysis</td>
<td>Project Management Team member; IT-expert/ Trainer</td>
<td>8</td>
<td>45 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
</tr>
<tr>
<td>1.4.1.2</td>
<td>Prepare end-user training materials and documentation</td>
<td>IT-expert/ Trainer</td>
<td>24</td>
<td>45 €</td>
</tr>
<tr>
<td>1.4.1.3</td>
<td>Set up training environment</td>
<td>Project Management Team member</td>
<td>4</td>
<td>45 €</td>
</tr>
<tr>
<td>1.4.1.4</td>
<td>Plan the end-user training schedule and sequence</td>
<td>Project Management Team member</td>
<td>4</td>
<td>45 €</td>
</tr>
</tbody>
</table>

#### Assumptions and Constraints:
Go-live of ERP-system was successfully and employees could already make themselves familiar with the graphical user interface.

#### Technical Information:
Go-live of ERP-system was successfully and employees could already make themselves familiar with the graphical user interface.

#### Agreement Information:
-
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: End-user training execution

**Code of Account:** 1.4.2.

#### Assumptions and Constraints:
- Go-live of ERP-system was successfully and employees could already make themselves familiar with the graphical user interface.

### Description of Work:
Perform the end-user training by execution the end-user training plan.

### Milestones:
1. End-user training plan created.

### Due Dates: 10.-16.04.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td>1.4.2.1</td>
<td>Execute training for CEO and manager</td>
<td>CEO; IT-expert/Trainer (external)</td>
<td>8</td>
<td>60 €</td>
<td>480 €</td>
</tr>
<tr>
<td>1.4.2.2</td>
<td>Execute training for employees</td>
<td>Employees; IT-expert/Trainer</td>
<td>24</td>
<td>35 €</td>
<td>840 €</td>
</tr>
<tr>
<td>1.4.2.3</td>
<td>Review training questions</td>
<td>Project Management Team member; IT-expert/Trainer</td>
<td>8</td>
<td>45 €</td>
<td>720 €</td>
</tr>
</tbody>
</table>

#### Technical Information:
- -

#### Agreement Information:
- -

**Quality Requirements:** The end-user training has to be performed to achieve a good usability. => requirement: usability, availability, comprehensibility

**Acceptance Criteria:** The final end-user training illustrates a main part of the success of the application and acceptance of the system.
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

<table>
<thead>
<tr>
<th>Work Package Name: End-user support</th>
<th>Code of Account: 1.4.3.</th>
</tr>
</thead>
</table>

**Description of Work:** Provide end-user support

**Assumptions and Constraints:**  
Go-live of ERP-system was successfully and employees could already make themselves familiar with the graphical user interface.

**Milestones:**  
1. End-user support provided.

**Due Dates:** 17.04.-05.05.2020 (and continuing after the project)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td>1.4.3.1.</td>
<td>Review questions from training</td>
<td>IT-expert/ Trainer</td>
<td>80</td>
<td>45 €</td>
<td>3.600 €</td>
</tr>
<tr>
<td>1.4.3.2.</td>
<td>Establish end-user support</td>
<td>IT-expert/ Trainer</td>
<td>24</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
</tbody>
</table>

**Total Cost**

- 3.600 €
- 1.080 €

**Quality Requirements:** The end-user support has to be performed to achieve a good usability and sustainability. => requirement: usability, sustainability

**Acceptance Criteria:** The final end-user support illustrates a part of the success of the application and acceptance of the system.

**Technical Information:** -

**Agreement Information:** -
Project Title: Implementation of an ERP-system to the company Sysperto GmbH
Date Prepared: 08.02.2019 (V3)

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.1.1.</td>
<td>Prepare kick-off workshop</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.5.1.1.</td>
<td>Conduct kick-off workshop</td>
<td>Project Management Team member; CEO; IT-expert</td>
<td>8</td>
<td>60 €</td>
<td>1.920 €</td>
</tr>
</tbody>
</table>

Assumptions and Constraints:
Main stakeholders and participants are available.

Milestones:
1. Kick-off Workshop completed.
Due Dates: Right at the start of the project => 21.-22.11.2018

Quality Requirements: Conducting a first overall kick-off workshop is crucial for the initiation process in order to have an official project start and to collect the expectations and different views on the project from different stakeholders. => requirements: accuracy, commitment

Acceptance Criteria: Participation from the owner/CEO.

Technical Information: -

Agreement Information: -
## Implementation of an ERP-system to the company Sysperto GmbH

**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Business Case

**Code of Account:** 1.5.1.2.

**Description of Work:** Develop the business case (document) for the project.

**Assumptions and Constraints:** Necessary information, requirements and knowledge is available.

**Milestones:**
1. Business Case developed.

**Due Dates:** Right at the start of the project => 29.11.-05.12.2018

### ID | Activity | Resource | Labor | Material |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.5.1.2.1.</strong></td>
<td>Review Project Charter for Business Case</td>
<td>Business Analyst</td>
<td>4</td>
<td>45 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Management Team member</td>
<td>4</td>
<td>45 €</td>
</tr>
<tr>
<td><strong>1.5.1.2.2.</strong></td>
<td>Collect information for Business Case</td>
<td>Business Analyst</td>
<td>8</td>
<td>45 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
</tr>
<tr>
<td><strong>1.5.1.2.3.</strong></td>
<td>Develop Business Case</td>
<td>Business Analyst</td>
<td>16</td>
<td>45 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
</tr>
<tr>
<td><strong>1.5.1.2.4.</strong></td>
<td>Review Business Case</td>
<td>Project Management Team member</td>
<td>10</td>
<td>45 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate analysis and development of the business case. => requirements: accurancy, detailedness

**Acceptance Criteria:** Approved by the owner/CEO.

**Technical Information:** -

**Agreement Information:** -
Project Title: Implementation of an ERP-system to the company Sysperto GmbH
Date Prepared: 08.02.2019 (V3)

Work Package Name: Project Charter
Code of Account: 1.5.1.3.

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.1.3.2.</td>
<td>Develop Project Charter</td>
<td>Project Management Team member</td>
<td>10</td>
<td>45 €</td>
<td>1.350 €</td>
</tr>
<tr>
<td>1.5.1.3.3.</td>
<td>Review Project Charter</td>
<td>Business Analyst</td>
<td>6</td>
<td>45 €</td>
<td>270 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Management Team member</td>
<td>6</td>
<td>45 €</td>
<td>270 €</td>
</tr>
<tr>
<td>1.5.1.3.4.</td>
<td>Receive approval for Project Charter</td>
<td>Client/CEO</td>
<td>4</td>
<td>60 €</td>
<td>240 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Management Team member</td>
<td>4</td>
<td>45 €</td>
<td>540 €</td>
</tr>
</tbody>
</table>

Milestones:
1. Project Charter developed.

Assumptions and Constraints:
Necessary information, requirements and knowledge is available.

Due Dates: Right at the start of the project => 23.-27.11.2018

Quality Requirements: Detailed and accurate analysis and development of the project charter. => requirements: accuracy, detailedness

Acceptance Criteria: Approved by the owner/CEO.

Technical Information: -

Agreement Information: -
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Scope Management Plan  
**Code of Account:** 1.5.2.1.

**Description of Work:** Develop the scope management plan

**Assumptions and Constraints:** Necessary information, requirements and knowledge is available.

**Milestones:**  
1. Scope management plan developed.

**Due Dates:** During planning phase => 07.-31.12.2018

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
</tr>
<tr>
<td>1.5.2.1.1.</td>
<td>Plan scope management</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.5.2.1.2.</td>
<td>Collect requirements</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.5.2.1.3.</td>
<td>Define scope</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.5.2.1.4.</td>
<td>Create WBS and WBS Dictionary</td>
<td>Project Management Team member</td>
<td>56</td>
<td>45 €</td>
<td>2.520 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate analysis and development of the scope management plan => requirements: accuracy, detailedness; efficiency; accessibility

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** MS Visio is used for the illustration of the WBS.

**Agreement Information:** -
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

**Work Package Name:** Schedule Management Plan  
**Code of Account:** 1.5.2.2.  
**Assumptions and Constraints:** Necessary information, requirements and knowledge is available.

**Description of Work:** Develop the schedule management plan

**Milestones:**  
1. Schedule management plan developed.  
**Due Dates:** During planning phase => 18.-30.01.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.2.1.</td>
<td>Plan schedule management</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.5.2.2.2.</td>
<td>Define activities</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>540 €</td>
</tr>
<tr>
<td>1.5.2.2.3.</td>
<td>Sequence activities</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>720 €</td>
</tr>
<tr>
<td>1.5.2.2.4.</td>
<td>Estimate activities durations</td>
<td>Project Management Team member</td>
<td>12</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.5.2.2.5.</td>
<td>Develop schedule</td>
<td>Project Management Team member</td>
<td>24</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate analysis and development of the schedule management plan => requirements: accuracy, detailedness; efficiency; accessibility

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** MS Project is used for the scheduling.

**Agreement Information:** -
<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.3.1.</td>
<td>Plan cost management</td>
<td>Project Management Team member</td>
<td>8</td>
<td>45 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.5.2.3.2.</td>
<td>Estimate costs</td>
<td>Project Management Team member</td>
<td>24</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.5.2.3.3.</td>
<td>Determine budget</td>
<td>Project Management Team member</td>
<td>24</td>
<td>45 €</td>
<td>1.080 €</td>
</tr>
</tbody>
</table>
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

<table>
<thead>
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<td>Project Management Team member</td>
<td>24</td>
<td>45</td>
<td>3,240</td>
<td>-</td>
<td>-</td>
<td>3,240</td>
<td></td>
</tr>
</tbody>
</table>

Assumptions and Constraints: Necessary information, requirements and knowledge is available.

Milestones:  
1. Cost management plan developed.  
Due Dates: During planning phase => 11.-13.02.2019

Quality Requirements: Detailed and accurate analysis and development of the quality management plan => requirements: accuracy, detailedness; efficiency; accessibility

Acceptance Criteria: Approved by the owner/CEO and reviewed by the Project Management Team.

Technical Information: -

Agreement Information: -
### Work Package Name: Risk Management Plan

**Code of Account:** 1.5.2.5.

**Description of Work:** Develop the risk management plan

**Assumptions and Constraints:** Necessary information, requirements and knowledge is available.

**Milestones:**

1. Risk management plan developed.

**Due Dates:** During planning phase => 14.-25.02.2019

<table>
<thead>
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<th>Material</th>
<th>Total Cost</th>
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<tr>
<td>1.5.2.5.1.</td>
<td>Plan risk management</td>
<td>Project Management Team member</td>
<td>8</td>
<td>360 €</td>
<td>360 €</td>
</tr>
<tr>
<td>1.5.2.5.2.</td>
<td>Identify risks</td>
<td>Project Management Team member</td>
<td>8</td>
<td>1.080 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.5.2.5.3.</td>
<td>Perform risk analysis</td>
<td>Project Management Team member</td>
<td>24</td>
<td>1.080 €</td>
<td>1.080 €</td>
</tr>
<tr>
<td>1.5.2.5.4.</td>
<td>Plan risk responses</td>
<td>Project Management Team member</td>
<td>24</td>
<td>1.080 €</td>
<td>1.080 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate analysis and development of the risk management plan => requirements: accuracy, detailedness; efficiency; accessibility

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
### Work Package Name: Communication Management Plan

| Code of Account: 1.5.2.6. |

**Description of Work:** Develop the communication management plan

**Assumptions and Constraints:** Necessary information, requirements, and knowledge is available.

**Milestones:**
1. Communication management plan developed.

**Due Dates:** During planning phase => 22.-26.03.2019

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.6.1</td>
<td>Plan communication management</td>
<td>Project Management Team member</td>
<td>24</td>
<td>45 €</td>
<td>3.240 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate analysis and development of the communication management plan => requirements: accuracy, detailedness; efficiency; accessibility

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.7.1</td>
<td>Plan stakeholder engagement</td>
<td>Project Management Team member</td>
<td>24 hours</td>
<td>45 €/hour</td>
<td>3,240 €</td>
</tr>
</tbody>
</table>

Assumptions and Constraints:
Necessary information, requirements and knowledge is available.

Due Dates: During planning phase => 27.-29.03.2019

Quality Requirements: Detailed and accurate analysis and development of the stakeholder management plan => requirements: accuracy, detailedness; efficiency; accessibility

Acceptance Criteria: Approved by the owner/CEO and reviewed by the Project Management Team.

Technical Information: -

Agreement Information: -
## Implementation of an ERP-system to the company Sysperto GmbH

**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Change Management Plan

#### Code of Account: 1.5.2.8.

**Description of Work:** Develop the change management plan

**Assumptions and Constraints:** Necessary information, requirements and knowledge is available.

**Milestones:**
1. Change management plan developed.

**Due Dates:** During planning phase => 22.-24.04.2019

### ID | Activity | Resource | Labor | Material | Total Cost
--- | --- | --- | --- | --- | ---
1.5.2.8.1. | Plan change management | Project Management Team member | 24 hours @ 45 €/hour | - | 3.240 €

**Quality Requirements:** Detailed and accurate analysis and development of the change management plan => requirements: accuracy, detailedness; efficiency; accessibility

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
## Work Package Name: Procurement Management Plan

### Description of Work: Develop the procurement management plan

**Assumptions and Constraints:**
- Necessary information, requirements and knowledge is available.

### Milestones:
1. Procurement management plan developed.

**Due Dates:** During planning phase => 25.-30.04.2019

### Activity Details

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.9.1</td>
<td>Plan procurement management</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>2.160 €</td>
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<tr>
<td>1.5.2.9.2</td>
<td>Develop contract draft</td>
<td>Project Management Team member</td>
<td>16</td>
<td>45 €</td>
<td>2.160 €</td>
</tr>
</tbody>
</table>

### Quality Requirements:
- Detailed and accurate analysis and development of the resource management plan => requirements: accuracy, detailedness; efficiency; accessibility

### Acceptance Criteria:
- Approved by the owner/CEO and reviewed by the Project Management Team.

### Technical Information:
- 

### Agreement Information:
-
## Work Package Name: Project Management Plan

### Code of Account: 1.5.2.10.

### Assumptions and Constraints:
- Necessary information, requirements and knowledge is available.

### Milestones:
- **1. Project management plan created and approved.**
  - Due Dates: During planning phase => 17.05.-11.07.2019

### ID | Activity | Resource | Labor | Material | Total Cost
--- | --- | --- | --- | --- | ---
1.5.2.10.1. | Collect all Management Plans | Project Management Team member | 24 | 45 € | 1.080 € |
1.5.2.10.2. | Review and revise Project Management Plan | Project Management Team member | 16 | 45 € | 2.160 € |
1.5.2.10.3. | Receive approval for Project Management Plan | Project Management Team member; CEO | 16 | 45 | 60 | 3.120 € |

### Quality Requirements:
- Detailed and accurate analysis, development and collection of the overall project management plan => requirements: accuracy, detailedness; efficiency; accessibility

### Acceptance Criteria:
- Approved by the owner/CEO and reviewed by the Project Management Team.

### Technical Information:
- 

### Agreement Information:
- 

---

---
**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

### Work Package Name: Project Work Management

**Code of Account:** 1.5.3.1.

**Description of Work:** Perform the overall management and direction of the project work.

**Assumptions and Constraints:** Resource availability

**Milestones:**
1. Project work management completed

**Due Dates:** During execution phase => 12.07.2019-05.05.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.3.1.1.</td>
<td>Manage and direct the project work</td>
<td>Project Management Team member</td>
<td>332.8</td>
<td>45 €</td>
<td>14,976 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate direction and management of the whole project work => requirements: accuracy, detailedness; efficiency

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
### Work Package Name: Quality Management

**Code of Account:** 1.5.3.2.

**Description of Work:** Managing the project's quality

**Assumptions and Constraints:**
- Resource availability

**Milestones:**
1. Quality management completed

**Due Dates:** During execution phase => 12.07.2019-05.05.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.3.2.1</td>
<td>Manage quality of the project (work)</td>
<td>Project Management Team member</td>
<td>332,8</td>
<td>-</td>
<td>14,976 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45 €</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate management of the quality of the project work => requirements: accuracy, detailedness; efficiency

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
# Implementation of an ERP-system to the company Sysperto GmbH

**Project Title:** Implementation of an ERP-system to the company Sysperto GmbH  
**Date Prepared:** 08.02.2019 (V3)

## Work Package Name: Team Development and Management

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.3.3.1.</td>
<td>Develop the project team</td>
<td>Project Management Team member</td>
<td>166.4</td>
<td>-</td>
<td>7.488 €</td>
</tr>
<tr>
<td>1.5.3.3.2.</td>
<td>Manage the project team</td>
<td>Project Management Team member</td>
<td>166.4</td>
<td>-</td>
<td>7.488 €</td>
</tr>
</tbody>
</table>

**Assumptions and Constraints:** Resource availability

**Milestones:**  
1. Team development and management completed

**Due Dates:** During execution phase => 12.07.2019-05.05.2020

**Quality Requirements:** Detailed and accurate management of the quality of the project work => requirements: accuracy, detailedness; communication, sensitivity

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
**Work Package Name:** Change requests  
**Code of Account:** 1.5.4.1.

**Description of Work:** Collect, analyze and manage all change requests

**Assumptions and Constraints:** Resource availability

**Milestones:**
1. Change requests completed  
Due Dates: During monitoring and controlling phase => 12.07.2019-05.05.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.4.1.1.</td>
<td>Collect the change requests</td>
<td>Project Management Team member</td>
<td>83,2</td>
<td>45 €</td>
<td>3,744 €</td>
</tr>
<tr>
<td>1.5.4.1.2.</td>
<td>Manage the change requests</td>
<td>Project Management Team member</td>
<td>83,2</td>
<td>45 €</td>
<td>3,744 €</td>
</tr>
</tbody>
</table>

**Quality Requirements:** Detailed and accurate collecting and managing of the change requests => requirements: accuracy, detailedness; communication

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
# Work Package Name: Change Log

**Code of Account:** 1.5.4.2.

## Description of Work: Collect, analyze and manage all change requests

## Assumptions and Constraints:
- Resource availability

## Milestones:
1. Change log/document exists

**Due Dates:** During monitoring and controlling phase => 12.07.2019-05.05.2020

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.4.2.1.</td>
<td>List occurring changes</td>
<td>Project Management Team member</td>
<td>33,28</td>
<td>45 €</td>
<td>1.498 €</td>
</tr>
<tr>
<td>1.5.4.2.2.</td>
<td>Track progress of each change</td>
<td>Project Management Team member</td>
<td>66,56</td>
<td>45 €</td>
<td>2.995 €</td>
</tr>
<tr>
<td>1.5.4.2.3.</td>
<td>Analyze impact of change of project</td>
<td>Project Management Team member</td>
<td>66,56</td>
<td>45 €</td>
<td>2.995 €</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>1.5.4.2.1.</td>
<td>List occurring changes</td>
<td>Project Management Team member</td>
<td>33,28</td>
<td>45 €</td>
<td>1.498 €</td>
</tr>
<tr>
<td>1.5.4.2.2.</td>
<td>Track progress of each change</td>
<td>Project Management Team member</td>
<td>66,56</td>
<td>45 €</td>
<td>2.995 €</td>
</tr>
<tr>
<td>1.5.4.2.3.</td>
<td>Analyze impact of change of project</td>
<td>Project Management Team member</td>
<td>66,56</td>
<td>45 €</td>
<td>2.995 €</td>
</tr>
</tbody>
</table>

## Quality Requirements:
- Detailed and accurate creating of the change log => requirements: accuracy, detailedness; communication

## Acceptance Criteria:
- Approved by the owner/CEO and reviewed by the Project Management Team.

## Technical Information:
- 

## Agreement Information:
-
## Work Package Name: Risk Monitoring

### Code of Account: 1.5.4.3.

**Description of Work:** Monitor all identified and new occurring risks.

**Assumptions and Constraints:**
- Resource availability

### Milestones:

1. **Risks monitored**

**Due Dates:** During monitoring and controlling phase => 12.07.2019-05.05.2020

### ID | Activity | Resource | Labor | Material | Total Cost
---|---|---|---|---|---
1.5.4.3.1. | Monitor identified risks | Project Management Team member | 33.28 | 45 € | 1.498 € |
1.5.4.3.2. | Identify potential new occurring risks | Project Management Team member | 66.56 | 45 € | 2.995 € |
1.5.4.3.3. | Analyze impact of risks | Project Management Team member | 66.56 | 45 € | 2.995 € |

**Quality Requirements:** Detailed and accurate monitoring of all risks => requirements: accuracy, detailedness

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -

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---
## Work Package Name: Cost Controlling

### Code of Account: 1.5.4.4.

### Description of Work: Control the costs from the project

#### Assumptions and Constraints:
- Resource availability

### Milestones:
1. Cost controlled

#### Due Dates: During monitoring and controlling phase => 12.07.2019-05.05.2020

### Resource utilization table:

<table>
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<tr>
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<th>Activity Description</th>
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<th>Material Cost</th>
<th>Material Total</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.4.4.1.</td>
<td>Review planned costs</td>
<td>Project Management Team member</td>
<td>33.28</td>
<td>45 €</td>
<td>1.498 €</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.498 €</td>
</tr>
<tr>
<td>1.5.4.4.2.</td>
<td>Collect cost data</td>
<td>Project Management Team member</td>
<td>66.56</td>
<td>45 €</td>
<td>2.995 €</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.995 €</td>
</tr>
<tr>
<td>1.5.4.4.3.</td>
<td>Analyze costs (Earned Value, Variance and Trend Analysis)</td>
<td>Project Management Team member</td>
<td>66.56</td>
<td>45 €</td>
<td>2.995 €</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.995 €</td>
</tr>
</tbody>
</table>

#### Quality Requirements: Detailed and accurate controlling of project's cost => requirements: accuracy, detailedness

#### Acceptance Criteria: Approved by the owner/CEO and reviewed by the Project Management Team.

#### Technical Information: -

#### Agreement Information: -
Project Title: Implementation of an ERP-system to the company Sysperto GmbH  
Date Prepared: 08.02.2019 (V3)

<table>
<thead>
<tr>
<th>Work Package Name: Lessons Learned</th>
<th>Code of Account: 1.5.5.1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Work: Collecting, analyzing, reviewing and discussing the lessons learned of the project.</td>
<td>Assumptions and Constraints: Project is completed and objectives are reached.</td>
</tr>
<tr>
<td>Milestones: 1. Lessons learned registered.</td>
<td>Due Dates: During the closing phase/end of project =&gt; 06.-11.05.2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID</th>
<th>Activity</th>
<th>Resource</th>
<th>Labor</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.5.1.1.</td>
<td>Review the project</td>
<td>Project Management Team member</td>
<td>10</td>
<td>45 €</td>
</tr>
<tr>
<td>1.5.5.1.2.</td>
<td>Collect and register lessons learned</td>
<td>Project Management Team member</td>
<td>10</td>
<td>45 €</td>
</tr>
<tr>
<td>1.5.5.1.3.</td>
<td>Analyze and review lessons learned</td>
<td>Project Management Team member</td>
<td>10</td>
<td>45 €</td>
</tr>
</tbody>
</table>

Quality Requirements: Detailed and accurate collecting, analyzing and discussing the lessons learned from the project => requirements: accuracy, detailedness

Acceptance Criteria: Approved by the owner/CEO and reviewed by the Project Management Team.

Technical Information: -

Agreement Information: -
## Work Package Name: Project Closing

### Code of Account: 1.5.5.2.

**Description of Work:** Final reviewing and closing of the project.

**Assumptions and Constraints:** Project is completed and objectives are reached.

**Milestones:**
1. Project closed

**Due Dates:** During the closing phase/end of project => 06.-11.05.2020

### ID | Activity | Resource | Labor | Material | Total Cost
--- | --- | --- | --- | --- | ---
| 1.5.5.2.1. | Review the project | Project Management Team member | 45 € | 6 | 810 € |
| 1.5.5.2.2. | Derive potential necessary new projects | Project Management Team member | 45 € | 8 | 360 € |
| 1.5.5.2.3. | Close the project | Project Management Team member | 45 € | 6 | 810 € |
| | | CEO | 60 € | 6 | 360 € |

**Quality Requirements:** Detailed and accurate review and closing of the project involving all relevant stakeholders => requirements: accurancy, detailedness

**Acceptance Criteria:** Approved by the owner/CEO and reviewed by the Project Management Team.

**Technical Information:** -

**Agreement Information:** -
# Project Schedule Management Plan

**Project Title:**
Implementation of an ERP-system to the company Sysperto GmbH

**Group 4:**
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

**Program:** Master in Project Management

EAE Business School
Universidad Rey Juan Carlos (URJC)

**Director in Charge:** Elena Maria Bulmer Santana
**Director:** Marcelo Leporati

<table>
<thead>
<tr>
<th>Document version and change history</th>
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<td>V003</td>
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<tr>
<td>V004</td>
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</table>
Abstract

The present chapter illustrates the Project Schedule Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Schedule Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Schedule Management Plan continues the project analysis, planning and development based on the previous analysis for the Project Charter, the Business Case and the Project Scope Management Plan. Those documents illustrate the basis and main inputs for the Project Schedule Management Plan. Moreover, this Project Schedule Management Plan illustrates the second knowledge area (Project Schedule Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Schedule Management Plan first provides a theoretical introduction about the Project Schedule Management Plan and the Schedule Management Plan itself, continues with the key dates and milestones as well as the complete activity list. Out of this, the timeline and sequence of the activities and the critical path are developed and illustrated through the use and application of MS Project. Subsequently, the reports and documents for the control of project deadlines are defined and generated. With those points, the schedule baseline for the project is described and developed at the current point in the planning phase. Each of the outlined parts include a description of the theoretical base as well as the application thereof to the named project.

Keywords: Project Schedule Management Plan, Milestones, Activity-List, MS Project, Project Scheduling, Implementation, ERP-system, IT-sector, IT-services
# Table of Contents

Abstract .............................................................................................................................. II

List of Figures..................................................................................................................... V

List of Tables...................................................................................................................... V

1. Introduction, Scope and Purpose of the Project Schedule Management Plan ............... 1

2. Schedule Management Plan ..................................................................................... 1

   2.1. Schedule Methodology .................................................................................. 2

   2.2. Schedule Tool ............................................................................................... 2

   2.3. Level of Accuracy ......................................................................................... 2

   2.4. Units of Measure ........................................................................................... 2

   2.5. Variance Thresholds ..................................................................................... 2

   2.6. Schedule Reporting Format .......................................................................... 3

   2.7. Activities Identification ............................................................................... 3

   2.8. Activities Sequencing ............................................................................... 3

   2.9. Estimating Resources ............................................................................... 4

   2.10. Estimating Efforts and Duration ................................................................. 4

   2.11. Updating, Monitoring and Controlling ....................................................... 4

3. Key Dates and Milestones of the Project ................................................................ 5

4. List of activities ....................................................................................................... 12

5. Timeline/Sequence of Activities – Project Schedule ............................................ 30

   5.1. Project Calendar .......................................................................................... 31

   5.2. Sequencing and Predecessors Definition .................................................... 32

   5.3. Resource allocation ...................................................................................... 33

   5.4. Project Schedule – Gantt Chart .................................................................. 34

   5.5. Network Diagram ....................................................................................... 48

6. Project Critical Path ................................................................................................. 48

7. Control of Project Deadlines through Reports and Control Documents ............... 49

   7.1. Issue Report ................................................................................................. 49

   7.2. Status Report ............................................................................................... 50

III
8. Project Schedule Baseline (based on project milestones) ........................................... 50

8.1. Definition of the Change Control Procedure ......................................................... 51

8.2. Comparison between the Actual and Planned Schedule .......................................... 53

9. Conclusions ............................................................................................................. 53

References ..................................................................................................................... VI
List of Figures

Figure 1 - Project Schedule Calendar Settings ................................................................. 32
Figure 2 - Constraint Types ............................................................................................... 32
Figure 3 - Resource Sheet ................................................................................................. 33
Figure 4 - Project Gantt Chart ......................................................................................... 47
Figure 5 - Network Diagram Excerpt ............................................................................... 48
Figure 6 - Critical Path Excerpt ....................................................................................... 49
Figure 7 - Schedule Baseline ............................................................................................ 51
Figure 8 - Change management process for changes of the project schedule .................... 52

List of Tables

Table 1 - Schedule reporting format .................................................................................. 3
Table 2 - Schedule updating, monitoring and controlling ..................................................... 5
Table 3 - Milestones list ................................................................................................... 12
Table 4 - List of activities ................................................................................................ 30
Table 5 - Issue report ...................................................................................................... 49
Table 6 - Status report .................................................................................................... 50
1. Introduction, Scope and Purpose of the Project Schedule Management Plan

A schedule is a timeline showing the progress of the different phases and deliverables of the project in function of time (APM, 2019).

All the processes required to manage the duration and timeline of a project, from its very start until its completion, are included in the project schedule management (Project Management Institute, 2017, S. 173). It provides a detailed plan, representing when the final product will be delivered, in order to be used as a tool for communication, for managing the execution of the project, the stakeholder’s expectations and as a basis for monitoring the performance throughout the project.

According to the PMBOK Guide (6th Edition), the processes for the schedule management plan do not have to follow a chronological plan. They are resumed in the following (Project Management Institute, 2017, S. 173):

- Schedule Management Plan: A plan documenting the approach used, the level of accuracy and the resources for the project schedule management.
- Definition of the activities: Defining and describing each activity of each work package that needs to be done in order to complete the project deliverables.
- Sequence of the activities: Clarifying the relationships existing between the different activities of the project.
- Estimate the duration of activities: Estimating the time each activity will require to be done and achieved correctly.
- Establishment of the schedule: Gathering and analyzing the sequence of the activities, their estimated duration and resources in order to build a schedule for the execution and the monitoring of the project.
- Control of the schedule: Controlling the follow-up of the schedule and proceeding to updates of the schedule baseline in order to manage properly the changes that occur in the project life-cycle.

2. Schedule Management Plan

The schedule management plan establishes and documents the different criteria, information and clarifications used to plan, develop, manage and control the schedule. It provides guidance on how the project schedule is developed and managed throughout the project (Project Management Institute, 2017, p. 179).
2.1. Schedule Methodology

The methodology used for the implementation of the ERP-system to the company Sysperto GmbH is a predictive approach, also known as Waterfall, as projects of this kind of implementation have been executed by many organizations and enterprises since a long time, as it has a familiar path that becomes well known and clear. The reason for the choice of the Waterfall approach is that the project is very unlikely to endure high-level of changes, as the phases, the steps, the objectives and outcomes are very well defined and precise (described and sequenced) for Sysperto GmbH.

2.2. Schedule Tool

To avoid all imprecise estimations in developing the schedule of the project, MS Project will be used as a tool to allocate and schedule the different tasks and activities. It provides a precise and effective time and resource scheduling, as it brings a better organization for the schedule – known as a crucial and complicated task – of the project. It also gives the ability to distribute tasks and resource allocations smartly and efficiently, helps having a precise scheduling as well as real-time access to data and the possibility to apply changes and updates easily.

2.3. Level of Accuracy

The accuracy in project management is never perfect, especially in time management. Therefore, the level of accuracy for the estimated duration of the activities of the project is set to be plus or minus 10%, without exceeding 10% of the duration of the overall project.

2.4. Units of Measure

The unit of measure chosen for the schedule is the number of labor hours needed until achievement in order to be efficient as it brings more precision and accuracy to the schedule.

2.5. Variance Thresholds

When a schedule change occurs, a meeting is held to discuss, review and analyze the change and its impact on the schedule and evaluate all the possible alternatives. If the change required exceeds the established boundaries, which is 10% variance in the work package duration or 10% variance in the overall project duration, a change request has to be submitted.
2.6. Schedule Reporting Format

<table>
<thead>
<tr>
<th>Report</th>
<th>Description</th>
<th>Responsible</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule task list and work packages report</td>
<td>Up-to-date report used to control the execution time of the tasks and work packages to the project team members.</td>
<td>Project Manager</td>
<td>Weekly</td>
</tr>
<tr>
<td>Project schedule report</td>
<td>Schedule progress report showing the progress made during the project status meetings.</td>
<td>Project manager</td>
<td>Every 2 weeks</td>
</tr>
<tr>
<td>CEO project report</td>
<td>Presentation of the project progress in order to keep the CEO updated regarding the execution of the project with high-level milestones.</td>
<td>Project Manager</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Table 1 - Schedule reporting format

2.7. Activities Identification

The activities are defined by the project management team using brainstorming, the decomposition from the WBS, expert and consultant judgment and the lessons learned from anterior projects. These processes provide a well development and identification of the different activities which is important for the good schedule management of the project.

2.8. Activities Sequencing

In the implementation of the ERP-system to the company Sysperto GmbH, the activities of the work packages defined by the WBS Dictionary have to be sequenced in order to progress and complete the work efficiently. In order to do so, the network logic followed for the activities is mainly the Finish-to-Start relationship, because in every work package, each activity has to finish before the next one can start because of the existing dependencies between an activity and its predecessor. In addition, also the Start-to-Start relationship will be used.
2.9. Estimating Resources

Thanks to MS Project, the resources are well allocated for each of the activities. They will be re-allocated to another task once the current activity is completed to provide efficiency. The resources are also updated in the software to manage properly the progress during the project life-cycle.

2.10. Estimating Efforts and Duration

To estimate efforts and duration for the implementation of the ERP-system, the project management team proceeded to several techniques such as the analogous estimating, the three-point estimating and the bottom-up estimating. Each technique was supported by the input, knowledge and experience from Acmeo GmbH and Sysperto GmbH. A high priority and relevance were given to their estimation and opinion.

First of all, at the early stages of the project, when not having many detailed documents concerning the project, the analogous estimating has been made by comparing to similar projects, despite being not too accurate, however it provided the project team with a range to consider. In the same sense, the three-point estimation has been made by considering the optimistic scenario, the most likely and the pessimistic one.

After having more information and going deeply into the project phases by creating detailed documents such as the WBS, the bottom-up estimation has been made to have a detailed estimation of each activity, each work-package, each deliverable and each phase leading to a proper and accurate estimation of the whole project.

2.11. Updating, Monitoring and Controlling

The updates of the schedule are done weekly by the project management team using the progress reports after the weekly meetings to ensure the good going of the project schedule. The project team members report task progress to the project managers on a weekly basis, to evaluate the progress and variance of the schedule and proceeding with updates. In order to control the schedule, the project management team measures the variance between the schedule and the actual execution to know if the project is going on time and on budget or corrective actions need to be planned and taken. However, there are some activities set to be performed to control the schedule of the project resumed in the table below.

<table>
<thead>
<tr>
<th>Control activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance review</td>
<td>The schedule is measured and compared with the initial elaborated dates to analyze the performance of the project during the execution.</td>
</tr>
</tbody>
</table>
### Control activity | Description
--- | ---
Re-estimation of the remaining components of the project | During the progress of the project, a re-estimation of the remaining tasks is done in order to check and control if the project is going on schedule or not.

Adjusting future parts of the project to compensate the delay | If there is a delay, the future component should be adjusted to compensate the delays in order to deliver the project within the fixed date according to the schedule.

Optimizing the schedule | The schedule has to be reviewed and analyzed in order to optimize it if possible.

*Table 2 - Schedule updating, monitoring and controlling*

### 3. Key Dates and Milestones of the Project

The milestone list as follows shows a table with all the milestones present in the WBS dictionary. The table describes on the one hand, the description of each work package, on the other hand, the name of the milestone, its description and type. The milestone list simplifies the tasks which are due, helping to understand what is requested in order to complete the work-package.

<table>
<thead>
<tr>
<th>Work-package ID</th>
<th>Work-package</th>
<th>Milestones</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1.1</td>
<td>Interviews</td>
<td>Preparation of the questions completed</td>
<td>The right questions to understand the current situation of the company and its processes are prepared.</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interviews completed</td>
<td>The interviews are held and the data and knowledge about the company's situation and processes are collected and analysed.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.1.1.2</td>
<td>Surveys</td>
<td>Preparation of the surveys and forms completed</td>
<td>The surveys and forms are prepared to complete the understanding of the overview of the company.</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analyse survey's questions completed</td>
<td>The surveys are collected and the data and knowledge about the</td>
<td>Internal</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
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</tr>
<tr>
<td>1.1.1.1.3.</td>
<td>Flow charts of current processes</td>
<td>Flow charts of the current processes created</td>
<td>After analysing the data collected and analysed from the anterior activities, the flow charts of the current processes are created.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.1.2.1</td>
<td>Definition of the desired state</td>
<td>Description of the desired state completed</td>
<td>The desired state is created and documented in order to have good knowledge about the new business processes.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.1.2.2.</td>
<td>Gap Analysis</td>
<td>Gap analysis is completed</td>
<td>The analysis of the gap between the current and the desired situation is done.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.1.3.1.</td>
<td>Research and documentation of “State of the Art” processes</td>
<td>Research completed</td>
<td>Doing a well conducted research about the state of art, solutions and best practices related to the ERP-system implementation as well as the documentation of the developed ideas.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.1.3.2.</td>
<td>Flow charts of the desired processes</td>
<td>Flow charts developed</td>
<td>Developing the flow charts of the desired processes, reviewing and documenting them.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.2.1.</td>
<td>Review the flow charts of the desired processes</td>
<td>Review completed</td>
<td>The flow charts created are reviewed and the necessary changes are identified.</td>
<td>Internal</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>1.1.2.2.</td>
<td>Creation of organizational change management roadmap</td>
<td>Change management roadmap completed</td>
<td>Creating a change management roadmap in order to have a good understanding of the structure of the restructuring business processes.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.2.3.</td>
<td>Change of existing processes</td>
<td>Existing processes changed</td>
<td>Change the current processes after identifying the ones needed to be changed and the procedures to change them and also documenting the change process.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.1.2.4.</td>
<td>Implementation of new processes</td>
<td>New processes are implemented</td>
<td>The new processes are implemented in order to adapt efficiently to the ERP-system implementation.</td>
<td>External</td>
</tr>
<tr>
<td>1.1.3.1.</td>
<td>Documentation of business process procedures</td>
<td>New organization processes and structure documented</td>
<td>Documenting the new structure and processes after the restructuring in order to have a reference.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.2.1.</td>
<td>Definition of general company's frame for ERP-system</td>
<td>General frame described</td>
<td>The frame for the ERP-system is defined to know and be aware of the ERP-system's criteria.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.2.2.</td>
<td>Definition of ERP-system needs and requirements</td>
<td>Document and define the ERP needs and requirements</td>
<td>The needs and the requirements of the company for the ERP-system are defined and documented after the discussions with the CEO and employees, in order for the software to suit the company in the best way possible.</td>
<td>Internal</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
</tr>
<tr>
<td>----------------</td>
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<td>------</td>
</tr>
<tr>
<td>1.2.3.1.</td>
<td>Request for offers</td>
<td>Offers request completed</td>
<td>After the analysis of the market and the potential suppliers, the offer request is built and sent to suppliers.</td>
<td>External</td>
</tr>
<tr>
<td>1.2.3.2.</td>
<td>Analysis of the offers (cost focused)</td>
<td>Cost comparison completed</td>
<td>A cost comparison between the counter-offers received is done including all the data and information to select the lowest bidder.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.2.3.3.</td>
<td>Multi-criteria analysis</td>
<td>Multi-criteria analysis completed</td>
<td>Besides the cost analysis, a multi-criterion analysis is conducted by analysing all relevant criteria to define the best offers according to this criterion.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.2.4.</td>
<td>Final decision making</td>
<td>Final ERP selected</td>
<td>By performing an analysis of the cost and the multi-criteria and reviewing this analysis, the final ERP offer is selected.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.3.1.1.</td>
<td>Implementation of the ticket-system</td>
<td>Ticketing system implemented</td>
<td>After defining the requirements and selecting an appropriate and suitable ticket-system, it is implemented and ready to be integrated into the ERP-system.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.1.2.</td>
<td>Implementation of online-shop</td>
<td>On-line shop implemented</td>
<td>After defining the requirements and selecting an appropriate and suitable online-shop, it is implemented and ready to be integrated into the ERP-system.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.2.1.</td>
<td>Configuration and development</td>
<td>Configuration and development completed</td>
<td>The customization and configuration of the final ERP-system is performed in order to be ready for installation.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
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<tr>
<td>----------------</td>
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<td>---------</td>
</tr>
<tr>
<td>1.3.2.2.</td>
<td>Installation of the software</td>
<td>The ERP software is implemented</td>
<td>After the proceeding with the technical procedures, the ERP-system is installed perfectly.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.2.3.1.</td>
<td>Assessment for the data migration</td>
<td>Assessment for data migration completed</td>
<td>Identifying the data migration plan, the data fields and structure of the database, how the data is currently structured and also the hardware on which the ERP will be installed.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.2.3.2.</td>
<td>Collection of the data</td>
<td>Collection of data completed</td>
<td>All existing data from all areas and departments is collected in a database and migrated into the new system.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.2.3.3.</td>
<td>Server go-live</td>
<td>Server go-live completed</td>
<td>After the configuration of the server, the server go-live is performed to be ready for the use.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.3.2.4.</td>
<td>System and performance testing</td>
<td>Testing of the system completed</td>
<td>All three types of testing are performed without any type of malfunction or error to ensure the perfect implementation of the ERP-system.</td>
<td>External</td>
</tr>
<tr>
<td>1.3.2.5.</td>
<td>Go-live</td>
<td>Go-live accomplished</td>
<td>After reviewing the tests, the ERP-system is taken from the production environment to the ready to use.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.4.1</td>
<td>End-user training plan</td>
<td>End-user training plan created</td>
<td>The training plan is ready in order to execute all the training activities demanded.</td>
<td>External</td>
</tr>
<tr>
<td>1.4.2</td>
<td>End-user training execution</td>
<td>End-user training conducted</td>
<td>The training session for the CEO, managers and employees is executed.</td>
<td>Internal/External</td>
</tr>
<tr>
<td>1.4.3</td>
<td>End-user support</td>
<td>End-user support provided</td>
<td>The support for the end-user is established.</td>
<td>Internal</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
</tr>
<tr>
<td>----------------</td>
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<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>1.5.1.1</td>
<td>Kick-off Workshop</td>
<td>Kick-off Workshop completed</td>
<td>The initiation workshop for the project is completed.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.1.2</td>
<td>Business Case</td>
<td>Business case developed</td>
<td>The business case is developed and completed in order to be accepted by the CEO.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.1.3</td>
<td>Project Charter</td>
<td>Project charter developed</td>
<td>The project charter is completed in order to be accepted by the CEO.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.1</td>
<td>Scope Management Plan</td>
<td>Scope management plan</td>
<td>The scope management plan is developed in detail in order to have a clear understanding of the project’s deliverables and tasks.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.2</td>
<td>Schedule Management Plan</td>
<td>Schedule management plan</td>
<td>The schedule management plan is developed in detail in order to have a sequence of all the activities and the overall program.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.3</td>
<td>Cost Management Plan</td>
<td>Cost management plan</td>
<td>The cost management plan is developed in detail in order to have an accurate analysis and planning of the project’s cost.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.4</td>
<td>Estimate costs</td>
<td>Cost management plan</td>
<td>The cost management plan is developed in detail in order to have an accurate analysis of the project’s cost.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.5</td>
<td>Risk Management Plan</td>
<td>Risk management plan</td>
<td>The risk management plan is developed in quantities and qualities methods to identify the possible risks and to establish corresponding prevention plans.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.6</td>
<td>Communication Management plan</td>
<td>Communication management plan</td>
<td>The communication management plan is developed to ensure that all the project communication activities are established.</td>
<td>Internal</td>
</tr>
<tr>
<td>Work-package ID</td>
<td>Work-package</td>
<td>Milestones</td>
<td>Description</td>
<td>Type</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1.5.2.7</td>
<td>Stakeholder Engagement plan</td>
<td>Stakeholder management plan developed</td>
<td>Stakeholder engagement plan developed to have a base of the possible interaction with the overall project by the stakeholders.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.8</td>
<td>Change Management Plan</td>
<td>Change engagement plan developed</td>
<td>Change management plan developed to control possible changes through a clear procedure and authorize possible changes.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.2.9</td>
<td>Resource Management Plan</td>
<td>Resource management plan developed</td>
<td>Management plan organized to define, allocate, monitored all the resource involved in the project.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.3.1</td>
<td>Project work management</td>
<td>Project work management completed</td>
<td>The Project work in this phase is completed following the structure of development and management.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.3.2</td>
<td>Quality Management</td>
<td>Quality management completed</td>
<td>The quality management is completed according to the planning phase.</td>
<td>External/I</td>
</tr>
<tr>
<td>1.5.3.3</td>
<td>Team Development and Management</td>
<td>Team development and management completed</td>
<td>The project manager has developed and managed all project team members.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.4.1</td>
<td>Change requests</td>
<td>Change requests completed</td>
<td>The occurring change requests are collected and corrective action or preventive actions are taken in order to have the least possible impact.</td>
<td>Internal</td>
</tr>
<tr>
<td>1.5.4.2</td>
<td>Change Log</td>
<td>Change log/document exists</td>
<td>The change log is filled up to communicate the changes occurred.</td>
<td>Internal</td>
</tr>
</tbody>
</table>
### 4. List of activities

Each work package defined in the WBS contains several activities needed to be performed in order to complete and achieve that work package. Having a good and clear understanding of each activity of every work package is crucial to the planning, execution and controlling of the project. Therefore, a description of each activity of the different work packages is detailed and documented using the WBS Dictionary where all the activities of the project are already listed. In the table below, a description is done for the activities corresponding to each work package of the project.
<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1.1</td>
<td>Interviews</td>
<td>1.1.1.1.1.1</td>
<td>Prepare interview questions</td>
<td>Preparing the right questions which will help to understand the current situation of the company which will lead to a proper and complete analysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.1.2.</td>
<td>Schedule interviews</td>
<td>Scheduling the interviews without affecting the current work of the company's members and employees.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.1.3.</td>
<td>Conduct interviews</td>
<td>Proceeding with the interviews to collect and document the information gathered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.1.4.</td>
<td>Analyze interviews answers</td>
<td>Analyzing the answers and information gathered to fully understand the situation and state in the company.</td>
</tr>
<tr>
<td>1.1.1.2</td>
<td>Surveys</td>
<td>1.1.1.2.1.</td>
<td>Prepare survey questions and form</td>
<td>Prepare the surveys with all the questions to have all data and information needed, helping documenting the current situation of the company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.2.</td>
<td>Release surveys with a deadline to employees</td>
<td>Provide the survey to the employees and set a deadline to collect them.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.3.</td>
<td>Collect surveys</td>
<td>Collect surveys from the employees after the deadline and gathering and documenting the information and data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.4.</td>
<td>Analyze survey's answers</td>
<td>Analyze the data and information gathered from the survey to document and analyze the current situation and state in the company.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
<td>Activity ID</td>
<td>Activity</td>
<td>Description of the work</td>
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</tr>
<tr>
<td>1.1.1.1.3</td>
<td>Flow chart of current processes</td>
<td>1.1.1.1.3.1.</td>
<td>Create flow chart draft of the current processes</td>
<td>Create a first version of the flow chart for the current processes from the analysis of the conducted interviews and surveys.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.1.3.2.</td>
<td>Review the draft of the flow chart</td>
<td>Evaluate the first version in collaboration of the members of the company to check if some modifications are needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.1.3.3.</td>
<td>Finalize the flow chart</td>
<td>The flow chart is finalized and approved in order to be used as a reference for the next activities.</td>
</tr>
<tr>
<td>1.1.1.2.1</td>
<td>Definition of desired state</td>
<td>1.1.1.2.1.1.</td>
<td>Brainstorming of desired state</td>
<td>Searching and discussing potential structures and states to suit the company and the ERP-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.1.2.</td>
<td>Structure ideas of the desired state</td>
<td>Structuring ideas of desired state that are likely to suit the company the best.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.1.3.</td>
<td>Document desired state</td>
<td>Choosing and approving the perfect state for the company.</td>
</tr>
<tr>
<td>1.1.1.2.2</td>
<td>Gap analysis</td>
<td>1.1.1.2.2.1.</td>
<td>Compare current with desired state</td>
<td>Make a comparison between the current state documented from past activities with the desired state defined.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.2.2.</td>
<td>Analyze gap/differences</td>
<td>Analyze the gap and the differences to evaluate if the desired state brings potential improvement to the company or not.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.2.2.3.</td>
<td>Derive the necessary changes</td>
<td>Define the changes needed to be done to achieve improvement.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
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<tr>
<td>1.1.1.3.1</td>
<td>Research and documentation of “State of the Art” processes</td>
<td>1.1.1.3.1.1</td>
<td>Do the research</td>
<td>Perform a research about &quot;state of the art&quot; processes, best practices and benchmarking for ERP-systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.3.1.2</td>
<td>Collect relevant ideas and best practices</td>
<td>Collect the ideas and best practices relevant to the company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.3.1.3</td>
<td>Document applicable processes for the company</td>
<td>Document the &quot;state of the art&quot; processes applicable to Sysperto GmbH.</td>
</tr>
<tr>
<td>1.1.1.3.2</td>
<td>Flow charts of the desired processes</td>
<td>1.1.1.3.2.1</td>
<td>Create flows chart draft of the desired processes</td>
<td>Create a first version of the flow chart for the desired processes from the anterior activities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.3.2.2</td>
<td>Review draft of flow charts</td>
<td>Evaluate the first version in collaboration of the members of the company to check if some modifications are needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1.3.2.3</td>
<td>Finalize flow charts</td>
<td>Finalizing and approving the flow charts in order to be used as a reference for the next activities.</td>
</tr>
<tr>
<td>1.1.2.1.</td>
<td>Review of flow charts of desired processes</td>
<td>1.1.2.1.1</td>
<td>Review flowcharts</td>
<td>The flow charts are reviewed in order to analyze and understand how the restructuring of the business processes has to be performed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.2.1.2</td>
<td>Derive and collect actions and changes</td>
<td>Define the changes needed to proceed with the restructured business processes.</td>
</tr>
<tr>
<td>1.1.2.2</td>
<td>Creation of organizational change</td>
<td>1.1.2.2.1</td>
<td>List necessary changes</td>
<td>List all the changes needed to be done to create an organizational change management roadmap.</td>
</tr>
<tr>
<td>Work-Package ID</td>
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<tr>
<td>1.1.2.2.2.</td>
<td>management roadmap</td>
<td>1.1.2.2.2.</td>
<td>Describe changes</td>
<td>Describe all the changes needed to have a clear understanding on how they should be handled.</td>
</tr>
<tr>
<td>1.1.2.2.3.</td>
<td>schedule/plan all changes</td>
<td>1.1.2.2.3.</td>
<td>Scheduling the changes for restructuring the processes.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.2.4.</td>
<td>create the roadmap</td>
<td>1.1.2.2.4.</td>
<td>Create a roadmap to have a clear way for restructuring the business processes.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.3.</td>
<td>change of existing processes</td>
<td>1.1.2.3.1.</td>
<td>List the processes needing to be changed</td>
<td>Define the processes affected by the change of the restructure.</td>
</tr>
<tr>
<td>1.1.2.3.2.</td>
<td>schedule the changing of the processes</td>
<td>1.1.2.3.2.</td>
<td>Schedule the changing of the processes to bring improvement.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.3.3.</td>
<td>list the procedures of changing the processes</td>
<td>1.1.2.3.3.</td>
<td>Defining the procedures to perform the change of the current processes with efficiency.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.3.4.</td>
<td>perform process changes</td>
<td>1.1.2.3.4.</td>
<td>Proceed with the changing following the roadmap achieved in the anterior stages.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.3.5.</td>
<td>document the process changes</td>
<td>1.1.2.3.5.</td>
<td>Documenting the changing of the processes in order to evaluate the benefits brought by the ERP-system.</td>
<td></td>
</tr>
<tr>
<td>1.1.2.4.</td>
<td>implementation of the new processes</td>
<td>1.1.2.4.1.</td>
<td>List all the processes that need to be implemented</td>
<td>Define the processes that meant to be implemented in the new structure to plan their integration properly.</td>
</tr>
<tr>
<td>1.1.2.4.2.</td>
<td>schedule the implementation of the new processes</td>
<td>1.1.2.4.2.</td>
<td>Schedule the integration of the new processes with the minimum impact on the ongoing work.</td>
<td></td>
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<tr>
<td>Work-Package ID</td>
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<td>1.1.2.4.3.</td>
<td>List the procedure of implementing the new processes</td>
<td>Define how the new processes will be implemented to have a perfect efficiency, sustainability and a high-quality structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.2.4.4.</td>
<td>Perform the implementation</td>
<td>Implement the new processes carefully following the right and defined procedures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.2.4.5.</td>
<td>Document the processes implementation</td>
<td>Report the implementation of the new processes to achieve the benefits for the ERP-system.</td>
</tr>
<tr>
<td>1.1.3.1.</td>
<td>Documentation of business processes</td>
<td>1.1.3.1.1.</td>
<td>Review the documented process change</td>
<td>Checking the documentation of the process changes in order to document the whole process restructuring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.3.1.2.</td>
<td>Review the documented process implementation</td>
<td>Checking the documentation of the processes implementation in order to document the whole process restructuring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.3.1.3.</td>
<td>Define and document the new business processes procedures</td>
<td>Document the restructuring of the business procedure implementation to have an accurate description of the new business processes and structure.</td>
</tr>
<tr>
<td>1.2.1.</td>
<td>Definition of general company's frame for the ERP-system to be implemented</td>
<td>1.2.1.1.</td>
<td>Define general settings</td>
<td>The general settings suiting the company have to be defined and identified in order to be configured in the ERP-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.1.2.</td>
<td>Define master data</td>
<td>Define the areas of data with the most valuable and sensible data which have to be given a high importance.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
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<tr>
<td>1.2.2.1.</td>
<td>Definition of the ERP-system needs and requirements</td>
<td>1.2.2.1.</td>
<td>Meeting with CEO to request his needs and requirements for the ERP-system</td>
<td>Having a meeting with the CEO in order to know his expectations, requirements and needs.</td>
</tr>
<tr>
<td>1.2.2.2.</td>
<td>Definition of the ERP-system needs and requirements</td>
<td>1.2.2.2.</td>
<td>Meeting with the employees to request to collect their needs and requirements for the ERP-system</td>
<td>Holding a discussing with the employees in order to know their requirements and needs for the software.</td>
</tr>
<tr>
<td>1.2.2.3.</td>
<td>Definition of the ERP-system needs and requirements</td>
<td>1.2.2.3.</td>
<td>Analyzing the collected needs and requirements</td>
<td>All the needs and requirements are collected and analyzed to illustrate the basis in which the software has to be built.</td>
</tr>
<tr>
<td>1.2.2.4.</td>
<td>Definition of the ERP-system needs and requirements</td>
<td>1.2.2.4.</td>
<td>Structure and document the needs and requirements</td>
<td>All needs and requirements collected are structured, documented and approved for the further developing of the software.</td>
</tr>
<tr>
<td>1.2.3.1.</td>
<td>Request for offers</td>
<td>1.2.3.1.1.</td>
<td>Performing a market analysis of potential suppliers</td>
<td>Analyze the market to know which are the potential suppliers and to have a good overview and more information on the offers.</td>
</tr>
<tr>
<td>1.2.3.1.2.</td>
<td>Request for offers</td>
<td>1.2.3.1.2.</td>
<td>Select potential suppliers</td>
<td>The selection of potential suppliers is done after the analysis of the market.</td>
</tr>
<tr>
<td>1.2.3.1.3.</td>
<td>Request for offers</td>
<td>1.2.3.1.3.</td>
<td>Create a request by describing the content of the desired offer</td>
<td>A request is created with all the description and specification of the product desired.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Activity ID</td>
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<td>Description of the work</td>
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<td></td>
<td>1.2.3.1.4.</td>
<td>Send the offer request to the suppliers</td>
<td>After the creation of the request offer, it is sent to the selected suppliers in order to have a confirmation or a counter-proposal.</td>
<td></td>
</tr>
<tr>
<td>1.2.3.2.</td>
<td>Cost analysis of offers</td>
<td>1.2.3.2.1. Collect all offers</td>
<td>The offers sent by the suppliers are collected to be analyzed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3.2.2. Structure all data in a cost comparison table</td>
<td>Classify the information contained in the offers following a cost comparison.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3.2.3. Analyze the cost comparison</td>
<td>Compare the costs given by each supplier to choose the best ones.</td>
<td></td>
</tr>
<tr>
<td>1.2.3.3.</td>
<td>Multi-criteria analysis of offers</td>
<td>1.2.3.3.1. Collect offers</td>
<td>The offers sent by the suppliers are collected to be analyzed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3.3.2. Define relevant criteria</td>
<td>List the criteria needed to be checked (besides the cost) in the offers to ensure the good ERP-system implementation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3.3.3. Structure data from offers according to criteria</td>
<td>Classify the information contained in the offers following the defined criteria in a comparable way.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3.3.4. Perform multi-criteria analysis</td>
<td>A multi-criteria analysis is made for the relevant criteria in each offer to choose the best one.</td>
<td></td>
</tr>
<tr>
<td>1.2.4.</td>
<td>Final decision making</td>
<td>1.2.4.1. Review all performed analysis</td>
<td>A detailed review of the cost and multi-criteria analysis is conducted.</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>1.2.4.2. Make the final decision</td>
<td>A supplier is finally chosen after discussing and comparing the anterior analysis conducted.</td>
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</tr>
<tr>
<td>Work-Package ID</td>
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</tr>
<tr>
<td>1.3.1.1.</td>
<td>Implementation of ticket-system</td>
<td>1.3.1.1.1.</td>
<td>Define ticket-system requirements</td>
<td>Define the required features and options for the ticket-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.1.2.</td>
<td>Analyzing available ticket-systems</td>
<td>Analyze the ticket-systems existing in the market.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.1.3.</td>
<td>Select ticket-system</td>
<td>Choosing a ticket-system after doing an offer request and analyzing counter-offers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.1.4.</td>
<td>Implementing the ticket-system</td>
<td>Implementing the ticket-system and ensuring that it is ready to be attached and integrated into the ERP-system as an additional module.</td>
</tr>
<tr>
<td>1.3.1.2.</td>
<td>Implementation of the online-shop</td>
<td>1.3.1.2.1.</td>
<td>Define online-shop requirements</td>
<td>Define how the online-shop is desired by the company and the features needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.2.2.</td>
<td>Analyze available online-shop options</td>
<td>Analyze the online-shops existing in the market.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.2.3.</td>
<td>Select online-shop</td>
<td>Choosing an online-shop after doing an offer request and analyzing counter-offers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1.2.4.</td>
<td>Implementing the online-shop</td>
<td>Implementing the online-shop and ensuring that it is ready to be attached and integrated into the ERP-system as an additional module.</td>
</tr>
<tr>
<td>1.3.2.1.</td>
<td>Configuration and development</td>
<td>1.3.2.1.1.</td>
<td>Define the ERP-system architecture</td>
<td>Designing the architecture and the graphical design/user interface of the ERP-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.1.2.</td>
<td>Customizing the ERP-system to the company's processes and structure</td>
<td>Modification and customizing of the ERP-system to fit and suit perfectly the company's business processes and structure.</td>
</tr>
<tr>
<td>Work-Package ID</td>
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<td></td>
<td>1.3.2.1.3.</td>
<td>Prepare technical infrastructure specification</td>
<td>Configure the IT infrastructure and the terminals to receive the ERP-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.1.4.</td>
<td>Establish the user access and security</td>
<td>Develop the user's level access and security to secure the sensible data.</td>
</tr>
<tr>
<td></td>
<td>Installation of the ERP-system</td>
<td>1.3.2.2.1.</td>
<td>Prepare technical installation of the ERP-system</td>
<td>Prepare all the technical tools in order to implement the ERP-system into the company's system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.2.2.</td>
<td>Execute technical installation of the ERP-system</td>
<td>The actual installation has to be performed to implement the software.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.2.3.</td>
<td>Execute technical upgrade of the ERP-system</td>
<td>Proceed with the upgrades needed in order to perfectionate the ERP-system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.2.4.</td>
<td>Set-up role assignment and authorizations</td>
<td>Configure the role, areas of work and authorizations for all users.</td>
</tr>
<tr>
<td></td>
<td>Assessment for data migration</td>
<td>1.3.2.3.1.1.</td>
<td>Prepare data migration workshop</td>
<td>Scheduling the data migration workshop by identifying the different data fields and structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.1.2.</td>
<td>Conduct data migration workshop</td>
<td>Defining the data migration plan by describing the detailed database structure plan by IT developers (internal and external).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.1.3.</td>
<td>Conduct organizational assessment</td>
<td>Identifying the way, the data is currently structured and stored in each department in the company.</td>
</tr>
</tbody>
</table>
### Schedule Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.1.4.</td>
<td>Conduct infrastructure assessment</td>
<td>Identifying the infrastructure and hardware on which the ERP-system has to be installed (terminals, servers, computers, laptops, …)</td>
</tr>
<tr>
<td>1.3.2.3.2</td>
<td>Collection of data</td>
<td>1.3.2.3.2.1.</td>
<td>Collect data from all areas</td>
<td>Collect and assemble the existing data from all the departments of the company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.2.2.</td>
<td>Create a database structure</td>
<td>A database structure is created to have a clear structure for the migration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.2.3.</td>
<td>Migrate the data</td>
<td>Migrate all existing data to the ERP-system carefully.</td>
</tr>
<tr>
<td>1.3.2.3.3</td>
<td>Server go-live</td>
<td>1.3.2.3.3.1.</td>
<td>Prepare server go-live</td>
<td>Prepare and configure the server to host the ERP-system with all data migrated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.3.3.2.</td>
<td>Perform server go-live</td>
<td>Making the server available and ready to perform.</td>
</tr>
<tr>
<td>1.3.2.4.</td>
<td>System and performing testing</td>
<td>1.3.2.4.1.</td>
<td>Prepare system and performance test plan</td>
<td>Prepare the tests for the functionality, performance and integration tests to ensure the high quality of the implementation of the ERP-system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.4.2.</td>
<td>Define test users</td>
<td>Special employees from each department are nominated to be the test users in order to conduct the testing before the final implementation by using real-life scenarios (in the Q-system).</td>
</tr>
</tbody>
</table>
|                 |              | 1.3.2.4.3.| Execute testing activities | Execute the different types of testing in order to detect any malfunctions or errors and to
<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.3.2.5.1.</td>
<td>Review testing results</td>
<td>Checking the results of the testing activities to ensure that no problem will occur when the system goes live.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2.5.2.</td>
<td>Perform go-live</td>
<td>Moving the ERP-system to the production environment and making it available to use.</td>
</tr>
<tr>
<td>1.4.1</td>
<td>End-user training plan</td>
<td>1.4.1.1</td>
<td>Conduct learning needs analysis</td>
<td>Conduct an analysis which allows to understand the needs for the learning session.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.1.2</td>
<td>Prepare end-user materials and documentation</td>
<td>Prepare all the material for the training.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.1.3</td>
<td>Set up training environment</td>
<td>Set the room up for the learning session and afterwards the test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.1.4</td>
<td>Plan the end-user training schedule and sequence</td>
<td>Plan the end-user training according to the employee's timetable and urgent appointment.</td>
</tr>
<tr>
<td>1.4.2</td>
<td>End-user training execution</td>
<td>1.4.2.1</td>
<td>Execute training for CEO and manager</td>
<td>The CEO and the executive managers receive a customized end-user training.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.2.2</td>
<td>Execute training for employees</td>
<td>The employees from Sysperto GmbH are trained according to the plan and their needs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.2.3</td>
<td>Review training questions</td>
<td>The questions of the test will be reviewed to understand possible lacks in the understanding from the employees of Sysperto GmbH.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
<td>Activity ID</td>
<td>Activity</td>
<td>Description of the work</td>
</tr>
<tr>
<td>-----------------</td>
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<td>----------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>1.4.3</td>
<td>End-user support</td>
<td>1.4.3.1</td>
<td>Review questions from training</td>
<td>Review questions in order to establish an end-user support for the final users.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4.3.2</td>
<td>Establish end-user support</td>
<td>End-user support established to help the final users</td>
</tr>
<tr>
<td>1.5.1.1</td>
<td>Kick-off Workshop</td>
<td>1.5.1.1.1</td>
<td>Prepare kick-off workshop</td>
<td>Preparation of the frame, themes and possible questions to have a clear understanding of the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.1.1.2</td>
<td>Conduct kick-off workshop</td>
<td>Conduct the kick-off workshop in order to gather all information from the CEO and executive managers of Sysperto GmbH.</td>
</tr>
<tr>
<td>1.5.1.2</td>
<td>Business Case</td>
<td>1.5.1.2.1</td>
<td>Collect information for Business Case</td>
<td>Collection of all information useful for the analysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.1.2.2</td>
<td>Develop Business Case</td>
<td>Analyze all information collected and develop the Business case for the implementation of an ERP-System.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.1.2.3</td>
<td>Review Business Case</td>
<td>The business case in this phase is enough detailed and accurate for a last review.</td>
</tr>
<tr>
<td>1.5.1.3</td>
<td>Project Charter</td>
<td>1.5.1.3.1</td>
<td>Review Business case for project charter</td>
<td>Activity dedicated to review the business case to gather the main idea for the project charter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.1.3.2</td>
<td>Develop Project Charter</td>
<td>Develop the project charter to have a clear document.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.1.3.3</td>
<td>Review Project Charter</td>
<td>Activity of reviewing the project charter with the business analyst to control any misunderstanding.</td>
</tr>
</tbody>
</table>
### Schedule Management Plan

**1.5.2.1 Scope Management Plan**

<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.1.1</td>
<td>Plan scope management</td>
<td>1.5.2.1.1</td>
<td>Plan scope management</td>
<td>Plan developed with the whole project management team in order to align the requester and the requirements for the plan.</td>
</tr>
<tr>
<td>1.5.2.1.2</td>
<td>Collect requirements</td>
<td>1.5.2.1.2</td>
<td>Collect requirements</td>
<td>The requirements will be gathered to have a clear understanding of the project requirements.</td>
</tr>
<tr>
<td>1.5.2.1.3</td>
<td>Define scope</td>
<td>1.5.2.1.3</td>
<td>Define scope</td>
<td>The project management team clearly defines the scope of the project.</td>
</tr>
<tr>
<td>1.5.2.1.4</td>
<td>Create WBS and WBS Dictionary</td>
<td>1.5.2.1.4</td>
<td>Create WBS and WBS Dictionary</td>
<td>The WBS and WBS Dictionary are developed to have a clear and well-defined structure of the project processes and phases.</td>
</tr>
</tbody>
</table>

**1.5.2.2 Schedule Management Plan**

<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.2.2.1</td>
<td>Plan schedule management</td>
<td>1.5.2.2.1</td>
<td>Plan schedule management</td>
<td>In this activity the project management team establishes the processes and procedures for the project schedule.</td>
</tr>
<tr>
<td>1.5.2.2.2</td>
<td>Define activities</td>
<td>1.5.2.2.2</td>
<td>Define activities</td>
<td>During this activity the activities of the project will be defined that have to be performed in order to achieve the project objectives.</td>
</tr>
<tr>
<td>1.5.2.2.3</td>
<td>Sequence activities</td>
<td>1.5.2.2.3</td>
<td>Sequence activities</td>
<td>The activities are polled and connected each other among</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
<td>Activity ID</td>
<td>Activity</td>
<td>Description of the work</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.2.4</td>
<td>Estimate activities durations</td>
<td>The ERP-system implementation will be estimated in terms of time duration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.2.5</td>
<td>Develop schedule</td>
<td>The final version of the plan schedule management uses MS Project to simplify and illustrate the schedule management.</td>
</tr>
<tr>
<td>1.5.2.3</td>
<td>Cost Management Plan</td>
<td>1.5.2.3.1</td>
<td>Plan cost management</td>
<td>This activity explains how the ERP-system implementation costs will be estimated, budgeted, monitored and controlled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.3.2</td>
<td>Estimate costs</td>
<td>This activity is to estimate the costs of resources needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.3.3</td>
<td>Determine budget</td>
<td>The costs are defined as detailed as possible to have an authorized cost baseline.</td>
</tr>
<tr>
<td>1.5.2.4</td>
<td>Estimate costs</td>
<td>1.5.2.4.1</td>
<td>Plan quality management</td>
<td>This activity helps to create a quality policy regarding the phase of planning, managing, and controlling project quality in order to deliver the Sysperto GmbH requirements.</td>
</tr>
<tr>
<td>1.5.2.5</td>
<td>Risk Management Plan</td>
<td>1.5.2.5.1</td>
<td>Plan risk management</td>
<td>The activity creates the lines to follow for the risk management activities of the ERP-system implementation.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work-Package</td>
<td>Activity ID</td>
<td>Activity</td>
<td>Description of the work</td>
</tr>
<tr>
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<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.5.2</td>
<td>Identify risks</td>
<td>The risks will be identified initially through a brainstorming, fishbone diagram and afterwards with an expert judgment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.5.3</td>
<td>Perform risk analysis</td>
<td>The risks identified will be scored according to their impact on the project and the probability of occurrence.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.5.4</td>
<td>Plan risk responses</td>
<td>The activity aids to find the best solution to react when a risk occurs. The plan develops possible options for a quick response.</td>
</tr>
<tr>
<td>1.5.2.6</td>
<td>Communication Management plan</td>
<td>1.5.2.6.1</td>
<td>Plan communication management</td>
<td>This activity involves the project management team to create the communication plan of the activities.</td>
</tr>
<tr>
<td>1.5.2.7</td>
<td>Stakeholder Management plan</td>
<td>1.5.2.7.1</td>
<td>Plan stakeholder engagement</td>
<td>Activity to develop the process of how the stakeholders will be involved in the ERP-system implementation.</td>
</tr>
<tr>
<td>1.5.2.8</td>
<td>Change Management Plan</td>
<td>1.5.2.8.1</td>
<td>Plan change management</td>
<td>Activity to develop the procedure of change requests within the project.</td>
</tr>
<tr>
<td>1.5.2.9</td>
<td>Resource Management Plan</td>
<td>1.5.2.9.1</td>
<td>Plan resource management</td>
<td>Activity dedicated to understand the resources involved, to acquire and to manage during the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.2.9.2</td>
<td>Estimate activity resources</td>
<td>Estimation of the team resources involved and the material/equipment needed.</td>
</tr>
<tr>
<td>Work-Package ID</td>
<td>Work Package</td>
<td>Activity ID</td>
<td>Activity</td>
<td>Description of the work</td>
</tr>
<tr>
<td>----------------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>1.5.3.1</td>
<td>Project work management</td>
<td>1.5.3.1.1</td>
<td>Management and direct the project work</td>
<td>The project team works as supervisors of the whole project work in order to handle all the phases.</td>
</tr>
<tr>
<td>1.5.3.2</td>
<td>Quality Management</td>
<td>1.5.3.2.1</td>
<td>Management quality of the project (work)</td>
<td>The activity in which the project management team works to execute the quality management plan applying the quality standards defined.</td>
</tr>
<tr>
<td>1.5.3.3</td>
<td>Team Development and Management</td>
<td>1.5.3.3.1</td>
<td>Develop the project team</td>
<td>Develop the project management team involved in the whole project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.3.3.2</td>
<td>Manage the project team</td>
<td>Phase of managing all project team members and stakeholders.</td>
</tr>
<tr>
<td>1.5.4.1</td>
<td>Change requests</td>
<td>1.5.4.1.1</td>
<td>Collect the change requests</td>
<td>Collect the change requests delivered to follow the defined procedure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.4.1.2</td>
<td>Manage the change requests</td>
<td>The change requests will be evaluated.</td>
</tr>
<tr>
<td>1.5.4.2</td>
<td>Change Log</td>
<td>1.5.4.2.1</td>
<td>List occurring changes</td>
<td>All the occurring changes are listed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.4.2.2</td>
<td>Track progress of each change</td>
<td>Keep track of all the changes which occur during the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.4.2.3</td>
<td>Analyze impact of change on project (in regard to time, cost, risk, etc.)</td>
<td>The changes are analyzed in terms of their influence on time, cost, risk and quality.</td>
</tr>
<tr>
<td>1.5.4.3</td>
<td>Risk Monitoring</td>
<td>1.5.4.3.1</td>
<td>Monitor identified risks</td>
<td>The activity is dedicated to monitor the identified risks for the ERP-system implementation.</td>
</tr>
</tbody>
</table>
## 1.5.4.3 Identification of Risks

<table>
<thead>
<tr>
<th>Work-Package ID</th>
<th>Work-Package</th>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.4.3.2</td>
<td></td>
<td>1.5.4.3.2</td>
<td>Identify potential new occurring risks</td>
<td>Beside the risks identified, potential new risks will be evaluated for the upcoming phases of the project.</td>
</tr>
<tr>
<td>1.5.4.3.3</td>
<td></td>
<td>1.5.4.3.3</td>
<td>Analyze the impact of risks</td>
<td>The risks identified are analyzed to estimate the probability, impact and the possible solution.</td>
</tr>
</tbody>
</table>

### 1.5.4.4 Cost Controlling

<table>
<thead>
<tr>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.4.2.1</td>
<td>Review planned costs</td>
<td>All costs are reviewed according to the plan.</td>
</tr>
<tr>
<td>1.5.4.2.2</td>
<td>Collect cost data</td>
<td>All the actual costs during the project phases from the project are collected.</td>
</tr>
<tr>
<td>1.5.4.2.3</td>
<td>Analyze costs (Earned value, Variance and Trend analysis)</td>
<td>The costs are analyzed in order to have a clear comparison between the cost baseline and the actual costs and compare it with the possible saving originated from the ERP-system implementation.</td>
</tr>
</tbody>
</table>

### 1.5.5.1 Lessons Learned

<table>
<thead>
<tr>
<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.5.1.1</td>
<td>Review the project</td>
<td>All information from the project are collected in order to create a register of lessons learned.</td>
</tr>
<tr>
<td>1.5.5.1.2</td>
<td>Collect and register lessons learned</td>
<td>The lessons learned are registered following a clear table which divides the lessons into different types.</td>
</tr>
<tr>
<td>1.5.5.1.3</td>
<td>Analyze and review lessons learned</td>
<td>Analyze the lessons learned to understand if during the project improvement they already took place and which are the main lessons learned for the next projects.</td>
</tr>
</tbody>
</table>
### 1.5.5.2 Project Closing

<table>
<thead>
<tr>
<th>Work-Package ID</th>
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<th>Activity ID</th>
<th>Activity</th>
<th>Description of the work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.5.2</td>
<td>Project Closing</td>
<td>1.5.5.2.1</td>
<td>Review the project</td>
<td>The project is reviewed to determine how the overall performance was compared to the expectation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.5.2.2</td>
<td>Derive potential necessary new projects</td>
<td>The activity is due to understand possible new projects after the completion of the ERP-system implementation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5.5.2.3</td>
<td>Close the project</td>
<td>This activity finalizes all the activities, closing all the documents and archiving them. The planned work is completed. The CEO gives the approval for the successful completion of the project.</td>
</tr>
</tbody>
</table>

*Table 4 - List of activities*

### 5. Timeline/Sequence of Activities – Project Schedule

The project schedule illustrates the linking and sequencing of the project activities by identifying the planned dates (start and finish dates), durations, milestones and the corresponding resources (Project Management Institute, 2017, S. 217). The required information for the project schedule is collected and combined “from the Activity List, Network Diagram, Activity Resource Requirements, Activity Duration Estimates, and any other relevant information to determine the start and finish dates for project activities” (Snyder, 2013, S. 65). For presenting a project schedule model either a tabular form or a graphically form such as bar charts, milestone charts or project schedule network diagrams can be used (Project Management Institute, 2017, S. 217/218).

For the present project the Project Schedule refers to the information of the defined activities from the WBS Dictionary and the further description thereof in the milestones as well as the activity list. For developing and establishing the project schedule, the project team decided to use MS Project. With this, the project schedule can be shown in the bar chart as well as in the network diagram format. The bar chart, also called Gantt chart, includes the schedule information...
through the activities on the vertical axis, the dates on the horizontal axis and the durations of the activities are shown as horizontal bars (Project Management Institute, 2017, S. 217). The network diagrams illustrate “the activity-on-node diagram format” (Project Management Institute, 2017, S. 218). They are also known as pure logic diagrams in the case that the activities and relationships are not referred to a time scale (Project Management Institute, 2017, S. 218).

The schedule in MS Project follows the structure of the WBS of the project and includes all activities that were defined in the WBS Dictionary and with this is presented in the known WBS-structured format.

For creating the project schedule in MS Project, the following high-level steps were completed:

1. Defining the project calendar
2. Listing all work packages and corresponding activities by structuring it according to the WBS in summary tasks and activities/tasks
3. Assigning activity durations
4. Assigning predecessors and relationships
5. Creating the resource table
6. Allocating the resources to the activities

In the following, first some general settings and special scheduling ways applied in the schedule are described and second, the project schedule is shown through the Gantt chart as well as the network diagram.

5.1. Project Calendar

The general project calendar defines an 8-hour-day and a 40-hour-week for the project team employees. In addition, the exceptions for Christmas vacations are also defined through the “change working time” option in MS Project.
5.2. Sequencing and Predecessors Definition

For the sequencing the precedence diagramming method (PDM) is applied for the project, mainly using the type of “Finish-to-Start” (FS) but also the type “Start-to-start” (SS) (Project Management Institute, 2017, p. 189). This is based on the nature of the project that requires for most of the work packages that the previous work packages is completed as this provides a specific or required base or input for the next work package.

In addition, also a “shortcut” between activities is used in order to guarantee that the milestones from the project executing as well as monitoring and controlling phase also end when the last activity of the project (“End-user support provided”) ends. As all tasks are automatically scheduled, this shortcut helps that if some of the sequences or durations within the project are changed, the end dates for the named project phases also change automatically. This shortcut leads to the constraint type of “Finish No Earlier Than”. Another constraint type that is used for the scheduling is the constraint type “Finish No Later Than”. This constraint type is used for the milestones within the planning phase as each management plan has a specific deadline due to the given frame of the project planning within a master thesis.
5.3. Resource allocation

For the resource allocation, the following resource table was defined. On this basis the resources were assigned and allocated to each activity. The WBS Dictionary provided input information about the different resources that are required for the project.

*Figure 3 - Resource Sheet*
5.4. Project Schedule – Gantt Chart

In the following the Gantt chart, consisting of the task sheet and the graphical bars, is shown. For a more detailed view please refer to the MS Project file in the appendix.
## Schedule Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Task</th>
<th>Start</th>
<th>Finish</th>
<th>Duration</th>
<th>Predecessors</th>
<th>Resource Name</th>
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**Diagram:**
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- Project Manager 2
- Project Manager 3
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## Schedule Management Plan – Implementation ERP-system (Group 4)

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Schedule Management Plan – Implementation ERP-system (Group 4)
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# Schedule Management Plan – Implementation ERP-system (Group 4)

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### Schedule Management Plan – Implementation ERP-system (Group 4)

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Legend:
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- Project Manager 2
- IT-expert 1
- IT-expert 2
- IT-expert 3
### Schedule Management Plan – Implementation ERP-system (Group 4)

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### Schedule Management Plan – Implementation ERP-system (Group 4)

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#### Implementation

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<td>220</td>
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<td>Define ticketing-system requirements</td>
<td>40 hrs</td>
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#### Configuration and Development

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<th>Time</th>
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## Schedule Management Plan – Implementation ERP System (Group 4)

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<td>08/01/20</td>
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</tr>
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<td>05/01/20</td>
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Note: All tasks are carried out within the specified time frame, ensuring timely completion of the project.
## Schedule Management Plan – Implementation ERP-system (Group 4)

### Task Details

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<th>Resource</th>
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<th>Work (hrs)</th>
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<td>Go-Live accomplished</td>
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<td>End-user Training 1</td>
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<td>End-user training plant setup</td>
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<td>Prepare end-user training materials and</td>
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### Gantt Chart

- IT-expert 1
- IT-expert 2
- IT-expert 3
- User 1
- User 2
- User 3
### Schedule Management Plan – Implementation ERP-system (Group 4)

#### Figure 4 - Project Gantt Chart
5.5. Network Diagram

In the following an excerpt of the project's network diagram can be seen. For the full view of the network diagram please refer to the MS Project file in the appendix.

Figure 5 - Network Diagram Excerpt

6. Project Critical Path

The critical path illustrates the minimum project duration and is established by a forward and backward pass analysis (Project Management Institute, 2017, p. 210). Out of this analysis it provides the “sequence of activities that represents the longest path through a project, which determines the shortest possible project duration” (Project Management Institute, 2017, p. 210). The critical path for the present project is created through MS Project. In the following, an excerpt of the critical path can be seen. For the full view of the critical path please refer to the MS Project file in the appendix.
7. Control of Project Deadlines through Reports and Control Documents

7.1. Issue Report

The issue report helps to identify possible issues during process project execution. Moreover, the report has the function to keep track of the performance trend of the project linked with the issue. Starting from the left side, the report presents the WBS ID and its activity name in order to circumscribe the element issued. In order to understand the gravity of the issue, the percentage of completion of the activity interested will be reported. On the other side, “ASSIGNED TO” shows the name of the member of the project management team who will be assigned to the responsibility to take over the issue, therefore the person in charge will track the issue and likely set up a new date from the date before established. The issue report, nevertheless helps the project management team to have an archive along the project way.

<table>
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<th>ACTIVITY</th>
<th>DATE</th>
<th>% COMPLETION</th>
<th>ASSIGNED TO</th>
<th>ISSUE</th>
<th>COMMENT</th>
<th>NEW DATE</th>
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</table>

Table 5 - Issue report
7.2. Status Report

The status report will be useful to have a clear overview of the activities progress. Beside the WBS dictionary, which represents a detailed understanding of the project, the status report is considered an explicit tool to track each phase and its related activity. The left side of the table shows the general information to rough out the project: Phase, WBS ID and activity. The right side of the table presents the performance’s parameter of each activity. The records allow the project management team to have an overview of the total project.

<table>
<thead>
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<th>PHASE</th>
<th>WBS ID</th>
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<th>DATE</th>
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</table>

*Table 6 - Status report*

8. Project Schedule Baseline (based on project milestones)

The Project Schedule Baseline “is the approved version of a schedule model that can be changed only through formal change control procedures” (Project Management Institute, 2017, S. 217). This baseline is used as a basis to perform the comparison of the approved and planned dates with the actual dates and results. With this, it helps to analyse if variances and changes have happened (Project Management Institute, 2017, S. 217).
The Schedule Baseline for the underlying project at the current point in the planning phase can be seen out of MS Project as follows:

- Overall baseline start date: 21.11.2018
- Overall baseline end date: 14.05.2018

![Schedule Baseline](image)

**Figure 7 - Schedule Baseline**

This schedule baseline illustrates the approved schedule version at the current point in the planning phase. This baseline will be used for all occurring changes influencing the schedule as well as for the general comparison with the actual dates during the monitoring and controlling phase. Therefore, in the following two sub-chapters, first the change control procedure is described and afterwards the procedure for the comparison with the actual dates.

### 8.1. Definition of the Change Control Procedure

As described by the PMBOK, any changes in the approved schedule can only be performed “through formal change control procedures” (Project Management Institute, 2017, S. 217). Moreover, for the schedule baseline management, it is important to “define circumstances that would trigger preventive or corrective action and when the change control process would be enacted” (Snyder, 2013, S. 17). Therefore, the following developed flowchart diagram illustrates the different steps and sequence to be followed for the situation within the project that an occurring change influences the schedule, including the steps of a formal change control procedure.
## Change management process for changes of the project schedule

<table>
<thead>
<tr>
<th>CEO</th>
<th>Employee</th>
<th>Project Manager/PM Team</th>
<th>Solution Team</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identification of tendency, opportunity, improvement or problem (corrective and/or preventive actions)</td>
<td>Identify responsibilities for change request</td>
<td>Develop change request</td>
</tr>
<tr>
<td></td>
<td>Provide information about current situation</td>
<td>Analysis current information about change</td>
<td>Gather further information about change</td>
</tr>
<tr>
<td></td>
<td>Change request</td>
<td>Analysis and register change request</td>
<td>Change request</td>
</tr>
<tr>
<td></td>
<td>Change request</td>
<td>Send change request</td>
<td>Communicate rejection of change to stakeholders</td>
</tr>
<tr>
<td></td>
<td>Develop change order</td>
<td>Assign change responsibilities</td>
<td>Change order</td>
</tr>
<tr>
<td></td>
<td>Change register</td>
<td>Register change</td>
<td>Change, update and revise schedule according to the change impact</td>
</tr>
<tr>
<td></td>
<td>Project Management Plan</td>
<td>Schedule Baseline</td>
<td>Schedule Outline</td>
</tr>
<tr>
<td></td>
<td>Lessons Learned Register</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 8 - Change management process for changes of the project schedule**
8.2. Comparison between the Actual and Planned Schedule

In order to monitor and control the good progress of the project regarding the planned schedule, a continuous and rigorous follow-up is done, by holding weekly meetings to discuss the time baseline progress and to prevent any delays that lead to over-costs. The evaluation of the variance between the planned schedule and the actual one is necessary as it shows the compliance of the work with the schedule. MS Project, the tool used in this project to develop the schedule, is a tool enabling the good following up of the activities and the overall project in general. Using its features, each activity is described regarding the time needed and the progress of the work by percentages that is being updated continuously, as the software provides a comparison between actual and planned duration, to check the good going of the time baseline of the project.

9. Conclusions

To conclude, this present document illustrates the whole Project Schedule Management Plan at the current point in the planning phase, including all components such as the Schedule Management Plan itself, the milestones and activity lists as well as the project schedule, the critical path, the control reports/documents and the schedule baseline.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as a base. The program MS Project was used to create the Project Schedule. Moreover, the tools of expert judgment, data analysis, meetings and different estimating and scheduling techniques were used to develop a coherent schedule for the project of the ERP-system implementation.

The project team performed this second planning process for the knowledge area of Project Schedule Management in order to create the Project Schedule Management Plan, the project schedule as well as the Schedule Baseline. All generated documents and outputs from this planning process will illustrate the input for the next planning processes such as the Cost Management Plan.

Moreover, the Project Schedule Management Plan represents part of the overall Project Management Plan.
References


Project Cost Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

<table>
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<tr>
<td>V001</td>
</tr>
<tr>
<td>V002</td>
</tr>
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<td>V003</td>
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</table>
Abstract

The present paper illustrates the Project Cost Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Cost Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Cost Management Plan continues the project analysis, planning and development based on the previous analysis for the Project Charter, the Business Case, the Project Scope Management Plan and the Project Schedule Management Plan. Those documents illustrate the basis and main inputs for the Project Cost Management Plan. Moreover, this Project Cost Management Plan illustrates the third knowledge area (Project Cost Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Cost Management Plan first provides a theoretical introduction about the Project Cost Management Plan and the Cost Management Plan itself, continues with the key requirements related to costs, the estimation of the activity costs and the identification of the risk costs. Out of this, the project budget is developed through the use and application of MS Project and a bottom-up estimation table. Subsequently, the reports and documents for the control of project costs are defined and generated. With those points, the cost baseline for the project is described and developed at the current point in the planning phase. Each of the outlined parts include a description of the theoretical base as well as the application thereof to the named project.

Keywords: Project Cost Management Plan, Estimation of Activity Costs, Risk Costs, Project Budget, Cost Baseline, MS Project, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract .............................................................................................................................. II
List of Figures.................................................................................................................... IV
List of Tables..................................................................................................................... IV
1. Introduction, Scope and Purpose of the Project Cost Management Plan ............... 1
2. Cost Management Plan ............................................................................................ 1
   2.1. Level of Accuracy ............................................................................................. 1
   2.2. Units of Measure ............................................................................................... 1
   2.3. Control Thresholds ........................................................................................... 2
   2.4. Rules for Performance Measurement .............................................................. 2
   2.5. Cost Reporting Format .................................................................................... 2
   2.6. Estimating Cost ................................................................................................ 3
   2.7. Developing the Budget .................................................................................... 3
   2.8. Updating, Monitoring and Controlling ........................................................... 3
3. Key Requirements .................................................................................................... 4
4. Estimation of the Costs of the Activities ................................................................. 6
5. Identification of Risk Costs ..................................................................................... 14
6. Project Budget ......................................................................................................... 15
   6.1. Funding Requirements and Financing of the Project ....................................... 16
7. Control of Project Costs through Reports and Control Documents .................... 17
   7.1. Earned Value Analysis .................................................................................... 17
   7.2. Earned Value Status Report .......................................................................... 19
   7.3. Project Status Report ....................................................................................... 20
8. Project Cost Baseline ............................................................................................. 20
9. Conclusions ............................................................................................................ 21
References ...................................................................................................................... V
Cost Management Plan – Implementation ERP-system (Group 4)

List of Figures

Figure 1 - Contingency Reserve ................................................................. 15
Figure 2 - Project Budget Components ....................................................... 16
Figure 3 - Earned Value Status Report ....................................................... 19
Figure 4 - Project Status Report ................................................................. 20
Figure 5 - Cost Baseline .............................................................................. 21

List of Tables

Table 1 - Cost reporting format ................................................................. 2
Table 2 - Cost updating, monitoring and controlling ................................. 3
Table 3 - Key Requirements ...................................................................... 5
Table 4 - Estimation of activity costs ......................................................... 13
Table 5 - Performance Measure ................................................................. 17
1. Introduction, Scope and Purpose of the Project Cost Management Plan

The project cost management is crucial to the project’s success as it maintains financial control throughout the project. It is the area of knowledge regrouping all the planning, estimating, monitoring, managing and controlling of the project budget (Project Management Institute, 2017, p. 231). To manage well the cost of the project, the PMBOK Guide (6th Edition) advices to use the processes explained below (Project Management Institute, 2017, p. 231):

- Cost Management Plan: details how the cost management of the project will be performed, carried out, monitored and controlled.
- Estimation of the Cost: evaluate and determinate an estimation of the necessary resources for the activities of each work packages with assistance from the project team.
- Determination of the budget: the processes of aggregating the estimated cost of the different work packages to have an overall cost baseline.
- Control of the cost: monitoring, updating and controlling the cost status and manage change when it occurs.

2. Cost Management Plan

The cost management plan provides a detailed description on how the cost is estimated, managed and controlled throughout the project life (Project Management Institute, 2017, p. 235). This process is done at the early stages of the project in order to define the budget needed to complete all the work, while it is controlled continuously as the project progresses.

2.1. Level of Accuracy

To perform an accurate estimation, the project management team analyzes every activity to estimate its cost taking into account all the resources needed (labor hours, materials, equipment, …) in order to empower the accuracy level of the estimation.

2.2. Units of Measure

As the project and all its stakeholders are based in Germany, consequently the unit of measure used is the European Union currency, the Euro (€). The main unit of measure refers to the working hours.
2.3. Control Thresholds

To measure the compliance of the project, its work packages and its activities with the estimated budget, weekly meetings are held by the project management team to evaluate and check the deviation from the baseline established. Earned value management is an appropriate method which will be used to control thresholds, therefore the evaluation of the criteria is done, and then, preventive actions are taken if the project is on budget, while if it is over budget, corrective actions are taken in the next five days to bring back the project on budget. However, if the cost exceeds the established boundaries, which is 10% variance in the work packages cost, without exceeding 3% variance in the overall project budget, a change request has to be submitted.

2.4. Rules for Performance Measurement

The performance and progress of the project regarding cost will be measured after each phase of the project, in order to proceed to corrective actions in the next phases if necessary. However, to measure the performance of the project regarding the budget, the Earned Value Management will be used supported by the use of the percentage of completion in MS Project. This is done to check the position of the project regarding the budget, if it is on-budget, under or over budget. By establishing the earned value (EV) to measure the work completed at the time wanted, the cost variance (CV) to measure the financial performance of the project, and cost performance index ratio (CPI) to measure the effectiveness and efficiency of the project during its execution.

2.5. Cost Reporting Format

The table below lists the different reports used in the cost management aspect.

<table>
<thead>
<tr>
<th>Report</th>
<th>Description</th>
<th>Responsible</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report of the progress of cost</td>
<td>An updated report used to monitor and control the cost used for the activities and work packages.</td>
<td>Project Manager</td>
<td>Weekly</td>
</tr>
<tr>
<td>management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Management Report</td>
<td>A detailed level report showing the progress of the project regarding cost management.</td>
<td>Project Manager</td>
<td>Every 2 weeks</td>
</tr>
<tr>
<td>CEO project report</td>
<td>A brief and accurate report of the progress is done to keep the CEO of Sysperto GmbH updated on the project phases.</td>
<td>Project Manager</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Table 1 - Cost reporting format
2.6. Estimating Cost

To estimate the overall cost of the project, a bottom-up estimation is adopted, which is the approach that consists of estimating each activity of the work packages at the lowest WBS level, sums them up into an estimation of high-level deliverables and then of the overall project.

2.7. Developing the Budget

The budget is developed by taking into account a reserve for each work package of the WBS Dictionary. Each work package will be given an appropriate reserve according to the level of risk associated.

2.8. Updating, Monitoring and Controlling

To ensure that the project is going on budget, updates are done weekly using the progress of cost management report to evaluate and control the spending of each activity and work package. A comparison is also done after each phase of the project between the planned cost and the actual cost during the execution of the implementation. In order to control the budget, the activities performed throughout the phases are resumed in the table below:

<table>
<thead>
<tr>
<th>Control activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance review</td>
<td>The actual cost is measured and compared with the cost elaborated to analyze the performance of the project during the execution.</td>
</tr>
<tr>
<td>Re-estimation of the remaining components of the project</td>
<td>During the progress of the project, a re-estimation of the remaining tasks is done in order to check and control if the project is going on budget or not.</td>
</tr>
<tr>
<td>Reevaluating future tasks to compensate the gap</td>
<td>In case of an over budgeting, the future tasks should be reevaluated to compensate the gap in order to deliver the project within the fixed budget. If this option is not possible, a change request has to be submitted.</td>
</tr>
</tbody>
</table>

*Table 2 - Cost updating, monitoring and controlling*
3. Key Requirements

The key requirements for the implementation of the ERP-system within Sysperto GmbH listed in the table below, are taken in consideration from the requirements traceability matrix (developed within the Project Scope Management Plan), because they have a close relation to the activity costs. Those requirements aid to control the project and it will permit to satisfy the intention to bring it at completion.

<table>
<thead>
<tr>
<th>WBS Deliverables</th>
<th>Requirement</th>
<th>Objective/ Description</th>
<th>Acceptance criteria</th>
<th>Metric</th>
<th>Test Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.3.2</td>
<td>Efficiency and productivity increase through faster offer and delivery times</td>
<td>The implementation of the ERP-system allows to increase the efficiency and productivity of the company offering better internal and external operations</td>
<td>Improvement of the productivity and time delivery by 10% within one year after the implementation from Sysperto GmbH</td>
<td>Percentage</td>
<td>Evaluating the company's productivity</td>
</tr>
<tr>
<td>1.2.3.2</td>
<td>Administrative and IT-costs decrease</td>
<td>Lowering the actual costs for administration and IT-costs (for the existing several programs)</td>
<td>Chosen the balanced and more profitable ERP-system</td>
<td>Highest cost saving quotation</td>
<td>Comparing different offers</td>
</tr>
<tr>
<td>1.5</td>
<td>Profitability</td>
<td>The ability of the ERP-system's implementation to positively impact the productivity and profitability of Sysperto GmbH. The ERP-system is aimed to increase the profitability of the company by having improved and faster business processes that</td>
<td>Sales are increased by at least 10% and customer satisfaction by 20% within one year after the implementation</td>
<td>Percentage</td>
<td>P&amp;L, Financial analysis, surveys (customer satisfaction)</td>
</tr>
<tr>
<td>WBS Deliverables</td>
<td>Requirement</td>
<td>Objective/ Description</td>
<td>Acceptance criteria</td>
<td>Metric</td>
<td>Test Case</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>allow the company to work for more customers, increasing the sales as well as the customer satisfaction.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Profitability of product deliverable</td>
<td>Deliver the project according to the approved cost; Select the most profitable ERP-system</td>
<td>Tolerance +/- 10% of the total cost</td>
<td>Total cost</td>
<td>Cost management plan</td>
</tr>
<tr>
<td></td>
<td>Resource effectiveness</td>
<td>Effective use of all the resources needed within the overall project work</td>
<td>Project completed with the optimal resources required to fulfill quality and on-time delivery (reference to resource management)</td>
<td>Resource allocation and Resource cost</td>
<td>Microsoft Project</td>
</tr>
<tr>
<td>1.5</td>
<td>Efficiency</td>
<td>The project work is performed with the minimum consumption of resources</td>
<td>Project completed with minimum cost and resources possible (reference to cost management and resource management)</td>
<td>Cost</td>
<td>Microsoft Project</td>
</tr>
<tr>
<td>1.5.2</td>
<td>Financial performance</td>
<td>The project fulfills the financial target according to the estimated project budget</td>
<td>Project cost tolerance +10%</td>
<td>Cost</td>
<td>Microsoft Project, Excel</td>
</tr>
</tbody>
</table>

*Table 3 - Key Requirements*
Besides the requirements shown before, in order to help the project management team to control the project’s budget, it has been considered to make further key assumptions. They will help to be aware even more to track the project development:

- The MS Project tool will be used to overview the resources
- A full report of the occurring costs and project costs trend will be developed weekly through the appropriate document in order to show the tendency of the project to the project management team leader and the Sysperto GmbH’s CEO.
- The overhead costs of the project must not pass the 2% of the budget allocated to them
- Level of accuracy: The level is between +/- 10%
- Level of precision: The level is between +/- 1€
- Cost Baseline limit (to take preventive actions): The range to take corrective actions is between +/- 10% (+/- 0.1) of CPI/SPI
- Contingency reserve: The contingency reserve allocated for the activities is estimated through a calculation based on the probability of risk that may occur to the specific activity. Moreover, on top of the contingency reserve for the activities, an additional 4% calculated from the baseline has been estimated, it’s concerning the general management costs.
- The cost control will be controlled by a member of the project management team in charge to evaluate the trend costs, if consequentially a control he/she deems to take corrective action, it will be evaluated first of all with the whole management team and then with the project sponsor, i.e. the Sysperto GmbH’s CEO.

4. Estimation of the Costs of the Activities

The activity total cost list shows the direct cost for each work package. In particular, the direct costs are divided in: the rate of each member that will work within the specific activity, the hours estimated and the cost for the material or equipment which will be used during the activity. Since most of the costs are associated at the hours of the resources involved in the project, it has been estimated the possible total cost per activity, “estimate column”, consequently the contingency reserve correspondent it. It is important to understand that due to the variance and uncertainty of the hours needed to execute the project, the costs are all estimated because they could increase as the project evolves through the execution of it. Besides the estimation, a column has been dedicated to the “basis of estimate” which record how the estimation is calculated. The last column is the “method”, namely the method to calculate it. The contingency reserve will be described in a point aside. With having said this, the table below details the estimation of the costs for the ERP-system implementation into Sysperto GmbH.
## Cost Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>WBS ID</th>
<th>WBS work-package name</th>
<th>Resource</th>
<th>Direct cost</th>
<th>Equipment/ Material</th>
<th>Estimate</th>
<th>Reserve</th>
<th>Basis of estimates</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
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<td></td>
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<td>Interviews</td>
<td>Project Management Team</td>
<td>44</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Project Management Assistant</td>
<td>2</td>
<td>30,00 €</td>
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<td>Project Management Team</td>
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<td>45,00 €</td>
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<td>1.740,00 €</td>
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<tr>
<td></td>
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<td>4</td>
<td>30,00 €</td>
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<tr>
<td>1.1.1.3.</td>
<td>Flow charts of current processes</td>
<td>Project Management Team</td>
<td>48</td>
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<td>72,58 €</td>
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<td>Key Users</td>
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<td>Project Management Team</td>
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<td>80,64 €</td>
<td>Hourly rate</td>
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<td>“State of the Art” processes</td>
<td>Project Management Team</td>
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<td>Project Management Team</td>
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<td>2.160,00 €</td>
<td>96,77 €</td>
<td>Hourly rate</td>
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<td>Review of flow charts of desired processes</td>
<td>Project Management Team</td>
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<td>1.800,00 €</td>
<td>54,00 €</td>
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<td>WBS ID</td>
<td>WBS work-package name</td>
<td>Resource</td>
<td>Direct cost</td>
<td>Equipment/ Material</td>
<td>Estimate</td>
<td>Reserve</td>
<td>Basis of estimates</td>
<td>Method</td>
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<td>-------------------</td>
<td>------------</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Rate</td>
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<td>156</td>
<td>45,00 €</td>
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<tr>
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<td>228</td>
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<td>Bottom up</td>
</tr>
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</tr>
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<td>IT Expert</td>
<td>112</td>
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<td>225,79 €</td>
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<td>1.2.2.</td>
<td>Definition of the ERP-system needs and requirements</td>
<td>CEO</td>
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<td>60,00 €</td>
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<td></td>
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## Cost Management Plan – Implementation ERP-system (Group 4)

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### WBS ID 1.5.4.3: Risk Monitoring
- **Resource:** Project management team
- **Hours:** 166.4
- **Rate:** 45.00 €
- **Direct cost:** 7,488.00 €
- **Reserve:** 640.22 €
- **Basis of estimates:** Hourly rate
- **Method:** Bottom up

### WBS ID 1.5.4.4: Cost Controlling
- **Resource:** Project management team
- **Hours:** 166.4
- **Rate:** 45.00 €
- **Direct cost:** 7,488.00 €
- **Reserve:** 640.22 €
- **Basis of estimates:** Hourly rate
- **Method:** Bottom up

### WBS ID 1.5.5.1: Lessons Learned
- **Resource:** Project management team
- **Hours:** 90
- **Rate:** 45.00 €
- **Direct cost:** 4,050.00 €
- **Reserve:** 346.28 €
- **Basis of estimates:** Hourly rate
- **Method:** Bottom up

### WBS ID 1.5.5.1: Project Closing
- **Resource:** Project management team
- **Hours:** 44
- **Rate:** 45.00 €
- **Direct cost:** 2,340.00 €
- **Reserve:** 200.07 €
- **Basis of estimates:** Hourly rate
- **Method:** Bottom up

- **CEO:**
  - **Hours:** 6
  - **Rate:** 60.00 €
  - **Direct cost:** 360.00 €

### TOTAL
- **Direct cost:** 85,000.00 €
- **Equipment/Material:** 238,840.00 €
- **Reserve:** 24,741.72 €

*Reserve calculations are the results of the detailed probability and impact analyses (Monte Carlo Simulation) within the risk management plan (for further details please refer to it)*

Table 4 - Estimation of activity costs
5. Identification of Risk Costs

The contingency reserve is developed to prevent, expect and most importantly being ready for any additional costs arising from unexpected and unplanned risks. The implementation of the ERP-system within Sysperto GmbH business expressed in terms of costs a certain level of uncertainty for its execution.

Knowing that, it has been estimated a certain amount of reserve that changes for each work package, the reserve percentage changes proportionally on the level of risk score of the risk management plan. In this sense, an analysis is done for the risks that might occur in each work package using the risk management plan as a reference to identify the exact level of risks (from 1 to 20) which is different for the work packages of the project. According to the level of risks established, a percentage of the potential reserve is given (from 3% to 10%) for the cost of the work-package. Below the table (Figure 1 – Contingency reserve) is developed that explains the percentage of contingency attributed at the project risk score.

The highest contingency reserves are given to the work packages of the data migration procedures and the project scheduling as they are identified as the highest risks for the implementation of the ERP-system project. While the lowest reserves are given to the work packages including the establishment of the interviews and the surveys and the definition of the flow charts of the current processes as they are defined as the lowest risks for the project.

For specific risks, a detailed probability and impact analyses, based on the Monte Carlo Simulation, was conducted. Those contingency reserves are highlighted in the table in orange. For more details in regard to these calculations, please refer to the project risk management plan.

The total amount of the contingency reserve estimated is 24.741,72 €, as it is equivalent to around 8% of the amount of the whole project work package cost estimates and which will be added to that amount in order to finally establish a proper estimation of the project’s budget.
6. Project Budget

According to the PMBOK, the project budget contains “all the funds authorized to execute the project” and is determined through “the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline” (Project Management Institute, 2017, p. 248). The project budget is established through the cost baseline (please refer to the Chapter 8) plus the management reserves (Project Management Institute, 2017, p. 254). The components of the project budget are the cost estimates for project activities and corresponding contingency reserve, cumulated to the work package costs plus the corresponding contingency reserves (illustrating the control accounts). The summation of the control accounts illustrates the cost baseline. Subsequently, the project budget is established by the cost baseline plus the management reserve (Project Management Institute, 2017, p. 254).

For the present paper, the described components of the project budget were established through the combination of a bottom-up estimation table and MS Project. In MS Project the activity costs were generated through the allocation of the resources. The bottom-up estimating...
table used those costs of the activities to aggregate them on the work package level. At this point it is important to mention, that the project management team decided to have no contingency reserve on the activity level due to overview and simplification reasons. On this basis, the contingency reserve was added (for a detailed explanation of the procedure please refer to the Chapter 5). Out of this, the cost baseline of 348,581,72 € was calculated. For the management reserve, the project management team in consultation with the CEO of the company decided to add 4% of the cost baseline. On this basis, the total project budget of 362,525 € is calculated. All the described components are illustrated in the following figure:

![Project Budget Component](image)

*Figure 2 - Project Budget Components*

### 6.1. Funding Requirements and Financing of the Project

The main sources of funding are internal equity, a government subsidy and a bank loan. The project scope gives access to a government subsidy that is granted to SME under 100 employees that are implementing IT-solutions and improvements of IT-security to their business (Ministerium für Wirtschaft, 2018). The project has to lead to a digitizing progress/advancement within the company. The subsidy is granted for projects with a budget between 10,000€ and 100,000€. The subsidy is linked to a loan. For projects with a budget between 10,000€ and 50,000€ the company receives a repayment bonus of 5,000€. For projects with a budget between 50,000€ and up to 100,000€ the reductions is equal to 10% of the overall budget (Ministerium für Wirtschaft, 2018). For the present project, the relevant budget for this subsidy refers to the corresponding budget for the actual implementation of the ERP-system which is estimated to cost
The repayment bonus equals a reduction of the debt, meaning that the company does not have to repay the whole loan amount (Ministerium für Wirtschaft, 2018).

7. Control of Project Costs through Reports and Control Documents

The cost control of the project will be performed using MS Project regarding the control part of the project management team and consequently reports (Figure 3 and 4) will be created for the weekly/monthly meeting with the CEO of the company Sysperto GmbH. The variance allowed to the performance of the project, in order to not take strong preventive actions, are explained according to the table below and explains the cost and schedule performance variance.

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Yellow</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Performance Index (SPI)</td>
<td>Between 0.9 and 0.8</td>
<td>Less Than 0.8</td>
</tr>
<tr>
<td></td>
<td>Between 1.1 and 1.2</td>
<td>Greater than 1.2</td>
</tr>
<tr>
<td>Cost Performance Index (CPI)</td>
<td>Between 0.9 and 0.8</td>
<td>Less Than 0.8</td>
</tr>
<tr>
<td></td>
<td>Between 1.1 and 1.2</td>
<td>Greater than 1.2</td>
</tr>
</tbody>
</table>

Table 5 - Performance Measure

(Cost Management Plan Template, 2019)

In case of any variance over the red part of the performance measure the action below will be considered by the project management team:

- If the project schedule performance is under 0.8 or greater than 1.2 the project management team has to act to prevent worse performance trend. The project sponsor will be alerted according to the change management plan in order to decide which action have to be taken to adjust the performance.

- If the project cost performance is less than 0.8 or greater than 1.2, after the precautionary actions of the project management team, consequently the team have to alert the Project Sponsor and follow the corrective actions according to the change management plan in order to prevent any other losses in the costs.

7.1. Earned Value Analysis

The performance of the project for the Earned value management will be controlled by MS Project. In fact, throughout the software, the project baseline will be created and adding the table “earned value” the Schedule Performance Index (SPI), Cost Performance Index (CPI) will
be displayed, and additionally the metrics are used to control the earned value: Planned Value (PV), Earned Value (EV), Actual Value (AC) and most important the Budget at Completion (BAC) (Six, 2017). The measurements of the trend performance must follow the criteria listed below, they will help during the project execution (Project Management Institute, 2017, p. 267):

- If Schedule Variance (SV) is:
  - SV = 0, the project is on schedule.
  - SV > 0, the project is ahead of schedule and earns more than expected.
  - SV < 0, the project is behind schedule and earning less value than initially planned.

- If Cost Variance (CV) is:
  - CV = 0, the project is on budget.
  - CV > 0, the project is under budget.
  - CV < 0, the project is over budget and is earning less value than expected.

The earned value analysis is essential to have a preventive indication of a possible problem during the project execution. The reporting project performance through the report “Earned value status report” and “Project Status Report” are useful tools for the project management team to have an internal overview within the project management team and to update the project sponsor of the project performance. These report documents guide through the weekly/monthly meeting with a well-informed status of the project.
7.2. Earned Value Status Report

In the following, the "Earned value status report" template for the project is shown:

![Earned Value Status Report](image)

**Figure 3 - Earned Value Status Report**
7.3. Project Status Report

In alignment with the previous described Earned Value Status Report, the following overall Project Status Report will be used for the communication with the CEO, as it illustrates all KPIs as a one pager.

![Project Status Report](image)

Figure 4 - Project Status Report

8. Project Cost Baseline

The cost baseline (already mentioned in Chapter 6 of the Project Budget) is seen as an output from the third process of plan cost management (“Determine Budget”) (Project Management Institute, 2017, p. 254). The cost baseline represents “the approved version of the
time-phased project budget that includes contingency reserves, but excludes management reserves” (Project Management Institute, 2017, p. 248) and “is used to measure, monitor, and control cost performance for the project” (Snyder, 2013, p. 78). Therefore, during the Monitoring and Controlling phase this established cost baseline is used in order to evaluates the project performance (Project Management Institute, 2017, p. 248). For the illustration of the cost baseline for the present project, besides the developed figure for the project budget, the report tool function from MS Project is used to illustrate the cost baseline with a time-phased view. This report tool function from MS Project will be used for several reports in regard to the cost management.

Figure 5 - Cost Baseline

9. Conclusions

To conclude, this present document illustrates the whole Project Cost Management Plan at the current point in the planning phase, including all components such as the Cost Management Plan itself, the key requirements related to costs, the estimation of the activity costs and identification of risk costs as well as the project budget, the control reports/documents and the cost baseline.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as a base. The program MS Project and a bottom-up estimation table were used to create the Project Cost Baseline. Moreover, the tools of expert judgment, data analysis, meetings and
different estimating techniques were used to develop the project budget and cost baseline for the project of the ERP-system implementation.

The project team performed this third planning process for the knowledge area of Project Cost Management in order to create the Project Cost Management Plan, the project budget as well as the Cost Baseline. All generated documents and outputs from this planning process will illustrate the input for the next planning processes such as the Quality Management Plan.

Moreover, the Project Cost Management Plan represents part of the overall Project Management Plan.
References


Project Quality Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

<table>
<thead>
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</tr>
</thead>
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<td>V000</td>
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<td>V001</td>
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<td>V002</td>
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<tr>
<td>V003</td>
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</tbody>
</table>
Abstract

The present paper illustrates the Project Quality Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Quality Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Quality Management Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule and cost. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Quality Management Plan illustrates the fourth knowledge area (Project Quality Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Quality Management Plan first provides a short introduction about the Project Quality Management Plan in general and the Project Quality Management Plan itself, continues with the policies and standards, the controlled deliverables and reviewed processes as well as the responsibilities for the quality management of the project. Subsequently, the determined activities to manage and control quality are defined first by describing the quality assurance and continuing with the quality controls, acceptance criteria and the control templates. In accordance with that, the tools for data gathering, data analysis and decision making are described. Finally, the present paper provides the description of the management of the non-conformities through the procedures of change management and claims and complaint management as well as the process improvement plan. With those points the quality activities for the project are described and developed at the current point in the planning phase.

Keywords: Project Quality Management Plan, Quality assurance, Quality control, Quality responsibilities, Change Management, Claims and Complaints Management, Process Improvement, Implementation, ERP-system, IT-sector, IT-services
## Table of Contents

Abstract ........................................................................................................................................ II

List of Figures.................................................................................................................................... V

List of Tables...................................................................................................................................... V

1. Introduction, Scope and Purpose of the Project Quality Management Plan ................. 1

2. Quality Management Plan ....................................................................................................... 1
   2.1. Quality Roles and Responsibilities ............................................................................... 1
   2.2. Quality Approach ........................................................................................................ 2
   2.3. Quality Planning Approach ......................................................................................... 2
   2.4. Quality Assurance Approach ....................................................................................... 3
   2.5. Quality Control Approach .......................................................................................... 3
   2.6. Quality Improvement Approach ................................................................................ 3

3. Quality Policies .......................................................................................................................... 4

4. Reference Standards ................................................................................................................... 5

5. Quality Control of Processes and Deliverables ...................................................................... 6

6. Quality Responsibilities .............................................................................................................. 10

7. Quality Assurance ..................................................................................................................... 13
   7.1. Document Coding ....................................................................................................... 13
   7.2. Audits ......................................................................................................................... 14

8. Quality Controls and Acceptance Criteria .............................................................................. 15
   8.1. Quality Control Approach ......................................................................................... 15
   8.2. Measurement of Quality Control ............................................................................... 16
   8.3. Quality Control in the Contract .................................................................................. 20

9. Quality Control Templates ....................................................................................................... 20
   9.1. Tools ........................................................................................................................... 20
      9.1.2. Data migration – Checklist ................................................................................. 25
      9.1.3. End-user Training – Survey ............................................................................... 27
      9.1.4. ERP-System Implementation – Checklist ......................................................... 30
9.2. Quality Management Plan Approval ................................................................. 32
10. Management of Non-Conformities ................................................................. 33
10.1. Change Management .................................................................................. 33
10.2. Claims and Complaints Management ......................................................... 36
11. Control and Process Improvement Plan .......................................................... 39
12. Conclusions ................................................................................................. 42
References .......................................................................................................... VI
List of Figures

Figure 1 - Organizational Structure for Quality Management ...................................................10
Figure 2 - Project Management Work Checklist .........................................................................13
Figure 3 - Example “Document Coding” ....................................................................................14
Figure 4 - Example “Folder Structure” ......................................................................................14
Figure 5 - Process-restructuring – Survey (part I) ......................................................................22
Figure 6 - Acceptance sheet – Measurement and Evaluation – Survey (part II) .........................23
Figure 7 - Acceptance sheet – Measurement and Evaluation – Survey (part III) .........................24
Figure 8 - Data migration – Checklist .........................................................................................26
Figure 9 - End-user Training – Survey (Part I) ............................................................................28
Figure 10 - End-user Training – Survey (Part II) .........................................................................29
Figure 11 - ERP-System implementation – Checklist ..................................................................31
Figure 12 - Quality Management Approval – Template ..............................................................32
Figure 13 - Change Request Template .......................................................................................34
Figure 14 - Change Management flowchart .............................................................................35
Figure 15 - Claims and Complaints Management flowchart (general) ........................................37
Figure 16 - Claims and Complaints Management flowchart (specific case) ..............................38

List of Tables

Table 1 - Roles and Responsibilities (overview) ........................................................................2
Table 2 - Internal and external quality policies ..........................................................................5
Table 3 - Reference standards ....................................................................................................6
Table 4 - Deliverables and Processes for Quality Control ..........................................................9
Table 5 - Roles and Responsibility Matrix ................................................................................13
Table 6 - Product Quality Requirements Matrix ......................................................................18
Table 7 - Project Quality Requirements Matrix .......................................................................19
1. Introduction, Scope and Purpose of the Project Quality Management Plan

Quality management is a crucial condition for any project. It provides a checking of the performance and a confirmation of the correct achievement of the deliverables with the client’s requirements. It includes the different processes of incorporating quality regarding the different phases such as planning, managing and controlling projects quality requirements to satisfy the stakeholder’s requirements and objectives (PMI, 2017, p. 271).

According to the PMBOK Guide (6th Edition), the quality management processes are as following (PMI, 2017, p. 271):

- Plan Quality Management: The process of identification project metrics and the documentation on how the project will comply with the quality requirements and different standards.
- Manage Quality: The process of executing quality activities incorporating the company’s policies and standards, according to the established quality management plan. These activities aim to gather, measure and analyze the data for each deliverable with accuracy and precision. It is also known as Quality Assurance.
- Control Quality: The process of recording the results of the quality management activities and monitoring the identified project metrics in order to ensure their performance on high and satisfactory levels by using the proper tools to evaluate the work.
- Quality improvement: The process of representing claims and complains about non-conformities and when the quality requirements are not met, in order to improve the quality of specific deliverables.

Moreover, the failure, the negligence or the rush of each of the identified processes above may have a negative impact and consequence on the success of the project.

2. Quality Management Plan

2.1. Quality Roles and Responsibilities

In order to ensure the quality exigencies and standards for the implementation of the ERP-system, roles and responsibilities have to be identified to structure and organize the quality management of the project.

The following table lists briefly the different roles and responsibilities that will be detailed furthermore under the point treating the roles and responsibilities of the present document.
<table>
<thead>
<tr>
<th>Roles</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andreas Zieher (CEO)</td>
<td>Approving the overall quality management plan</td>
</tr>
<tr>
<td>Andreas Domke (IT manager)</td>
<td>Reviewing and evaluating the quality management plan</td>
</tr>
<tr>
<td>Veronika Kolb – Omar Lansari – Alberto</td>
<td>Creation and development of the quality management plan</td>
</tr>
<tr>
<td>Molinarelli (Project Management Team)</td>
<td></td>
</tr>
<tr>
<td>Joachim Zieher (Quality Manager)</td>
<td>Providing support regarding quality standards, procedures, assurance and control</td>
</tr>
<tr>
<td>Frank Graziani – Justin Lang (IT Technicians)</td>
<td>Providing technical support and knowledge for the implementation of the ERP-system</td>
</tr>
</tbody>
</table>

Table 1 - Roles and Responsibilities (overview)

2.2. Quality Approach

In order to succeed with the implementation of the ERP-system, the quality requirements and standards are identified at first, and set to be followed and complied within the project phases. Those are identified by interviewing Sysperto GmbH managers and IT-experts. The performing of the different deliverables is followed and monitored by the project management team as well as internal and external quality manager and IT-experts, to ensure compliance with the stakeholders’ requirements regarding quality. The different phases of the project are also controlled to evaluate their quality and detect the possible errors or malfunctions in order to be managed, revised or changed. After performing the control of the deliverables, those not showing a good quality of work or any errors are set to be ameliorated and improved to satisfy the exigencies defined.

2.3. Quality Planning Approach

To manage the overall quality management plan, the project management team identified the tools and techniques needed to be used and performed to provide a high quality for the project.

Interviews are done with the CEO and managers of Sysperto GmbH to identify the quality requirements of the company. Experts judgments and advices are also taken into account to reassemble the best compilation of standards related to the implementation of the ERP-system. Audits and structural ways of work will be proceeded systematically in order to enhance the quality assurance and ensure the compliance with the quality standards. However, inspections and tests followed by checklists and surveys will be created to control and evaluate the deliverables.
and their acceptance, while flowcharts will be developed in order to bring improvement or change if needed.

2.4. Quality Assurance Approach

ERP-system implementation projects are well known for their high probability of failure (Guo Chao Peng, 2009, p. 926) (Shi-Ming Huang, 2004, p. 681). Consequently, to assure the success of the project, quality assurance activities and processes are performed to ensure the compliance of the implementation of the software with the required quality requirements and standards by making sure and confirming that the deliverables are done the right way (PMI, 2017, p. 289). In this sense, external and internal audits are carried out through all implementation processes. This point will be developed under the point of quality assurance.

2.5. Quality Control Approach

Quality control is a tool in quality management used to evaluate that the project meets the quality required by Sysperto GmbH regarding the implementation of the software and the additional systems delivered by the consultancy company in order to determine the acceptance of the deliverables. It is aimed to manage the control of the different deliverables of the project inspections and technical testing throughout all the implementation processes. Therefore, checklists and surveys are created to evaluate and check if the deliverables are showing poor quality work, defects or malfunctions in order to validate the work or request for an improvement or a change.

2.6. Quality Improvement Approach

Quality improvement is important for the project as it helps to reach the highest quality wanted by all the stakeholders who are involved in the quality control of the overall phases of the implementation. The quality improvement is required when a deliverable shows signs of poor performance or does not meet the quality requirements and standards defined by the stakeholders. Due to that, claims or complaints can follow. Therefore, the claims and complaint management represented by a flowchart for the project is developed in order to demonstrate the steps needed to be performed for improving the quality of the deliverable.

However, to guarantee the continual quality, the Deming cycle or PDCA (Plan-Do-Check-Act) will be visualized and adopted for the quality improvement process (PMI, 2017, p. 275). This point is developed under the point of management of non-conformities in Chapter 10 of the quality management plan.
Quality Management Plan – Implementation ERP-system (Group 4)

3. Quality Policies

A company’s policies are important for any organization as they establish the rules of conduct within the organization clarifying the responsibilities of both, the employers and the employees, and protect their rights, in order to work in the best environment possible which results in creating and performing a high quality work, that will help the organization gain and increase its value and brand image in the market (Hart Ford, 2019).

Quality policies and standards can be supported by national or international laws as well as they can be self-made by the company to ensure the high-quality level given to the clients.

The table below describes some of the policies of Sysperto GmbH leading to achieve successfully the projects and increase the quality of work:

<table>
<thead>
<tr>
<th>Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance</td>
<td>Sysperto GmbH ensures its compliance with the national and international laws and regulations of quality.</td>
</tr>
<tr>
<td>Code of conduct</td>
<td>The employees understanding of the code of conduct brings commitment and professionalism that will increase the success of the project (Nikoletta Bikia, 2019).</td>
</tr>
<tr>
<td>AUP</td>
<td>Acceptable Use Policy restricts the use of the company’s networks to prevent illegal activities and ensure security (Corporate Computer Services Inc., 2019).</td>
</tr>
<tr>
<td>Privacy Policy</td>
<td>The company fully commits to protect and secure all customer’s and employee’s personal data, by making clear that the data is not sold to third parties (Corporate Computer Services Inc., 2019).</td>
</tr>
<tr>
<td>Disaster Recovery Policy</td>
<td>The management level proceeds to the elaboration of a DRP (Disaster Recovery Plan) that gathers all the processes needed to be executed to recover and protect the business and IT infrastructure in the event of a disaster (Corporate Computer Services Inc., 2019).</td>
</tr>
<tr>
<td>Network set up Policy</td>
<td>This policy is related to the licensing of the software needed and how the network is configured as well as how the permission-levels are given to the employees (Corporate Computer Services Inc., 2019).</td>
</tr>
</tbody>
</table>
Defect Policy
Sysperto GmbH explicitly states that the company itself and its suppliers commit to deliver a zero-defect products and services (Mike Clayton, 2015).

Competency Policy
The employees of Sysperto GmbH have to be competent and skillful in their respective areas in order to produce high-quality work.

QMP
The Quality Management Principles focusing on 7 principles to guide the company’s performance. These principles are customer focus, leadership, engagement of people, improvement, processes approach, evidence-based decision making and relationship management (ISO, 2015).

4. Reference Standards

Standards are guidelines describing, in a more technical way, quality, performance, safety, testing, etc. (Hart Ford, 2019).

The standards must be approved and followed by the project management team, the company Acmeo GmbH implementing the ERP-system and other key stakeholders. The team is committed to deliver a quality project which fulfills the requirements of Sysperto GmbH. The standards considered for this project are listed and detailed below:

<table>
<thead>
<tr>
<th>Standards</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9126</td>
<td>The international standard used for the selection and definition of the quality criteria of the ERP-system, describing the internal and external quality criteria such as profitability, usability, functionality, efficiency, reliability, maintainability and adaptability (Alrawashdeh, Muhairat, &amp; Althunibat, 2013).</td>
</tr>
<tr>
<td>ISO 27001</td>
<td>Processes and procedures of the information security management system assuring the protection against the loss of information (Ahmad Nurul Fajar, 2018).</td>
</tr>
<tr>
<td>Regulation n°2016/679 (GDPR)</td>
<td>The ERP-system has to comply with the European General Data Protection Regulations to ensure the protection of the personal</td>
</tr>
</tbody>
</table>
### Standards | Description
--- | ---
ISO/IEC 38500 | The international standard for corporate governance of information technology provides a framework for the governance of IT projects to understand the legal and ethical obligations (IT Governance Europe Ltd, 2019).
ISO 21500:2012 | This standard provides generic guidance for project management practices needed for the success of the project (Varajão, Colomo-Palacios, & Silva, 2012).
CISQ | The Consortium for IT Software Quality provides specifications, such as the software sizing, the quality of the coding and the level of weaknesses present in the software (Software Engineering Institute, 2019).

*Table 3 - Reference standards*

### 5. Quality Control of Processes and Deliverables

Many of the deliverables and processes of the ERP-system implementation listed in the WBS have to be performed with high-quality exigencies to assure in the most and best possible way the success of the implementation into Sysperto GmbH.

Quality control management is the area of knowledge aiming to evaluate and verify that project outputs and deliverables comply with the standards, quality requirements and the stakeholders’ expectations without any problems or malfunctions (PMI, 2017, p. 298).

To manage the quality control in a structured way, checklists and surveys are used after each quality control activity as tools and techniques to provide a good clearance, awareness and details of the quality of the work performed. The main quality control processes used for the ERP-system implementation in Sysperto GmbH are as follows:
- **Final Inspections** (Gateway inspections):

At the end of every phase of the project, constructed inspections and strict evaluations are conducted to assure that the delivered work is conforming to the standards and requirements of Sysperto GmbH and to find errors, defects, bugs or other nonconformance in order to be changed or repaired if necessary. This process is performed after each milestone to prevent and help reduce the cost of fixing and repairs. Meetings are also held after the inspections and evaluations to discuss reports of these evaluations and inspections in order to rate and check the performance of the completed work.

- **Technical Testing:**

In the ERP-system implementation project, testing, by well-trained professionals, is necessary to ensure the correct installation and integration, the proper functioning and appropriate configuration of each module.

Three types of testing of the ERP-system are meant to be performed in the project:

- **Functionality testing:** to ensure that every feature and functionality of the system works and fulfills the organization needs (TEC, 2019).

- **Performance testing:** to ensure that the system is robust enough to endure the highest peak of demands and the flow of information, to be able to proceed the transactions safely and to allow the communication and relation between different modules (TEC, 2019).

- **Integration testing:** to test the overall integration of the system into the company using real-life scenarios (TEC, 2019).

The following table identifies the main deliverables that will be controlled and the processes that will be evaluated and reviewed.

<table>
<thead>
<tr>
<th>WBS ID</th>
<th>Deliverables/processes</th>
<th>Quality Review</th>
<th>Metrics</th>
<th>Frequency</th>
<th>Control / Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1</td>
<td>Analysis of the existing business processes</td>
<td>All the processes are documented and analyzed efficiently</td>
<td>Number of processes analyzed</td>
<td>Once</td>
<td>Evaluation by Sysperto GmbH</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Restructuring the business processes</td>
<td>The processes are restructured to be improved and more appropriate for the ERP</td>
<td>Process Capability (Cp &amp; Cpk)/</td>
<td>Once</td>
<td>Evaluation of the new structure of</td>
</tr>
<tr>
<td>WBS ID</td>
<td>Deliverables/processes</td>
<td>Quality Review</td>
<td>Metrics</td>
<td>Frequency</td>
<td>Control / Test</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
<td>-----------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>1.2.3.3</td>
<td>Analysis of the offers for ERP-system selection</td>
<td>The offers have to be analyzed regarding multiple criteria to choose the right and suitable ERP-system for Sysperto GmbH</td>
<td>Reliability/Suitability</td>
<td>Once</td>
<td>Evaluation by Sysperto GmbH</td>
</tr>
</tbody>
</table>
| 1.3.1.1| Implementation of the ticket-system | The ticket-system has to work perfectly and has to be implemented correctly in the ERP-system | Number of analyzed offers/profitability     | Once      | -Functionality Testing  
-Performance Testing  
-Integration Testing |
| 1.3.1.2| Implementation of the online-shop | The online-shop needs to have a good interface and architecture without presenting any errors, and implemented correctly within the ERP-system | Performance stability/Reliability           | Once      | -Functionality Testing  
-Performance Testing  
-Integration Testing |
| 1.3.2.2| Installation of the ERP-system software | The installation needs to be done without problems and the software has to work and adapt perfectly to the IT-infrastructure of the company | Adaptiveness/Performance stability/Usability (employees’ satisfaction) | Once      | -Functionality Testing  
-Performance Testing |
| 1.3.2.3| Data Migration | All existing data have to be integrated correctly into the system | Percentage of the data migrated              | Once      | Verification by IT members |
| 1.3.2.4| Testing the system | The overall system has to be designed, programmed, developed, configured and installed perfectly | Defect density                              | Once      | -Functionality Testing  
-Performance Testing |
<table>
<thead>
<tr>
<th>WBS ID</th>
<th>Deliverables/processes</th>
<th>Quality Review</th>
<th>Metrics</th>
<th>Frequency</th>
<th>Control/Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>without any malfunctions or signs of errors</td>
<td></td>
<td></td>
<td>-Integration Testing</td>
</tr>
<tr>
<td>1.4</td>
<td>End-user training</td>
<td>The end-users have to be able to handle and operate on the ERP software appropriately, easily and efficiently</td>
<td>User satisfaction/Completeness</td>
<td>Once</td>
<td>Evaluation of the knowledge acquired by the end-users</td>
</tr>
<tr>
<td>1.5.1.2</td>
<td>Business case</td>
<td>The business case needs to be clear and to provide the reasons and circumstances of implementing the ERP into the company</td>
<td>Information and accuracy of data</td>
<td>Once</td>
<td>Evaluation by Sysperto GmbH</td>
</tr>
<tr>
<td>1.5.1.3</td>
<td>Project charter</td>
<td>The project charter resumes the project's criteria, it has to be well defined with the high-level points of the project</td>
<td>Transparency/accuracy of the information</td>
<td>Once</td>
<td>Evaluation by Sysperto GmbH</td>
</tr>
<tr>
<td>1.5.2</td>
<td>Planning process</td>
<td>This phase is important as it defines how the project will be developed and carried out</td>
<td>Level of the compliance with the PMBOK methodology/Efficiency</td>
<td>Weekly</td>
<td>Evaluation by stakeholders</td>
</tr>
<tr>
<td>1.5.3</td>
<td>Executing process</td>
<td>The execution of the project has to be reviewed continuously all along the project life-cycle to ensure the quality of the work performed</td>
<td>Level of the compliancy with the standards</td>
<td>Weekly</td>
<td>Evaluation by stakeholders</td>
</tr>
</tbody>
</table>

*Table 4 - Deliverables and Processes for Quality Control*
6. Quality Responsibilities

In the following, the roles and responsibilities in regard to the quality management will be described by defining who will be involved in the quality management for the project and which are the specific tasks for those persons.

In accordance with the process groups from the PMBOK, the tasks from all three project management team members are divided accordingly for the quality management of the project. Besides the project management team another main responsible for the quality management is the employee who is already in charge of the overall quality management for the company. Therefore, his main role is the comprehensive management and control of the overall quality of the project, mainly by supporting the project team with company and topic specific information and knowledge. For further specific issues, that are only related to the ERP-system implementation, the project team and the quality manager have the possibility of receiving consultancy support from a specified consultancy agency. This consultancy follows the ISO 9001 certification. Additionally, the company who is going to implement the ERP-system into the company receives partially responsibility for the quality of the implemented ERP-system. This will be defined and settled specifically in the contract. All mentioned roles and responsibilities are further described in the following roles and responsibility matrix. Additionally, the organizational hierarchical structure is outlined beforehand.

![Organizational Structure for Quality Management](image)

Figure 1 - Organizational Structure for Quality Management
<table>
<thead>
<tr>
<th>Roles</th>
<th>Phase</th>
<th>Responsibilities</th>
<th>Frequency</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andreas Zieher (CEO)</td>
<td>All phases</td>
<td>Approval of the Quality Management Plan and the overall project work</td>
<td>Continuously</td>
<td>-</td>
</tr>
</tbody>
</table>
| Andreas Domke (IT-service manager) | All phases                   | - Supporting the CEO with the approval of the Quality Management Plan
- Reviewing the Quality Management Plan
- Supporting the project team with IT-specific knowledge for the ERP-system implementation
- Providing feedback on the Quality Management Plan | Continuously and on request from the project team | -                   |
<p>| Alberto Molinarelli (Project Manager) | Plan Quality Management – Planning Phase | Responsibility for the creation of the Quality Management Plan, quality metrics, updates of the Project Management Plan and other documents | Once at the starting with continuous re-evaluation and updating during the project | Approval from the CEO/client as well as the overall Quality Manager |
| Omar Lansari (Project Manager) | Manage Quality – Execution Phase | Responsibility for the creation of the quality checklists, quality reports, test and evaluation documents, audits, | During the execution of the project | -                   |</p>
<table>
<thead>
<tr>
<th>Roles</th>
<th>Phase</th>
<th>Responsibilities</th>
<th>Frequency</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veronika Kolb (Project Manager)</td>
<td>Control Quality – Monitoring and Controlling Phase</td>
<td>Responsibility for the overall inspection, testing and product evaluation, documentation of the quality control measurements, verification of the deliverables, providing the overall work performance information, Proposing required adjustments.</td>
<td>Throughout the project; on a weekly basis; also, according to the tasks and project phase</td>
<td></td>
</tr>
<tr>
<td>Joachim Zieher (Quality Manager)</td>
<td>All quality management phases</td>
<td>Interface to the quality department; Assisting and supporting the project team with existing quality procedures, policies and standards from the company in general and for other projects, the creation of the quality management plan, review and auditing the project work, supervising the quality assurance and control.</td>
<td>Continuously throughout the project and on request from the project team</td>
<td>Approval from the CEO</td>
</tr>
<tr>
<td>Frank Graziani &amp; Justin Lang</td>
<td>All phases</td>
<td>Supporting the project team with IT-specific knowledge for the ERP-system implementation.</td>
<td>Continuously throughout the project and on</td>
<td></td>
</tr>
</tbody>
</table>
7. Quality Assurance

To manage the quality of the deliverables of the project as well as the overall project during its planning and execution, some processes and activities are carried out to ensure that the work is being done correctly regarding the way of work agreed on by the stakeholders. These processes are referred to as quality assurance processes (PMI, 2017, p. 298).

In order to manage quality throughout the project life-cycle, a document coding is fixed by the project management team bringing efficiency and accuracy to the work, while audits are performed to assure and check the way of work.

7.1. Document Coding

In order to ensure of the accuracy of the project, the work will follow some little fundamental rules to avoid possible mistakes. One of the criteria is to create a template/checklist that illustrates the pending work in regard to the subtopics of each plan, the responsible and supporting person working on it, the internal deadline and the current status (not started, in progress, completed – applying color management for it).

![Checklist FMT Tasks](image)

*Figure 2 - Project Management Work Checklist*
The files are classified following the criteria listed below:

- Specific folder and not only be included in a general folder
- Always create a new version of the document when main changes are done by renaming the document with the current date
  - Code: YYYYMMDD_Number-of-deliverable_Name-of-topic
  - Example: 20190115_6A_2_Quality-policies

![Figure 3 - Example “Document Coding”](image)

- Always create a “Final” folder including the final version that was delivered
- Structure the subfolder of each plan according to the given topics/headlines in the document “CriteriosEvaluacionTFM_MPM”

![Figure 4 - Example “Folder Structure”](image)

- The colors are an essential element in order to make a certain criterion of order not only in the files but also in file development

### 7.2. Audits

The audit is an organized and independent process carried out during the development of the deliverables to determine if the activities are suitable and complying with the project policies, processes and procedures with a frequency planned by an audit schedule by the quality assurance manager in order to ensure the good and quality development of the deliverables of the implementation (Marta Alvarez, 2019).

The audits performed in the project are internal and also external (Marta Alvarez, 2019), increasing the control of quality of the deliverables as the ERP implementation project are well-
known for their failure due to poor control and follow-up (Guo Chao Peng, 2009, p. 926) (Shi-Ming Huang, 2004, p. 681). The internal audit is done by the employees of the organization such as the quality assurance manager and the IT-developer members of the Sysperto GmbH in each phase of the implementation of the ERP-system.

On the other hand, the external audit is also carried out, by the consultancy company Acmeo GmbH Systems Software’s developer in order to evaluate their own work regarding the high quality of the implementation agreed on with Sysperto GmbH.

After the completion of every audit, the project management team, the auditors as well as the key stakeholders assemble a meeting to discuss the findings, to come out with the resulting preventive or corrective actions and defects repairs, if necessary.

8. Quality Controls and Acceptance Criteria

8.1. Quality Control Approach

During the implementation, the main point is to guarantee a high-level of work. Emphasizing the quality control, ensure to respect one of the major risks detected during the risk analysis i.e. the schedule; in fact, the attention related to it involves to control the possible occurring costs of the project.

Moreover, the research to evaluate the consultancy company takes into consideration to choose a company which holds certain standard criteria to allow a correct work-flow for the project management team and the consultancy company involved in the implementation. The main characteristic defined is to hold the standards: ISO/IEC 38500, ISO 21500:2012, CISQ, ISO 9126, ISO 27001.

The project managers in charge of Quality Control (QC) have to do inspections during the implementation especially to control the project management restructure, the ticket-system and online-shop implementation as well as the ERP-system implementation (Samantha Mathara Arachchia, 2015).

One of the main sources that the QC will use to guarantee the quality standards is the “product and project quality requirements matrix”. It determines if the quality standards of the project may be accepted or not; which means the QC and the stakeholder involved accept or reject the quality deliverable. Afterwards, if it is rejected, the deliverable must be reworked or further adjustments have to be made to take the necessary steps in order to fix the problem and control it again (PM4DEV, 2016, p. 12).
8.2. Measurement of Quality Control

The project quality standard of the ERP-system implementation is supported by a table that shows the quality requirements to deliver the product (ERP-system). Part of the activities listed in the Requirements Traceability Matrix (RTM) are employed as quality objectives because those are requirements used to be audited during the deliverables or to be controlled as a final review. The product and project quality requirements represent the methods of how the quality will be performed.

In this case, the project management team (Alberto Molinarelli, Omar Lansari and Veronika Kolb), supported by the quality manager (Joachim Zieher) are in charge of determining the acceptance criteria, which means metric, frequency, test cases of each requirement that are listed in the following:

<table>
<thead>
<tr>
<th>ID Number</th>
<th>PRODUCT QUALITY REQUIREMENTS</th>
<th>Supporter</th>
<th>Objective/ Description</th>
<th>Performance standards</th>
<th>Metric</th>
<th>Frequency</th>
<th>Test Case</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product Traceability</td>
<td>IT Developer</td>
<td>ERP-system that permits the traceability of purchasing and stock</td>
<td>Requirement satisfied</td>
<td>Yes/No</td>
<td>Once</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Efficiency and productivity increase through faster offer and delivery times</td>
<td>IT Developer</td>
<td>The implementation of the ERP-system allows to increase the efficiency and productivity of the company offering better internal and external operations</td>
<td>Improvement of the productivity and time delivery by 10% within one year after the implementation from Sympart GmbH</td>
<td>Percentage</td>
<td>Monthly</td>
<td>Evaluating the company's productivity</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Administrative and IT-costs decrease</td>
<td>Project Manager</td>
<td>Lowering the actual costs for administration and IT-costs (for the existing several programs)</td>
<td>Chosen the balanced and more profitable ERP-System</td>
<td>Cost saving</td>
<td>Once</td>
<td>Comparing different offers</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Complete understanding of the ERP-system</td>
<td>Trainer</td>
<td>Clear and precise training for every employee in order to ensure a good understanding of the tools and features the system is offering</td>
<td>Result above 70%</td>
<td>Percentage of understanding</td>
<td>Once</td>
<td>Test given to the employees</td>
<td></td>
</tr>
<tr>
<td>ID Number</td>
<td>Product Quality Requirements</td>
<td>Supporter</td>
<td>Objective/Description</td>
<td>Performance Standards</td>
<td>Metric</td>
<td>Frequency</td>
<td>Test Case Details</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Profitability</td>
<td>IT consultancy company, Project Manager, Sypperto GmbH executive members, CEO Sypperto GmbH</td>
<td>The ability of the ERP-system’s implementation to positively impact the productivity and profitability of Sypperto GmbH. The ERP-system is aimed to increase the profitability of the company by having improved and faster business processes that allow the company to work for more customers, increasing the sales as well as the customer satisfaction.</td>
<td>Sales are increased by at least 10% and customer satisfaction by 20% within one year after the implementation.</td>
<td>Percentage of sales and customer satisfaction increase.</td>
<td>Five months after the completed implementation of the ERP-system</td>
<td>R&amp;D, Financial analysis, surveys (customer satisfaction).</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Customer satisfaction improvement</td>
<td>Project Manager</td>
<td>Improving the customer satisfaction by 20% through the faster offer and delivery times and the clear documentation of the customer requests and problems with the ticketing system.</td>
<td>Increased customer satisfaction by 20% within one year after the implementation.</td>
<td>Percentage</td>
<td>Once</td>
<td>Survey</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Business processes restructure for the ERP-system implementation</td>
<td>IT consultancy company, Project Manager, Sypperto GmbH executive members, Sypperto GmbH CEO and consultancy company analysis</td>
<td>Restructure the business management processes according to the managerial preferences from Sypperto GmbH CEO and consultancy company analysis.</td>
<td>Deliver the business management restructured in order to implement the ERP-system.</td>
<td>Percentage</td>
<td>Once or at completion</td>
<td>Focus group executives</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Responsiveness and speed of user interface</td>
<td>IT Developer</td>
<td>Effective improvement in the working day roles of the ERP-system by having a smooth performance of the system with a good and fast response.</td>
<td>Percentage of improvement above 25%</td>
<td>Percentage</td>
<td>Twice: Once when the system is just implemented and three months later</td>
<td>Survey</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Usability of ERP-system</td>
<td>IT Developer</td>
<td>Deliver an ERP-system that is understandable and applicable for the end-users by providing an intuitive software interface.</td>
<td>Selection of an ERP-system which ensures an optimal usability for the Sypperto GmbH employees.</td>
<td>Yes/No or Part of it</td>
<td>Once</td>
<td>Multi-criteria analysis</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Integrity</td>
<td>IT consultancy company, Sypperto GmbH executive members, CIO Sypperto GmbH</td>
<td>The ERP-system ensures that the data is protected and no unauthorized access/user is possible or any unwanted modifications on the software.</td>
<td>Selection of an ERP-system which ensures an optimal integrity for Sypperto GmbH data.</td>
<td>Yes/No or Part of it</td>
<td>Once</td>
<td>Multi-criteria analysis</td>
<td></td>
</tr>
<tr>
<td>ID Number</td>
<td>PRODUCT QUALITY REQUIREMENTS</td>
<td>Supporter</td>
<td>Objective/ Description</td>
<td>Performance standards</td>
<td>Metric</td>
<td>Frequency</td>
<td>Test Case</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
<td>-----------</td>
<td>------------------------</td>
<td>-----------------------</td>
<td>--------</td>
<td>-----------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>11</td>
<td>Expandability</td>
<td>IT Developer</td>
<td>The ERP-system can be expanded after the implementation by new features and functionalities and the system's performance is not influenced when the data volume is increasing.</td>
<td>Selection of an ERP-system which ensures the possibility of implementing new features and functionalities afterwards</td>
<td>Yes/No or Part of it</td>
<td>Once</td>
<td>Multi-criteria analysis</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Performance stability</td>
<td>IT Developer</td>
<td>The ERP-system ensures to deliver a good and smooth performance stability under the stated conditions of Sysepco GmbH</td>
<td>Selection of an ERP-system which ensures the optimal performance stability for Sysepco GmbH</td>
<td>Yes/No or Part of it</td>
<td>Once</td>
<td>Multi-criteria analysis</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Transparency increase</td>
<td>IT Developer</td>
<td>The ERP-system ensures the ability to perform the required function under stated conditions by increasing the transparency and overview of the information</td>
<td>Selection the ERP-system which permit perform higher transparency</td>
<td>Yes/No or Part of it</td>
<td>Once</td>
<td>Multi-criteria analysis</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Implementation of the ticket-system in the ERP-system</td>
<td>IT Developer</td>
<td>The ERP-system must be implemented with the ticket tool</td>
<td>Ticket-system connected with the ERP-system</td>
<td>Effective operation: Yes/No or part of it</td>
<td>Once or at completion</td>
<td>Test the implementation</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Implementation of the online-shop in the ERP-system</td>
<td>IT Developer</td>
<td>The online-shop is completely implemented with the ERP-System and is connected through the interface</td>
<td>Online-shop associated completely with the ERP-system</td>
<td>Effective operation: Yes/No or part of it</td>
<td>Once or at completion</td>
<td>Test through a purchase test</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Availability of all data and information in the ERP-system</td>
<td>IT Developer</td>
<td>The ERP-system provides all the required and existing data</td>
<td>Complete data migration</td>
<td>All data is provided</td>
<td>Once</td>
<td>Acceptance from IT developer</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Guarantee of high-level data security according GDPR</td>
<td>IT Developer, CEO Sysepco GmbH</td>
<td>Deliver a system that permits to protect sensitive data and information according to the new norms (GDPR) (e.g., customer and supplier data are saved in a specific way in order to have a full compliance with the law)</td>
<td>Pass the 100% of the security tests</td>
<td>Percentage</td>
<td>Once or at completion</td>
<td>Test to sensor in the system</td>
<td></td>
</tr>
</tbody>
</table>

**Table 6 - Product Quality Requirements Matrix**
## MEASURE PROJECT QUALITY

<table>
<thead>
<tr>
<th>ID Number</th>
<th>PROJECT QUALITY REQUIREMENTS</th>
<th>Supporter</th>
<th>Objective/Description</th>
<th>Performance standards</th>
<th>Metric</th>
<th>Frequency</th>
<th>Test Case</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Overall project execution</td>
<td>PMI Institute, SAP Consultant</td>
<td>Deliver the project according to the following the guideline from the PMI Institute and ASAP methodology</td>
<td>Perform to deliver the project according the methodology</td>
<td>complete the checklist</td>
<td>weekly</td>
<td>Checklist</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Profitability of product deliverable</td>
<td>Project Manager team</td>
<td>Deliver the project according the approved cost; Select the most profitable ERP-system</td>
<td>Tolerance +/- 10% of the total cost</td>
<td>Total cost</td>
<td>once</td>
<td>Cost management plan</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Resource effectiveness</td>
<td>Project Manager team</td>
<td>Effective use of all the resources needed within the overall project work</td>
<td>Project completed with the optimal resources required to fulfill quality and on-time delivery (reference to resource management)</td>
<td>Resource allocation and Resource cost</td>
<td>weekly</td>
<td>Microsoft Project</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Accuracy</td>
<td>Project Manager team</td>
<td>The project work has to be performed accurately during all the phases</td>
<td>Perform in the best possible way (defined by the project team due to infeasibility)</td>
<td>Fulfil the quality requirements</td>
<td>daily</td>
<td>Checklist</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Efficiency</td>
<td>Project Manager team</td>
<td>The project work is performed with the minimum consumption of resources</td>
<td>Project completed with minimum cost and resources possible (reference to cost management and resource management)</td>
<td>Cost</td>
<td>At each new resource allocation Microsoft Project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Timeliness</td>
<td>Project Manager team</td>
<td>Project work is delivered according to the schedule and the Synergy GmbH requirements regarding time</td>
<td>Follow the schedule management plan and deliver the project on time (+/- 2 weeks)</td>
<td>Schedule</td>
<td>daily</td>
<td>Schedule</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Correctness</td>
<td>Project Manager team</td>
<td>The project work is performed correctly fulfilling the defined specifications of the project as well the project objective</td>
<td>Satisfaction above 85%</td>
<td>Percentage</td>
<td>After each project phase and three months after the closing of the project Survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Financial performance</td>
<td>Project Manager team</td>
<td>The project fulfills the financial target according to the estimated project budget</td>
<td>Project cost tolerance +10%</td>
<td>Cost</td>
<td>weekly</td>
<td>Microsoft Project, Excel</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The applied colours for each requirement reflect the colours of the corresponding WBS component (please refer to the WBS in the appendix).*

**Table 7 - Project Quality Requirements Matrix**
8.3. Quality Control in the Contract

Having one main fixed contract for the project, the performance of it follows fixed weekly inspections to permit the payment of the contract tranche established. The responsible managers, that are the Project managers in charge for QA & QC, executive Sysperto GmbH manager and member of the consultancy company will conduct scheduled meetings to check the work in progress and if it observes the quality requirements stipulated in the contract. A more detailed description of the quality assurance and control for and within this contract can be found in the Project Procurement Management Plan.

9. Quality Control Templates

For the definition of templates for control quality tools, the project team has chosen some of the main project deliverables in order to develop corresponding templates for those deliverables. The first selected deliverable is the process-restructuring of the existing business processes. The second deliverable is the data migration of the existing data and (historical) information into the new ERP-system, whereas the third deliverable is the end-user training that is performed after the go-live and the fourth template is dedicated to a checklist for the overall ERP-System implementation.

For all mentioned project deliverables, in the following the developed templates are described how they are used as tools for data gathering, data analysis and decision-making. The approach used to guarantee the quality of the ERP-system implementation is based on translating the data into clear information in order to be evaluated. The tools are developed to allow a fluid gathering, analysis and subsequence assessment of the information collected. Nevertheless, it has been taken into account to gather the information with the aim of aiding the controlling phase, otherwise, an audit outsourced.

The tools are recommended to the whole project management execution to take actions to improve the performance. All tools and templates follow a color management structure according to the WBS.

9.1. Tools


The project has the aim of implementing an ERP-system aiding Sysperto GmbH during the growth phase. The company is facing also an old process structure and through a complete restructuring and with the support of Acmeo GmbH, the company will have the opportunity to implement the ERP-system in a new management business structure.
During the business process restructuring (according to the 1.1.2 work package of the WBS dictionary) the development of a survey has been taken into account that allows to control the acceptance of the new role position according to the business process restructuring. Moreover, the other templates will support the quality managers during the process of restructure.

Data gathering:

The first document is the “acceptance sheet”, that needs to gather and evaluate if the employee after the restructure accepts the new changes. The data will be gathered from this document so the employee will evaluate if the changes in the role position, team, seat position are accepted also from his/her side.

Data analysis:

The data analysis for the “acceptance sheet – measurement and evaluation” will be performed separately from the “acceptance sheet” document because there will be several documents filled out from each employee of Sysperto GmbH. This document is necessary to evaluate all the employees’ positions, which could be in pending. Under “evaluation” further evaluation and notes for taking decisions related to “what to do” is available.

Decision making:

The last template will be used for the decision-making phase of the employee. In fact, the pending position will be evaluated and a decision will be taken through a personal interview. The consultation is composed between the employee affected and the board in charge of evaluating the position, it is composed by: a consultant from Acmeo GmbH, the project manager and the HR manager from Sysperto GmbH.
### SySperto Business Management Restructure

#### Acceptance sheet

<table>
<thead>
<tr>
<th>PREVIOUS ROLE</th>
<th>IT consultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLE DESCRIPTION</td>
<td>-</td>
</tr>
<tr>
<td>TEAM</td>
<td>IT consultancy – Marta</td>
</tr>
<tr>
<td>SEAT POSITION</td>
<td>A6 corridor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEW ROLE</th>
<th>IT consultant</th>
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<tr>
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<td>IT consultancy – Antonio</td>
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<tr>
<td>SEAT POSITION</td>
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Mark your preference of acceptance for the new role position *(If there is no change mark YES)*

- YES
- NO
- PART OF IT

If you marked - PART OF IT - please indicate here what would be clarify:

- GENERAL INFORMATION
- CLARIFICATION/DUBTS FOR THE ROLE
- TEAM
- SEAT POSITION

\*You will be contact in the next days in order to evaluate the issues

<table>
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*Figure 5 - Process-restructuring – Survey (part I)*
Figure 6 - Acceptance sheet – Measurement and Evaluation – Survey (part II)
## Quality Management Plan – Implementation ERP-system (Group 4)

### Figure 7 - Acceptance sheet – Measurement and Evaluation – Survey (part III)

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**TEAM**

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<tr>
<td>New Role</td>
<td>IT consultancy – Antonio</td>
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**SEAT POSITION**

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<tbody>
<tr>
<td>New Role</td>
<td>A7 (table team narrow the window)</td>
</tr>
</tbody>
</table>

**Evaluation position**

---

**Date**: __________

**Signature**: __________
9.1.2. Data migration – Checklist

Data gathering:

The second tool is a checklist with evaluation criteria tools from a survey in order to establish the complete data migration before the go-live of the ERP-system. It is used in order to ensure that all existing data are migrated and all business processes are included in the ERP-system. The completeness and correctness of the data migration are seen as a very important criteria of the project and for the final product of the implemented ERP-system, as a result of this data, illustrates a very crucial success factor for the company. Furthermore, it is very important to control if all data are migrated.

Data analysis:

The data analysis for the data migration is done in the second part of the checklist by counting the results from the first part of the checklist. The resulting number simply demonstrates how many areas of the data migration is completed, in how many it is only performed partially or not at all. This analysis helps to identify the areas where the data migration, that was performed so far, has to be reviewed and performed again. Moreover, it clearly illustrates the completion and success of the data migration at the current point in time. The results are simply illustrated by using a bar chart. This means that the data analysis is illustrated and performed by using the same document that is also used for the data gathering.

Decision making:

The decision making of the results from the checklist will be performed and documented by using the third part on the checklist. The third section will give the opportunity to the QC to state if the data migration has to be reviewed/redone again based on the data analysis and the graph from the analysis part. The decision to include the decision-making part of this checklist is to guarantee a correct work-flow from all the parts and subsequent a clear understanding. The benefit of using an all-in-one document is to have an overview with all the gathered data available and in order to know with one document where the improvements are necessary.
Figure 8 - Data migration – Checklist
9.1.3. End-user Training – Survey

Data gathering:

The third tool is a survey for the end of the end-user training. It is used in order to gather the data if the training content was appropriate or not. The gathering of those data is also crucial for the project because if the employees do not understand correctly how to work with the new ERP-system, this will have a great effect on the organization’s daily business. Moreover, if the employees do not know how to work with the new ERP-system the whole project objective would be failed somehow as it then would not bring the desired benefits to the company.

Data analysis:

The data analysis for the survey has to be performed separately from the survey document because there will be several returned surveys forms (from each employee that received a training). Therefore, the application of a histogram is used to perform the analysis of the responses and to have a clear overview of the employee’s perception of the conducted training. Within the analysis a score result has been added to evaluate the performance of each question and the overall situation. In this circumstance a parameter has been inserted which shows the maximum and minimum score that in overall is possible to get. Therefore, a pie chart is consequently added to permit an overview of the total score from the employees of Sysperto GmbH. A final clear understanding will be possible through an attribute impact matrix, which shows a clear classification of the result that each employee has taken. The horizontal axis has been associated with a number for each employee, whereas the vertical axis shows the maximum and minimum score possible to pass the survey.

Decision Making:

The final decision making out of the results from the survey are documented in meeting minutes from the special board composed by: a consultant from Acmeo GmbH, a project manager and a HR manager from Sysperto GmbH. One the one hand, if the results are quite low, the meeting evaluation could lead to the conclusion that another training session is necessary. In this case, additional training documents have to be provided to the employees and a stronger focus has to be placed on the end-user support. On the other hand, if the overall situation of the employees is good, further explanations are not required, the focus will be done only for limited cases which mean the employees with low score grade. In particular, the document shows the minimum grade to pass the training, in this case, it is 38. The attribute impact matrix aims to see which employee is under the minimum (red line) in order to evaluate a corrective action.
### Figure 9 - End-user Training – Survey (Part I)

#### Quality Management Plan

**Figure 9** - End-user Training – Survey (Part I)

<table>
<thead>
<tr>
<th>Instructions</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not relevant to this event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The trainers were skilful, had the appropriate and right knowledge for the ERP-system handling</td>
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<tr>
<td>2. The trainers were able to clearly explain and give the knowledge perfectly</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. The trainers were inviting for questions and responding completely</td>
<td></td>
<td></td>
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<tr>
<td>4. The content of the training was good, constructive and helpful.</td>
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<td></td>
<td></td>
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<tr>
<td>5. The content of the training was organised and easy to follow.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. The training was operated smoothly and effectively.</td>
<td></td>
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<tr>
<td>7. The duration and schedule of the training was appropriate</td>
<td></td>
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</tr>
<tr>
<td>8. My knowledge and skills for the use of the ERP-System has increased.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9. I understand the way the ERP-System works</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10. I can handle and perform tasks on the ERP-System implemented</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I am satisfied with the training provided</td>
<td></td>
<td></td>
<td></td>
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**Dedicate this space to ask possible question or ask for further information:**

**signature**

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**Figure 9** - End-user Training – Survey (Part I)
### Figure 10 - End-user Training – Survey (Part II)
9.1.4. ERP-System Implementation – Checklist

The surveys established have the function of controlling and evaluation, whereas the checklist in the following has the aim to organize the work during the whole implementation of the ERP-system. This control sheet measures the achievement of the quality standard. If the requirements have not been or have partially been satisfied, therefore all the processes have to be reworked to satisfy the standard. Nevertheless, the “Checklist – ERP-System implementation” is a formal paper that evaluates also the overall performance of the implementation team.

The quality audit of the implementation is structured following the WBS, i.e. waterfall methodology. The audit is performed by the project management team under the standard regulations established. Following the methodology, the control takes place at the end of each activity. Only at the end, after the go-live, the overall performance will be evaluated, which may be satisfied exclusively with the fully completed implementation.
## ERP-System implementation

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<td>1.3.1.2 Implementation of online-shop</td>
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<td>1.3.2.1 Configuration and Development</td>
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<td>1.3.2.2 Installation of the software</td>
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<td>Integration of Syspetro GmbH processes in the ERP-system</td>
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<tr>
<td>1.3.2.3 Data migration (refer to the Survey 1)</td>
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<td>Availability of all data and information in the ERP-system</td>
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<td>1.3.2.4 System and performance testing</td>
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<td>Guarantee of high-level data security according GDPR</td>
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<td>1.3.2.5 Go-Live</td>
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<td>Performance stability</td>
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### Overall implementation performance

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### Evaluation


date_________________________ signature_________________________

*Figure 11 - ERP-System implementation – Checklist*
9.2. Quality Management Plan Approval

The undersigned acknowledge that they have reviewed the Quality Management Plan and authorize to include it to the Project Management Plan for the implementation of an ERP-system to the company Sysperto GmbH. The Quality Management Plan could be changed only following the correct framework and change request template. Moreover, the new revisions of the plan shall be approved by the person who is authorized for the approval of the plan.

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<td>Role title: Project manager – Sysperto GmbH</td>
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<td>Role title: Quality Manager – Sysperto GmbH</td>
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<td>Role title: IT manager – Sysperto GmbH</td>
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<tr>
<td>Role title: CEO – Sysperto GmbH</td>
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Figure 12 - Quality Management Approval – Template
10. Management of Non-Conformities

In the following, the management of occurring non-conformities within the project is described by the definition of the procedures for change management and for claims and complaints management. Both mentioned procedures are represented using a flowchart diagram.

It is assumed that each non-conformity within the project either leads to a change request and/or to a claim/complaint. Due to this, occurring non-conformities are handled by applying the defined steps for the processes.

10.1. Change Management

In regards to the definition of the change management, at first it is important to establish a clear change request template. Therefore, a template was developed based on the template from the Book of Forms (Snyder, 2013, pp. 145-147). It will be used for the project and is outlined in the following. Further explanations can be found in the corresponding change management plan.

Besides the mandatory use for all project participants (internal and external) of this change request template, the change management flowchart (Figure 14) illustrates the steps and sequences of those steps in order to perform the defined change management within the project. The trigger for a change request can come from the CEO, employees, project manager or the solution team/company implementing the software and is related to the identification of a necessity, opportunity, improvement or problem (either corrective and/or preventive actions.) After this identification, several defined steps have to be followed.
Implementation of an ERP-system

Change Request

Normal RFC

Change Requester Details

Date submitted: ____________ Request: __________________________
Date required: ____________ Department: ________________________
Requester name: ____________ Manager: _________________________
Email: _____________________ Email: ____________________________
Other: _____________________ Other: ____________________________

Basic Details

Change Classification (Check all that apply):
☐ Testing/quality  ☐ Cost  ☐ Requirements/Deliverables
☐ Schedule  ☐ Scope  ☐ Resources

Does this Change affect (Check all that apply):
☐ Corrective Action  ☐ Updates  ☐ Preventative Action
☐ Other  ☐ Defect Repair

Describe the change being requested: ____________________________________________________________
__________________________________________________________________________________________

Describe the Reason for the change: ______________________________________________________________
__________________________________________________________________________________________

Describe any Technical changes to implement this change: __________________________________________
__________________________________________________________________________________________

Estimate Resources: __________________________________________________________________________

Estimate Cost: ______________________________________________________________________________

Describe risks to be considered for the change: ____________________________________________________
__________________________________________________________________________________________

Disposition: ☐ Approve  ☐ Reject  ☐ Defer

Documents attached:
- 
- 
- 

Figure 13 - Change Request Template
Figure 14 - Change Management flowchart
10.2. Claims and Complaints Management

For the claims and complaints management first, a flowchart for the general claims and complaints management is represented. This general flowchart describes the steps, actions and decisions that have to be performed for any claim or complaint, meaning this sequencing will be applied for all claims and complaints that occur during the project in the company.

The second flowchart illustrates the defined steps and actions for the specific case that a system error is detected (for example the migration is incorrect). The project team additionally defined this specific flowchart as the system performance and the data migration illustrate one of the main crucial deliverables for the project and those are going to have a big influence on the success of the project. If such an error or non-conformance is detected, a detailed and specialized sequence of steps and actions has to be followed in order to facilitate that the claim can be solved as fast and accurate as possible, to ensure the quality within the project and with this finally the success of the project.
Figure 15 - Claims and Complaints Management flowchart (general)
Claims and Complaints Management (Case: system error is discovered (e.g. migration incorrect))

Figure 16 - Claims and Complaints Management flowchart (specific case)
11. Control and Process Improvement Plan

As stated in the PMBOK and the Book of Forms, a specific relation can be seen between the Quality Management Plan and the Process Improvement Plan also as the “Project Quality Management […] supports continuous process improvement activities” (PMI, 2017, p. 271). Therefore, the possible combination of both plans is mentioned (Snyder, 2013, p. 80) and will be applied for the present project. In consequence, the process improvement plan will be outlined in the following as part of the quality management plan. Besides this, the process improvement plan is seen as an output from the process “Plan Quality Management” and is a part of the overall project management plan (Snyder, 2013, p. 85).

According to the PMBOK, the quality improvement activities and methods are in general seen as tools and techniques for the process of “manage quality” (PMI, 2017, p. 289/296). One technique to determine possibilities for process improvements is the process analysis (a specific data analysis technique) (PMI, 2017, p. 292). Another tool is the quality improvement method such as the plan-do-check-act method or tool (in the following referred to as PDCA-cycle) that is going to be applied and used for the process improvement plan for the present project. The PMBOK refers to this method as one of the most commonly used tools in order to achieve quality improvement and “to analyze and evaluate opportunities for improvement” (PMI, 2017, p. 296). Another reason for this selection is that within the company this method was also used before for other projects and process improvements and with this, the knowledge, skills and acceptance of applying this method is given.

In the following, the template for the process improvement plan according to the Book of Forms is applied in order to describe the “approach that will be used to continuously improve quality for the product, process, and project” (Snyder, 2013, p. 80). The process improvement plan defines the steps for the analysis of possibilities to increase the value of project management, product development or organizational processes (Snyder, 2013, p. 85). As the product of the project itself is also related to process improvement as one of the first deliverables, this topic has special attention within the overall project management work.

For the process improvement plan, the sub-process of the project initiation related to the approving of the Business Case is used exemplarily for the illustration of the overall process improvement approach that is going to be applied for the overall project.

Process description:

This process is used by Sysperto GmbH to develop and approve the Business Case for a project and with this to initiate a project. It consists of the following steps:

1. Conduct a kick-off workshop that was initiated by the project initiation request
2. The Business Analyst and the Project Management Team work together and collect all information for the Business Case. Therefore, they request:
   a. The requirements and expectations of the CEO and main stakeholders
   b. Financial information from the finance department
   c. Market information from the Marketing and Business Development responsible
3. Based on the collected information, the Business Case is developed.
4. The developed Business Case is reviewed together with the CEO.
5. The changes are incorporated into the Business Case.
6. The Business Case is approved by the CEO and the project initiation is performed.
7. The project managers are assigned to the project.

**Process starting point:**
Kick-off Workshop

**Process ending point:**
Assignment of the project managers

**Inputs:**
- Project initiation request
- Kick-off workshop meeting minutes
- Requirements from CEO
- Financial data
- Market research data
- Templates for the Business Case
- Related procedures to the Business Case
- Form for the assignment of the project manager

**Outputs:**
- Business Case
- Decision of approval or decline of the project
- Assignment of a project manager (if approved)

**Process owner:**
The Business Analysts has the main responsibility to maintain and ensure the successful performance for this process.
Process stakeholder:
- Project requestor
- CEO
- Business Analyst
- Project Managers/Project management team
- Finance department
- Marketing and Business Development Department
- Key users/experts from the company’s employees for the project

Metrics and control limits:
- Hours of the kick-off workshop → Control limit: Not more than 5 hours
- Time to receive all requested information → Control limit: Not more than 10 working days
- Time to develop the Business Case → Control limit: Not more than 32 hours per employee who is developing the Business Case
- Time to incorporate the required changes from the review → Control limit: Not more than 8 working days
- Time to receive the approval for the Business Case → Control limit: Not more than 5 working days
- Time for the assignment of a Project Manager → Control limit: Not more than 3 working days

Targets for improvement:
- Reduction of the number of steps from 7 to 4
- Reduction of the overall process time by 10%
- Reduction of the involved employees by one employee

Process improvement approaches: (in general for all processes; not only for the previously outlined, exemplary chosen process)
- General meetings with main stakeholders and involved participants to review current “as-is” model of the process and to identify possibilities to improve or remove process steps at the end of each month
- Brainstorming sessions with several stakeholders for the collection of process improvement ideas (in regard to improve steps execution in general, remove or combine process steps)
- Develop quick wins in the daily operations based on smaller, occurring issues
- Weekly review meetings with the project management team and involved stakeholders from the current project phase. Use of:
  - Agenda
  - Meeting minutes
  - Backlog-lists

- Introduction of common project folder and database; especially use of “Microsoft OneNote” as communication platform as well as a tool for collecting ideas for meetings and in order to prepare them → helps to settle the agenda appropriately to the current topics in advance of the meeting

- Introduction of the “Improvement Friday” on which each employee assigns 3 hours of his day to a specific improvement of a task

- Application of the “CIP-form” that is available for each employee to suggest ideas for improvements or problems that should be resolved

- Continuously application of the previously described PDCA-cycle

By applying all mentioned approaches, the project management team aims to ensure a continuous process improvement within the project. Moreover, the goal is that those approaches within the project also have a positive influence on the overall improvement of the processes of the company itself.

12. Conclusions

To conclude, this present document illustrates the whole Project Quality Management Plan, that is aimed to describe all activities and approaches applied for the project in order to plan, manage and control the quality of the project. With this, this Project Management Plan provides the description of how the project management team wants to ensure the best possible quality within the project, in order to achieve the overall successful implementation of the ERP-system. Besides the described activities to assure and control the quality, this present document also illustrates the approaches for the overall process improvement within the project by outlining the Project Process Improvement Plan.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, data analysis, brainstorming and meetings were used for all parts to develop a clear description of the quality approach for the project of the ERP-system implementation.
The project team performed this fourth planning process for the knowledge area of Project Quality Management in order to create the Project Quality Management Plan as well as the Project Process Improvement Plan. All generated documents, templates and outputs from this planning process will illustrate the input for the next planning processes such as for example the Procurement Management Plan.

Moreover, the Project Quality Management Plan represents part of the overall Project Management Plan.
References


Project Risk Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

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<td>Carmen Goytre Castro</td>
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**Abstract**

The present paper illustrates the Project Risk Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Risk Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Risk Management Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule, cost and quality. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Risk Management Plan illustrates the fifth knowledge area (Project Risk Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Risk Management Plan first provides a short introduction about the Project Risk Management Plan in general and the Project Risk Management Plan itself, continues with the identification of the different project risks (in regard to the roles and responsibilities, budget and calendar), the probability and impact analyses as well as the specific response to the identified risks. Subsequently, the format of the reports and the risk follow-up are described in detail. In accordance with the previously mentioned topics, the Project Risk Management Plan concludes with the overall risk matrix that contains all identified risk items, their impact and probability, the corresponding mitigation plan as well as the responsibilities for each risk. With those points, the risk management approaches for the project are described and developed at the current point in the planning phase.

**Keywords**: Project Risk Management Plan, Identification of project risks, Probability and impact analyses, Risk Matrix, Implementation, ERP-system, IT-sector, IT-services
# Table of Contents

Abstract ........................................................................................................................................ II

List of Figures ............................................................................................................................ V

List of Tables ............................................................................................................................... VI

1. Introduction, Scope and Purpose of the Project Risk Management Plan ...................... 1

2. Risk Management Plan ......................................................................................................... 1

   2.1. Methodology .............................................................................................................. 2

   2.2. Roles and Responsibilities ......................................................................................... 2

   2.3. Risk Categories ......................................................................................................... 3

   2.4. Risk Management Funding ....................................................................................... 4

   2.5. Contingency Protocols .............................................................................................. 4

   2.6. Frequency and Timing .............................................................................................. 4

   2.7. Stakeholder Risk Tolerance ....................................................................................... 5

   2.8. Tracking and Audit .................................................................................................. 5

   2.9. Definition of Probability ......................................................................................... 5

   2.10. Definition of Impact .............................................................................................. 6

   2.11. Probability and Impact Matrix .............................................................................. 6

3. Identification of Project Risks ............................................................................................. 7

   3.1. Identification of Project Risks ................................................................................... 7

   3.2. Roles and Responsibilities ......................................................................................... 8

   3.3. Influence on Budget ................................................................................................. 11

   3.4. Influence on Calendar ............................................................................................... 12

4. Probability and Impact Analyses ....................................................................................... 14

   4.1. Probability Analysis ................................................................................................. 14

      4.1.1. Project Schedule Probability Analysis .............................................................. 14

      4.1.2. Data Migration Probability Analysis ................................................................ 15

      4.1.3. Software System Design Customization Probability Analysis .................. 16

   4.2. Impact Analysis ....................................................................................................... 17

      4.2.1. Impact Analysis Project Schedule ................................................................. 17
4.2.2. Impact Analysis Data Migration ............................................................ 21
4.2.3. Impact Analysis Software System Design/Customization ....................... 23
5. Response to Risks .......................................................................................... 24
6. Format of the Reports ....................................................................................... 25
   6.2. Change Request Risk Impact ................................................................... 25
7. Risk Follow Up .................................................................................................. 26
   7.1. Data Analysis ............................................................................................ 26
   7.2. Audits ....................................................................................................... 26
8. Risk Matrix ........................................................................................................ 26
9. Conclusions ....................................................................................................... 33
References ........................................................................................................ VII
List of Figures

Figure 1 - Required funds - Risk Management Plan.................................................................12
Figure 2 - Required funds - Monitoring and controlling of risks.............................................12
Figure 3 - Timing - Risk Management Plan...............................................................................13
Figure 4 - Timing - Monitoring and controlling of risks.............................................................13
Figure 5 - Project schedule probability with Monte Carlo analysis...........................................15
Figure 6 - Project schedule probability statistics graph............................................................15
Figure 7 - Data migration probability with Monte Carlo Analysis...........................................16
Figure 8 - Data migration probability statistics graph..............................................................16
Figure 9 - Software system design customization probability calculated with Monte Carlo Analysis.........................................................................................................................16
Figure 10 - Software system design customization probability statistics graph........................17
Figure 11 - Contingency reserve for the project schedule...........................................................18
Figure 12 - Project schedule time impact graph......................................................................18
Figure 13 - Project schedule cost impact graph......................................................................19
Figure 14 - Ticket system cost impact graph...........................................................................19
Figure 15 - Online-shop cost impact graph.............................................................................20
Figure 16 - System and performance testing cost impact graph.............................................20
Figure 17 - Go-live cost impact graph......................................................................................20
Figure 18 - Training of the employee’s cost impact graph......................................................21
Figure 19 - Change request impact graph................................................................................21
Figure 20 - Data migration time impact graph ......................................................................22
Figure 21 - Data migration cost impact graph.........................................................................22
Figure 22 - Contingency reserve for data migration.................................................................22
Figure 23 - Software system design/customization time impact graph....................................23
Figure 24 - Software system design/customization cost impact graph....................................23
Figure 25 - Contingency reserve for software system design/customization..........................23
Figure 26 - Management plan performance report.................................................................25
Figure 27 - Change risk impact report.....................................................................................25
Figure 28 - Risk Matrix Legend..............................................................................................27
Figure 29 - Risk Matrix...........................................................................................................32
List of Tables

Table 1 - Roles and Responsibilities (overview) ................................................................. 3
Table 2 - Risk Categories ................................................................................................... 3
Table 3 - Definition of Probability ..................................................................................... 5
Table 4 - Definition of Impact ......................................................................................... 6
Table 5 - Probability and Impact Matrix ............................................................................ 7
Table 6 - Roles and Responsibility Matrix ....................................................................... 11
Table 7 - Risk response ..................................................................................................... 24
1. Introduction, Scope and Purpose of the Project Risk Management Plan

Project risk management is the area of knowledge related to the management of uncertainties that may occur throughout the project life-cycle in order to be prepared for the arising risks or the known unknowns. This management area includes different processes, as identified by the PMBOK Guide (6th Edition) to be the planning, the identification of risks, the analysis of risks, the response planning as well as the response implementation, and finally risk control and monitoring. All these listed processes aim to the same objective; to increase the positive risks (opportunities) and to decrease the negative ones (threats) (PMI, 2017, p. 395).

Following the PMBOK methodology, the risk management processes used for the implementation of the ERP-system to the company Sysperto GmbH are listed below (PMI, 2017, p. 395):

- Plan risk management: the process of planning the approach and the processes that will be used to perform the project risk management.
- Risk identification: the process of identifying all the risk items, susceptible to have an impact on the project, in order to be analyzed.
- Analysis of risks: the process of analyzing the probability and priority of risks and also the analysis of their impact on the project, by carrying out a qualitative and quantitative method.
- Risk response: the process of planning how the risks will be dealing with and responded to, and then plan the way to implement the agreed upon responses.
- Risk monitoring and follow-up: the process of monitoring the risk responses, following up and tracking the identified risks and also identifying the new risks that might emerge during the execution of the project (also known as the unknown risks).

2. Risk Management Plan

The risk management plan defines how the different risk activities will be planned, performed, executed and monitored. This process is carried out to ensure that the degree and accuracy of the risk management is equivalent to the potential risks of the project (PMI, 2017, p. 401). It explains the strategy of risk management and the different information and activities needed to be specified and clarified in order to have the best and maximum control over the risks of the project.
2.1. Methodology

The project management team will ensure that risks are actively and well identified, analyzed and managed throughout the whole project life-cycle. In order to do so, different tools have been used to identify the risks affecting the project of the implementation of the ERP-system, such as brainstorming, consulting experts to gain from their lessons learned and experience, and also using the process mapping to identify all the potential risks in each step of the project (PMI, 2017, p. 396). A detailed description of the risk identification can be found in Chapter 3.1.

A qualitative approach is used to identify risks and manage them using numeric scales and score to classify the risk items regarding their importance and effect on the project, so an effective plan for responses or contingency plans needed to be performed to respond and control the risks (Carmen Goytre Castro, 2019).

Then, a quantitative approach is used in order to analyze, evaluate, estimate and quantify the outcomes and consequences of a risk item when it occurs during the project execution by carrying out a Monte Carlo simulation (PMI, 2017, p. 433).

2.2. Roles and Responsibilities

The project management team is mainly responsible for managing the risks throughout the project’s life-cycle, accompanied by the project team’s IT-expert as well as the consultancy company implementing the ERP-system. Their responsibilities are to identify and evaluate all the risks affecting the project and their probability as well as their impact on the project resulting in the classification of the risks from high to low in order to plan how to control and manage them. They also have to perform a follow-up for the risk items and establish a mitigation plan for each one by planning a response strategy which is mainly prevention, mitigation, transfer or acceptance of the risk.

The following table shows the roles and responsibilities of the different parties for the project in the overall view. The detailed roles and responsibility matrix can be found in Chapter 3.2.

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Roles &amp; responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management Team</td>
<td>- Identify the risks that might occur in the whole project life-cycle</td>
</tr>
<tr>
<td></td>
<td>- Manage and control the risks</td>
</tr>
<tr>
<td></td>
<td>- Create a mitigation plan as a response to the risks</td>
</tr>
<tr>
<td></td>
<td>- Report and document the risk activities</td>
</tr>
<tr>
<td>Internal IT-expert</td>
<td>- Review and recommend suggestions or changes to the project management team based on lessons learned and experience</td>
</tr>
</tbody>
</table>
Risk Management Plan – Implementation ERP-system (Group 4)

2.3. Risk Categories

The risks affecting the project are grouped and gathered from the individual risks under specific categories in order to have a better evaluation, overview and response to the risks. The risk categories identified for the implementation of the ERP-system to the company Sysperto GmbH are listed and detailed in the table below:

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological Risks</td>
<td>Risks related to the technical work of the project and focus on the adaptability, stability, performance and accuracy of the implementation of the ERP-system to the company.</td>
</tr>
<tr>
<td>Project Management Risks</td>
<td>Risks related to the management aspect and activities of the project, such as compliance with the schedule, the definition of the scope or the control of quality.</td>
</tr>
<tr>
<td>Stakeholders Risks</td>
<td>Risks related to the persons, legal or natural, taking part in the project, such as the employees, the company proceeding to the implementation or Sysperto GmbH for instance.</td>
</tr>
<tr>
<td>Business Risks</td>
<td>Risks brought by the project that could affect the core and overall business of the company.</td>
</tr>
<tr>
<td>External factor Risks</td>
<td>Risks related to external factors that could have an influence on the project.</td>
</tr>
<tr>
<td>Legal Risks</td>
<td>Risks that are related to laws, regulations and contracts.</td>
</tr>
</tbody>
</table>

Table 2 - Risk Categories


2.4. Risk Management Funding

In order to proceed to a well-conducted project risk management, the project team has interviewed and consulted ERP-system experts and professionals to gain knowledge from their lessons learned and experiences with the implementation of ERP-systems, the risks occurring during the project and also the risk responses available and their implementation.

However, some risks will be monitored and followed up by the project management team such as the risks related to the compliance with the schedule or the scope of the project. While some risks will be directly transferred to third parties as a mitigation plan such as the development and customization of the ERP-system software as well as the training of the employees will be transferred to the consultancy company operating the implementation of the software for Sysperto GmbH. The required funds for those previously mentioned activities are in detailed described in Chapter 3.3.

2.5. Contingency Protocols

Contingency protocols are defined regarding the budget and the schedule of the project in order to prevent and take into account the risks that may occur which will lead to additional cost or delays in the execution of the project.

Regarding the budget of the project, a specific and different contingency reserve has been allocated to every work package by analyzing the risks occurring in each of these work packages. Then, a percentage of potential reserve is given (from 3% to 10% of the work package cost) according to the level of risk established (refer to “5. Identification of risk costs” in the cost management plan).

To prevent any delays regarding the schedule baseline of the project, a contingency of 10% is already allocated to every work package’s duration.

2.6. Frequency and Timing

All the project processes listed in the risk management matrix have to be under continuous control and monitoring, especially the risk items with the highest scores, in order to mitigate the risks associated to the processes and deliverables.

However, depending on the nature of risk items, the frequency of follow-up and control will be assigned, continuously throughout the project life-cycle or just during a specific phase of the project. While an overall follow-up of the project will be monitored in order to detect the arising of new risks when the project is in the execution phase.
2.7. Stakeholder Risk Tolerance

The stakeholders are very sensible with the risks that may affect the project of the implementation of the ERP-system, as the company is a SME and it is a project that Sysperto GmbH relies on for the upcoming business operations in order to grow and expand its market share. However, the company is willing to take higher risks to achieve its objectives as the implementation of the software is a critical and highly important project for Sysperto GmbH. Consequently, the stakeholders have a higher tolerance for risks regarding this project.

Having a higher tolerance to risk leads the stakeholders to rank high level risks by adopting only the risks with a very high probability and a very high impact as well (Snyder, 2013, p. 117). In this sense, a contingency protocol has been made carefully in order to control the high risks regarding the scope, schedule and cost of the project.

2.8. Tracking and Audit

It is essential to track and follow up the risk items, in this sense the project management team is set to track all risk items throughout the project with giving the importance to the highest risks while not forgetting about the lowest ones. The tracking consists of checking the development of the risks throughout the project to ensure the identified risks will not impact negatively the project. It provides also the identification of new risks when they occur in the project execution, the effectiveness of the responses and their implementation (PMI, 2017, p. 453).

This point, as well as the point of frequency and timing discussed above, will be developed in the current document under the part treating the risk follow-up.

2.9. Definition of Probability

Defining the probability of a risk displays its expected likelihood of occurrence in the project. A numeric scale is used (from 1 to 5) to define the probability of each risk. The table below explains the numeric scales and their equivalent percentages (Carmen Goytre Castro, 2019).

<table>
<thead>
<tr>
<th>Numeric Scale</th>
<th>Probability of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>&gt;76% probability of occurrence</td>
</tr>
<tr>
<td>4</td>
<td>51% to 75% probability of occurrence</td>
</tr>
<tr>
<td>3</td>
<td>26% to 50% probability of occurrence</td>
</tr>
<tr>
<td>2</td>
<td>11% to 25% probability of occurrence</td>
</tr>
<tr>
<td>1</td>
<td>&lt;10% probability of occurrence</td>
</tr>
</tbody>
</table>

Table 3 - Definition of Probability
2.10. Definition of Impact

The impact of a risk item is the potential effect that will be caused in the project. A numeric scale is also used to identify the impact of the risk items (from 1 to 5). The table below details and explains the different impact results according to the numeric scales (Carmen Goytre Castro, 2019).

<table>
<thead>
<tr>
<th>Numeric Scale</th>
<th>Impact on the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Project failure</td>
</tr>
<tr>
<td>4</td>
<td>Significant time delay (61 – 90 days) / Significant profit reduction (&gt;51%)</td>
</tr>
<tr>
<td>3</td>
<td>Moderate time delay (31 – 60 days) / Moderate profit reduction (26 – 50%)</td>
</tr>
<tr>
<td>2</td>
<td>Low time delay (11 – 30 days) / Low profit reduction (6 – 25%)</td>
</tr>
<tr>
<td>1</td>
<td>Very little time delay (&lt;10 days) / Very little profit reduction (&lt;5%)</td>
</tr>
</tbody>
</table>

*Table 4 - Definition of Impact*

2.11. Probability and Impact Matrix

The probability and impact matrix defines the risk score of each risk item in the project, which is the product of the probability scale and the impact scale. The risk score matrix provides the risk items classification by demonstrating the importance of the project’s risks in order to be able to perform a continuous monitoring and control to ensure the success of the project (Carmen Goytre Castro, 2019).

The results of the multiplication are categorized in three types:

- **High Risk**: (>15) present a really high risk of failure for the project, that is why actions have to be taken.
- **Medium Risk**: (from 9 to 15) significant risk for the project success and caution or contingency plan has to be prepared
- **Low Risk**: (<8) a risk with low signification for the project, but it has to be monitored and controlled.

The table presented below shows the risk score matrix with the different categories of risks in function of the impact and the probability of the risks.
3. Identification of Project Risks

The following paragraphs are aimed to describe the process and methods applied to identify the risks for the project. Moreover, the roles and responsibilities for planning, managing and controlling the project risks as well as the influence of the identified risks on the budget and the calendar are going to be described.

3.1. Identification of Project Risks

According to the PMBOK the identification of the project risks is seen as the second process of the project risk management and is aimed to determine as well as to document the individual project risks and the overall project risks (PMI, 2017, p. 395). It is important that the risk identification is carried out continuously throughout the whole project. The PMBOK names several tools and techniques which can be used for this identification (PMI, 2017, pp. 409-416).

For the present project the project management team decided to use several, different tools and techniques in order to achieve a wide and holistic overview and to try to identify as many potential risks as possible.

One of the main tools for the risk identification was the **expert judgment**. Therefore, the project team conducted meetings with several employees from Sysperto GmbH. Although the company so far has never implemented an ERP-system to their company, they have already had similar projects for their customers. Due to that, their experience and lessons learned from those projects were used for the risk identification. Moreover, also a meeting with the CEO was conducted in order to know which risks he is identifying from his point of view. Besides

---

**Table 5 - Probability and Impact Matrix**

<table>
<thead>
<tr>
<th>Probability</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

...
performing the expert judgment with Sysperto GmbH also the experts from the company, that is
going to implement the system (Acmeo GmbH), were consulted.

Aligned with the expert judgment also several interviews with employees from Sysperto
were conducted in order to know their perceptions and “fears” for the implementation.

Using this input from the expert judgments, interviews and also the available lessons
learned documents and checklists from the customer projects from Sysperto GmbH, the project
management team conducted a specific brainstorming session (which can be perceived as a risk
workshop) for collecting all identified risks from the experts as well as for identifying further
potential risks that are for example linked to the project management work itself or that illustrate
overall project risks.

After the brainstorming, another way for the identification of the project risks was the
layout technique of process maps. Therefore, the project team deeply reviewed the whole project
processes and with this also each work package within the project in order to identify each
potential risk that could be linked to any part of the project. This step was perceived as important
for assuring that no part of the project was missed where a risk could occur. In addition, for the
identified problems the further development through a root cause analysis was outlined. Out of
this also several hypotheses and scenarios were created and the project assumptions and
constraints were analysed and reviewed that helped to identify further risks.

Moreover, also an overall information research technique was applied by performing
research from expert journals, books and best practice descriptions.

The application of those mentioned, several tools and techniques helped the project team
to identify different risks and also to confirm already identified risks from previously performed
techniques. All project risks, either individual or overall project risks, were collected, categorized
and further described in order to ensure a common understanding between all project members.
The identified risks can be found in the risk matrix (please refer to Chapter 8).

3.2. Roles and Responsibilities

According to the PMBOK one part of the risk management plan is to determine “the lead,
support, and risk management team members for each type of activity described in the risk
management plan, and clarifies their responsibilities” (PMI, 2017, p. 405). The following
paragraph and matrix are aimed to provide a detailed overview about the involved persons in the
risk management in general for the project as well as their corresponding roles and responsibilities
therefore (following the outline provided in Chapter 2). The specific allocation to the identified
risks and with that to the activities is performed within the risk matrix and can be seen there
(please refer to Chapter 8).
Overall, it can be said that there are several people and parties involved in the risk management for this project but it is important to mention that the final responsibility (mainly in regard to the controlling and monitoring of the activities performed by other persons or parties) stays for the project management team. Therefore, the project management team has the main roles and responsibilities for the risk management and is assigned to most of the activities. Besides that, the internal IT-expert assigned to the project also fulfils several activities for the risk management as this person is the expert for the IT-related topics and provides specific knowledge and experience. Due to the fact that the actual implementation of the ERP-system is performed by an external party, this provider/consultancy company also receives the responsibility for several risk activities. The actual division of risk between Sysperto GmbH and this provider is analysed and described in more detail in the procurement plan. Smaller activities or roles and responsibilities are assigned to the market analysis consultancy company as well as the lawyer and legal consultancy company. The overall role of approving the risk management plan is assigned to the CEO who is supported by the IT-service manager. The following table shows the different roles and responsibilities from the previously mentioned persons and parties.

<table>
<thead>
<tr>
<th>Roles</th>
<th>Phase</th>
<th>Responsibilities</th>
<th>Frequency</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andreas Zieher (CEO)</td>
<td>All phases</td>
<td>Approval of the Risk Management Plan and the overall project work</td>
<td>Continuously</td>
<td>-</td>
</tr>
</tbody>
</table>
| Andreas Domke (IT-service manager) | All phases | - Supporting the CEO with the approval of the Risk Management Plan 
- Supporting the project team with IT-specific knowledge for the ERP-system implementation and the risk management | Continuously and on request from the project team | -                           |
| Veronika Kolb; Omar Lansari; Alberto Molinarelli (Project) | All Phases  | - Responsibility for the creation of the Risk Management Plan, as well as updates of the Project Management Plan and other documents 
- Plan Risk Management | Planning tasks with focus on once at the starting but with continuous | Approval from the CEO/client |
## Roles, Phase, Responsibilities, Frequency, Acceptance Criteria

<table>
<thead>
<tr>
<th>Roles</th>
<th>Phase</th>
<th>Responsibilities</th>
<th>Frequency</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
</table>
| Managers/ Project Management Team | All phases | - Identify continuously project risks  
- Performing qualitative and quantitative risk analysis  
- Plan and implement the risk responses  
- Monitor the risks and persons working on risk responses  
- Responsibility for the delivery and explanation of the Risk Management Plan to the CEO and the other project team members  
- Specific responsibility for several risk items | re-evaluation and updating during the project on a weekly basis; also, according to the tasks and project phase |  |
| Frank Graziani (IT-technician and expert) | All phases | - Supporting the project team with IT-specific knowledge for the ERP-system implementation  
- Monitoring of IT-specific issues and risks of the ERP-system implementation | Continuously throughout the project and on request from the project team | Approval from the Project Management Team |
| Acmeo GmbH (Provider and consultancy company for the implementation) | During the overall implementation phase | - Specific responsibility for several risk items (please refer to the Risk Matrix in Chapter 8) | Continuously throughout the implementation phase and on request from the project team | Approval from the CEO and the project management team |
### 3.3. Influence on Budget

According to the PMBOK another part of the risk management plan is related to the funding and the influence of the risk management on the overall budget and refers to it as the identification of “the funds needed to perform activities related to Project Risk Management. Establishes protocols for the application of contingency and management reserves.” (PMI, 2017, p. 405). The following paragraph gives a brief description therefore. More detailed information can be found in the corresponding cost management plan of the project.

The information about the required funds in order to conduct the activities that are related to the risk management for the project and with this meaning the project management work itself can be extracted from MS Project.

<table>
<thead>
<tr>
<th>Roles</th>
<th>Phase</th>
<th>Responsibilities</th>
<th>Frequency</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market analysis consultancy company</td>
<td>All phases</td>
<td>- Responsibility for the analysis of potential, occurring market changes</td>
<td>Continuously throughout the project and on request from the project team</td>
<td>Approval from the Project Management Team through providing clear data reports of market changes</td>
</tr>
<tr>
<td>Lawyer and legal consultancy company</td>
<td>All phases</td>
<td>- Responsibility for the analysis and solving of potential, occurring legal issues that are related to laws, regulations and contracts</td>
<td>Continuously throughout the project on request from the project team</td>
<td>Approval from the CEO and the Project Management Team through providing an accurate solution proposal</td>
</tr>
</tbody>
</table>
For the planning of the risk management and with this the development of the risk management plan 3,600€ were allocated.

![Figure 1 - Required funds - Risk Management Plan](image)

For the monitoring and controlling process additional 7,488€ were allocated.

![Figure 2 - Required funds - Monitoring and controlling of risks](image)

To sum this up, for the project management work related to the risk management in total 11,088€ were allocated therefore.

Besides that, it is also important to mention the amount of the contingency reserves that was calculated and based on the identified risk to 24,741,72 €. Further details and explanations can be extracted from the project cost management plan.

### 3.4. Influence on Calendar

According to the PMBOK also the timing and with this the influence on the project calendar have to be mentioned in the risk management plan (PMI, 2017, p. 405). It refers to it as the definition of “when and how often the Project Risk Management processes will be performed throughout the project life cycle, and establishes risk management activities for inclusion into the project schedule.” (PMI, 2017, p. 405).

This information can also be extracted out of MS Project and is shown in both screenshots in the following. It can be said that the project risk management processes especially are performed for the first time within the planning phase mainly during the development of the risk management plan. Therefore, eight days with 80 working hours are allocated to it. Besides that,
also during the development of the other project management plans the risk management plan will be reviewed and, if required, revised.

**Figure 3 - Timing - Risk Management Plan**

After the planning phase, specific activities are scheduled throughout the whole execution and monitoring and controlling processes. With this, it can be said that throughout these processes, time is allocated for the risk activities, as it can be seen in the following screenshot:

**Figure 4 - Timing - Monitoring and controlling of risks**

To conclude, the project risk management processes are allocated throughout the whole project and therefore will be performed during the whole project. This means that the project management team agreed on weekly meetings to review the current situation for the risk management in order to review the already identified risks (whether maybe some of them occurred or are foreseen to be more likely to happen in the near future) but also to identify potential new risks and therefore plan and implement new risk responses. In addition, more detailed information regarding the schedule of the activities from risk management can be found in the project schedule management plan. Besides that, the risk matrix (please refer to Chapter 8) states the timing for each specific risk activity itself (last column “when”).
4. Probability and Impact Analyses

The implementation of the ERP-system within Sysperto GmbH has a high level of human factor involved and with this also working hours. As seen in the cost management plan all the activities have a high involvement of the project management team and some experts working within the company to implement the software. The possible risks that could impact the project are due to the level of occurrence and consequently the level of impact identified in the risk matrix.

4.1. Probability Analysis

The probability that a risk occurs depends on many factors. It is referred to as a risk/uncertainty factor when there is no 100% probability that the risk occurs. As a result, an analysis has been carried out in order to calculate the likelihood of the impact in terms of cost and time. The task of the project manager is to reduce the probability using some tools to understand the level of risk and to evaluate possible plans of mitigation to move on the project if it occurs.

The project management team for the implementation of the ERP-system to Sysperto GmbH has established a certain level of risk for each activity, in order to understand for which risks it is crucial to pay higher attention. In order to rank the risks, the analysis use the level of probability and level of impact; afterwards the identification and categorization of the higher risks, has been calculated the probability that the highest risks could happen. To calculate an accurate probability for each of the higher risks, it has been required the consultancy from Acmeo GmbH, in addition, has been used the expertise of Sysperto GmbH in terms of software implementation to be precise with the estimation.

The next subparagraphs will show a simulation of probability using the software Palisade with the Monte Carlo analysis. This aspect is fundamental to have a clear picture and to identify for Sysperto GmbH all the possible outcomes from the risk analysis.

4.1.1. Project Schedule Probability Analysis

The likelihood of occurrence with the project schedule of the implementation of the ERP-system, takes into account the most critical work package of the whole project. According to the expert’s judgement the most critical work packages that have been considered are:

- Implementation of ticket system – 1.3.1.1
- Implementation of online-shop – 1.3.1.2
- System and performance testing – 1.3.2.4
- Go-Live – 1.3.2.5
- Training of the employees – 1.4.2
- Change request – 1.5.4.1
The result is the table here below:

```
<table>
<thead>
<tr>
<th>Risk</th>
<th>Probability</th>
<th>Time Impact</th>
<th>Monetary Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test phase</td>
<td>Very Low</td>
<td>$781$ hours</td>
<td>€ $30,795$</td>
</tr>
<tr>
<td>Go-Live</td>
<td>Low</td>
<td>$805$ hours</td>
<td>€ $30,795$</td>
</tr>
<tr>
<td>Go-Live</td>
<td>Medium</td>
<td>$850$ hours</td>
<td>€ $30,795$</td>
</tr>
<tr>
<td>Go-Live</td>
<td>Medium</td>
<td>$850$ hours</td>
<td>€ $30,795$</td>
</tr>
<tr>
<td>Go-Live</td>
<td>High</td>
<td>$900$ hours</td>
<td>€ $30,795$</td>
</tr>
<tr>
<td>Go-Live</td>
<td>Very High</td>
<td>$1,000$ hours</td>
<td>€ $30,795$</td>
</tr>
</tbody>
</table>

Figure 5 - Project schedule probability with Monte Carlo analysis
```

The application of the Monte Carlo analysis has given as output two important outcome:

- Time: $781$ hours
- Monetary: € $30,795$

The analysis performed the results taking into consideration the probability for each risk, the “occur?” column, gives the outcome of which risk has occurred or not. Here below the graph shows the simulation with five hundred interactions, whether likelihood of the risks happen and the possible delay in percentage.

```
Figure 6 - Project schedule probability statistics graph
```

**4.1.2. Data Migration Probability Analysis**

The data migration for the implementation of an ERP-system is a sore subject. Usually the data migration in a multinational company allows to reduce complexity and the duplication of master data. However, in a small-medium company as Sysperto GmbH, the data are essential as much as the internal know-how; that is because the data are part of the know-how and competitive advantage of the company. Here below the table shows an assessment of probability where part of the activities faces a defect during the implementation.
The application of the Monte Carlo analysis has given as output a possible scenario where some defects happen, giving an outcome:

- Time: 89 hours
- Monetary: € 4.698

The graph shows the probability in percentage for a possible risk happens in terms of schedule. Besides, the graph, the grid helps to understand the probability hour/percentage.

4.1.3. Software System Design Customization Probability Analysis

The Monte Carlo Analysis, in this case, has assessed if a defect happens during the software system customization. Knowing the probability has been evaluated the possible impact in terms of time and cost for the project during the implementation of the ERP-system.

- Time: 64 hours
- Monetary: € 2.880
The graph below shows the impact in percentage on the schedule. In this case, the risk is quite high (probability 70%), in consequence in a 30% of the trials the risk did not appear which brings to not consider contingency reserve in terms of time and cost. However, whether occur is reasonable and precautionary a buffer. The trial made by the Monte Carlo analysis estimate a possible impact of 64 hours.

Figure 10 - Software system design customization probability statistics graph

4.2. Impact Analysis

The analysis for the critical risks has been performed by the software Palisade, using the Monte Carlo analysis. The calculation allows an assessment of the possible impact taking into account the estimates for each risk. The expertise from Acmeo GmbH combined with the know-how of Sysperto GmbH gives a range of impact, which means the companies assessed a pessimistic impact, optimistic impact and most likely impact for time and cost of the highest risks.

The assessment of the impact, throughout the Monte Carlo analysis, has been performed only to evaluate the impact for the highest risks, which have critical consequence in the overall project. Nevertheless, the analysis supports a structured and more accurate estimation for the contingency reserve for critical activities. The forthcoming subparagraphs will describe how the impact has been evaluated.

4.2.1. Impact Analysis Project Schedule

The major work packages of the project schedule that have a critical impact on the schedule and consequently on the cost are:

- Implementation of ticket system – 1.3.1.1
- Implementation of online-shop – 1.3.1.2
- System and performance testing – 1.3.2.4
- Go-Live – 1.3.2.5
- Training of the employees – 1.4.2
- Change request – 1.5.4.1

The table here below gives an overview of the total impact for all the activates that have been taken into consideration:

![Contingency Reserve for the Project Schedule](image1)

**Figure 11 - Contingency reserve for the project schedule**

Through the graphs here below represented, it is possible to understand more in detail the possible impact in terms of time, considering the critical work packages.

![Project Schedule Time Impact Graph](image2)

**Figure 12 - Project schedule time impact graph**

For 90% of the probabilities, the impact of the project schedule will be from 755.2 hours to 900.4 hours. The estimated impact in terms of time is 843 hours.

Speaking about the cost impact here below the graph shows the range of impact if the risk take place:
For 90% of probability, the range of cost will be from € 34.251 to € 40.453; The estimated impact in terms of cost is € 42.305.

Speaking about the contingency reserve for the project schedule, it has been considered the singular activity to have a more accurate estimation. The forthcoming graph expresses the singular impact for each activity, which is the result subtracting the total impact and the pessimistic scenario:

- **Implementation of ticket-system – 1.3.1.1**

The contingency reserve is: € 865
- Implementation of online-shop – 1.3.1.2

*Figure 15 - Online-shop cost impact graph*

The contingency reserve is: € 1,335

- System and performance testing – 1.3.2.4

*Figure 16 - System and performance testing cost impact graph*

The contingency reserve is: € 593, has been taken in consideration the probable impact.

- Go-Live – 1.3.2.5

*Figure 17 - Go-live cost impact graph*

The contingency reserve is: € 696
- **Training of the employees – 1.4.2**

![Training of the employees - 1.4.2](image)

*Figure 18 - Training of the employee’s cost impact graph*

The contingency reserve is: € 170

- **Change request – 1.5.4.1**

Change management request: The change management request is signed within the contract with a fixed cost for the consultancy company (Acmeo G mbH). However, the cost for the time needed for a change has to be estimated. The assessment presented here below shows the contingency reserve for it.

![Change request - 1.5.4.1](image)

*Figure 19 - Change request impact graph*

The contingency reserve is: € 3,249

**4.2.2. Impact Analysis Data Migration**

Through the graph here below represented it is possible to understand the potential impact in terms of time for the data migration during the implementation:
Figure 20 - Data migration time impact graph

For the 90% of the probabilities, the impact of the data migration will be from 110.5 hours to 153.8 hours. The estimate impact in terms of time is 127 hours.

Speaking about the cost impact here below the graph shows the possible range of impact if the risk take place:

Figure 21 - Data migration cost impact graph

For 90% of probability the range of cost will be from € 4,984 to € 6,961; The estimated impact in terms of cost is € 6,925.

Speaking about the contingency reserve for the data migration is estimated € 2,903 which is the result subtracting the total impact and the pessimistic scenario.

Figure 22 - Contingency reserve for data migration
4.2.3. Impact Analysis Software System Design/Customization

Through the graph here below represented it is possible to understand the potential impact in terms of time for the software system design/customization during the implementation:

![Time Impact Graph](image)

**Figure 23 - Software system design/customization time impact graph**

For 90% of the probabilities, the impact of the software system design/customization will be from 48.54 hours to 82.63 hours. The estimated impact in terms of time is 68.38 hours.

Speaking about the cost impact here below the graph shows the possible range of impact whether the risk takes place:

![Cost Impact Graph](image)

**Figure 24 - Software system design/customization cost impact graph**

For 90% of probability, the range of cost will be from € 2.183 to € 3.714; The estimated impact in terms of cost is € 2.867.

Speaking about the contingency reserve for the software system design/customization it is estimated € 1.408 which is the result of subtracting the total impact and the pessimistic scenario.

![Contingency Reserve Table](image)

**Figure 25 - Contingency reserve for software system design/customization**
5. Response to Risks

Planning the risk response “is the process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.” (PMI, 2017, p. 437). This process aims to develop a strategy or a plan to counter the risks when they occur, to prevent the negative impact which will damage the implementation of the ERP-system project. The risk response has to be cost-effective and realistic towards each of the identified, analyzed and prioritized risks of the project.

According to the PMBOK (6th Edition), the risk responses (focusing on the threats) that should be taken into consideration while developing the alternative strategies for dealing with the risks are explained in the following table:

<table>
<thead>
<tr>
<th>Risk response/ strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent</td>
<td>Trying to eliminate the project risk by narrowing its probability of occurrence to zero. “Some risks can be avoided by clarifying requirements, obtaining information, improving communication, or acquiring expertise” (PMI, 2017, p. 443).</td>
</tr>
<tr>
<td>Mitigate</td>
<td>The mitigation plan consists of reducing to the maximum the probability of occurrence of the risk while its known that it is very unlikely to be prevented and impact.</td>
</tr>
<tr>
<td>Transfer</td>
<td>Transferring risks to third parties to deal with it such as insurances or a lawyer office for instance. This is a good strategy because the transferred risks are mainly the responsibility of a third party and not of the project management team (to the full extent), letting them focus on other risks or even other tasks.</td>
</tr>
<tr>
<td>Accept</td>
<td>Accepting the risk is the strategy consisting of doing nothing against the risk and accepting the existence of it in the project while of course planning a contingency reserve for it. This response is usually appropriate for low-level risk not having a big impact or probability of occurrence.</td>
</tr>
</tbody>
</table>

Table 7 - Risk response

The specific responses for each risk item for the implementation of the ERP-system to Sysperto GmbH can be seen in the developed risk matrix in the following of the document.
6. Format of the Reports

The implementation of an ERP-system in a smaller company such as Sysperto GmbH is not exempted by risks. The human factor during a change, as an implementation, is one of the major factors that could occur. In fact, a recent study from McKinsey says that one-third of change projects or a possible organizational transformation in a company has been a success. The lower value is due to the human factor that may impact any possible phase of a project (Dcosta, 2019). In order to ensure that the possible risks are correctly tracked, monitored and reported, during the project life-cycle, some templates will be used to assure a correct work flow and to avoid the repetition of mistakes.

6.1. Management Plan Performance Report

The table shows the risk ID to keep track of each risk which could occur, the date when the risk comes up, subsequence targeted a possible date for the resolution of the risk. Followed by details about the risk such as the name, description and people involved. Quality control helps to understand the possible quality control made. At the end, the impact affecting the risk is stated.

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Date</th>
<th>Target resolution</th>
<th>Risk Name</th>
<th>Description</th>
<th>People in charge</th>
<th>Quality control made</th>
<th>Value of probability</th>
<th>Effective impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 26 - Management plan performance report

6.2. Change Request Risk Impact

During the implementation, the risks which take place are consequently reported and analysed through the table represented in the following. The change risk impact report will help to assess the creation of new risks or to revaluate existing ones. The table is composed by the risk ID, date of reporting, risk name and its change request description. Subsequently, the ID risks will be displayed which has been impacted by the principal one. Furthermore, the project manager in charge and his/her superior approve the changes. To conclude, the possible new impact is listed to understand the possible modification turned up.

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Date</th>
<th>Risk Name</th>
<th>Change request description</th>
<th>Risks ID related</th>
<th>Reviewed by</th>
<th>Approved by</th>
<th>New impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 27 - Change risk impact report
7. Risk Follow Up

The risk follow up is essential to ensure that the implementation of the risks responses are well monitored, to track identified risks and analyze new risks throughout the project life-cycle (PMI, 2017, p. 453). This process checks and evaluates the effectiveness of the risk response implemented regarding each of the identified risks (PMI, 2017, p. 457), and also plans the response for new risks during the execution of the implementation of the ERP-system.

Following the PMBOK methodology, some processes and activities are set to be done in order to monitor risks efficiently and effectively such as:

7.1. Data Analysis

This process consists of analyzing the current data in order to ensure the well progression of the project and that all the risks are not affecting the success of the project. The technical performance analysis evaluates the technical accomplishments and compares them with the goals and objectives targeted, and it also evaluates the effectiveness of the risk response and its implementation. While the reserve analysis analyzed the remaining contingency reserve and comparing it to the remaining risks throughout the project execution in order to ensure that the remaining reserve is sufficient for the remaining risks.

7.2. Audits

With a weekly frequency, risk audits are conducted by the project management team and included in the routine project review meetings in order to monitor and evaluate the progress of the deliverables, the quality of their risk follow up and the implementation of risks response when risks occur. The tools stated above are set to be used by the project management team in order to carry out a good monitoring and the follow-up of the individual risks as well as the overall project risks.

8. Risk Matrix

The Risk Matrix, also referred to as the risk register, illustrates the document that collects and combines the results from the risk analysis as well as the risk response planning (Snyder, 2013, p. 109). This document helps to monitor and keep track of all identified risks during the whole project. The developed risk matrix for the present project starts with a unique risk ID (identifier) for each identified risk in order to clearly and easily distinguish between the risks. Subsequently, the risk is categorized into the overall risk categories which are for the project
Business Risk, External factors Risk, Legal Risk, Project Management Risk, Stakeholders Risk as well as the Technology Risk. The third column states the risk item itself by first naming it and afterwards giving a short description of the risk and its influence in order to ensure a common understanding. This is followed by the evaluation of the potential impact of this risk on the project as well as the probability of occurrence. The multiplication of the impact and the probability leads to the project risk score. The criteria and structuring of the impact, probability and the score, as already explained previously in the document in detail, can be seen from the following legend:

Figure 28 - Risk Matrix Legend

All risks are sorted according to the risk score from the highest to the lowest in order to ensure a focus on the highest risks first. After the risk score, the next column shows the mitigation plan or overall risk response to the corresponding risk. The matrix ends by stating who and when is responsible for this risk item and the associated activities.

In general, about the developed risk matrix it can be said that it contains 21 risk items from which are three scored as high risks, 13 as medium risks and five as low risks. Besides that, the risk matrix mostly is focused on the threats and does not cover the uncertainty of opportunities but several risk items also have the possibility to be turned into an opportunity and to have a positive impact. The full risk matrix can be seen in the following as well as attached in the appendix.
## Risk Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Student/Group</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>22.01.2019</td>
</tr>
</tbody>
</table>

### Risk Matrix

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk No.</th>
<th>Risk Category</th>
<th>Risk Item</th>
<th>Potential impact on project</th>
<th>Probability of occurrence</th>
<th>Project Risk score (impact * probability)</th>
<th>Mitigation Plan</th>
<th>Who</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>R001</td>
<td>Business Risk</td>
<td>Influence on daily business: The implementation of the ERP-system was in</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>Mitigate</td>
<td>Consultancy company, internal IT-expert, Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>complete (e.g. processes, data are missing) leading to a negative</td>
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<td></td>
<td></td>
<td></td>
<td>influence on the daily business and operations of the company. This</td>
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<td>influences the overall performance and operations of the company, the</td>
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<td></td>
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<td></td>
<td>service performance for the customer and with this the customer</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>b</td>
<td>R002</td>
<td>Technology Risk</td>
<td>Software system design/customization: The supported standard and design</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>Mitigate</td>
<td>Consultancy company, internal IT-expert, Project Management Team</td>
<td>During the configuration and development phase (1.3.2.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from the ERP-system do not match with the company’s processes, mistakes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>in the development/customization of the system as well as with the</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>interface to the online-shop and the ticket-system occur, leading to</td>
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<td></td>
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<td>higher costs (rework), inefficiency of the system as well as a</td>
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<td>decrease in the expected project benefits</td>
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</tr>
<tr>
<td>c</td>
<td>R003</td>
<td>Project Management Risk</td>
<td>Project Schedule: A delay of the project schedule leads to a high</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>Mitigate</td>
<td>Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>influence on the daily business operations as the corollary terminates</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td>their existing program licenses for a certain date.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>R004</td>
<td>Project Management Risk</td>
<td>Evaluation and decision for the ERP-System: inappropriate ERP-system</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>Mitigate</td>
<td>Project Management Team - Internal IT expert</td>
<td>During the ERP selection (1.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>selection due to inappropriate analysis with lacks of requirements</td>
<td></td>
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<td></td>
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<td>could lead to the overall project process</td>
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</tr>
</tbody>
</table>
## Risk Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk No.</th>
<th>Risk category</th>
<th>Risk item</th>
<th>Potential Impact on project</th>
<th>Probability of occurrence</th>
<th>Project Risk score (Impact * probability)</th>
<th>Mitigation Plan</th>
<th>Who/When</th>
</tr>
</thead>
<tbody>
<tr>
<td>h.</td>
<td>R005</td>
<td>Technology Risk</td>
<td>Migration of the data: Not all existing data and information from the company are migrated into the new system leading to a loss of important company data, knowledge and intellectual property/assets which has a big influence on the company’s performance and operations as well as a delay in the project schedule.</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>Mitigate Prevention Plan: Clear definition of the database structure plan describing the combination of each database field from the old and the new system and the database comparison. Alerts: Controlling the percentage of migrated data and the margin of errors in the data through data migration checklists. Corrective Plan: Clearly defined issue escalation plan describing all necessary actions and sequences of steps.</td>
<td>Consultancy company and internal IT-expert During the data migration phase (1.3.2.3.)</td>
</tr>
<tr>
<td>c.</td>
<td>R006</td>
<td>Stakeholders Risk</td>
<td>Acceptance from employees: The employees do not accept the performed business changes from the project and the ERP-system because they were not involved in the project. They develop an active resistance against the system, do not work with the system as expected leading to a non-fulfilment of project objectives.</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>Mitigate Prevention plan: Establishing a clear communication plan with weekly updates for the employees as well as an overall change management plan.</td>
<td>Project Management Team Continuously</td>
</tr>
<tr>
<td>l.</td>
<td>R007</td>
<td>Stakeholders Risk</td>
<td>Knowledge and expertise from end-users: The end-users do not have the required knowledge and expertise for working with the ERP-system because they did not attend the training session or the training was insufficient leading to an inappropriate and inefficient execution of the ERP-system. Customization of the ERP-system: The ERP-system is not adapted/customized according to the needs, requirements, structure and processes of the company leading to inefficiency and no usability of the system.</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>Transfer The ERP-system implementing consultancy company will execute the training session with a specialized trainer and an IT-expert. They establish a training schedule including all employees and also backup training sessions. Employee surveys are used afterwards to check employees' perception. All these points are established in the consultancy contract. Transfer The ERP-system implementing consultancy company customizes the system according to the previously clearly defined requirements and processes. Mitigate Prevention plan: several meetings with consultancy company beforehand for reviewing the customization.</td>
<td>Consultancy company During the training phase (1.4.)</td>
</tr>
<tr>
<td>g.</td>
<td>R008</td>
<td>Technology Risk</td>
<td>Training of employees: The training of the employees/end-user is not adapted to the needs and questions from the employees leading to a decrease in the knowledge and expertise of the system, acceptance of the system and an inefficient application of the system.</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>Mitigate Alerts: Employee surveys, interviews and tests after the implementation Corrective plan: Conducting another training session tailored to the employees questions and problems with the system.</td>
<td>Consultancy company and Project Management Team During the configuration and development phase (1.3.2.1.)</td>
</tr>
</tbody>
</table>
### Risk Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Risk ID (Description)</th>
<th>Risk No.</th>
<th>Risk category</th>
<th>Risk item</th>
<th>Potential Impact on project</th>
<th>Probability of occurrence</th>
<th>Project Risk score (impact * probability)</th>
<th>Mitigation Plan</th>
<th>Who</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>m. R010 Technology Risk</td>
<td>Stability of system performance:</td>
<td>The stability of the system performance and the usability of the system are not met before the final implementation leading to higher costs (rework), delay of the schedule, inefficiency of the system as well as a decrease in the expected project benefits.</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>Transfer The ERP-system implementing consultancy company ensures the stability of system performance as fixed in the contract. Mitigate Prevention plan: Establishing quality gates that cannot be passed during the project as well as no project closing when stability of system performance is not guaranteed by the consultancy company. Several meetings with consultancy company beforehand for reviewing system performance. Alerts: Testing phase before the go-live.</td>
<td>Consultancy company</td>
<td>During ERP-implementation phase (1.3)</td>
<td></td>
</tr>
<tr>
<td>b. R011 Project Management Risk</td>
<td>Scope definition and planning:</td>
<td>The project scope is not defined and planned appropriately or in enough detail from the project management team leading to change requests, delay of schedule, inefficiency of the final implemented ERP-system and a non-fulfilment of project objectives and requirements.</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>Mitigate Prevention plan: Detailed planning and development of the Scope Management Plan, scope baseline, RTM, WBS and WBS Dictionary with several reviews with the project management team and the owner (client)</td>
<td>Project Management Team</td>
<td>Continuously</td>
<td></td>
</tr>
<tr>
<td>e. R012 Project Management Risk</td>
<td>Business process changes:</td>
<td>The dimension/extent of the required business process changes is underestimated and/or there is an inappropriate definition and re-design of the processes leading to an extension of the schedule and/or missing areas in the ERP-system. Financial risk/resources (grant):</td>
<td>The desired grant/subsidy from the government is no longer available (due to high request from other companies) and/or the company does not fulfill the requirements to receive the grant leading to a higher debt burden for the SME company and an increase in the project costs.</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>Mitigate Prevention plan: Establishing a quality gate after the project phase for the business processes that cannot be passed if requirements are not met. Several reviews with employees and experts. Several meetings with consultancy company for reviewing the business processes and the adaptation of the system to them. Accept Project management team accepts the risk in an active way by creating a reserve in the cost management plan.</td>
<td>Project Management Team</td>
<td>During Business Processes phase (1.1)</td>
</tr>
<tr>
<td>a. R013 Project Management Risk</td>
<td>Support from the owner:</td>
<td>The owner of the company/inclient) does no longer support the project because he assumes that the project does not bring the expected benefits. He has an active resistance and lack of interest to provide further resources.</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>Prevent Clear requirement definition, traceability and controlling with the owner at the beginning with several meetings after each project phase. Continuously involvement of the owner in the project as well as a detailed communication plan to the owner.</td>
<td>Project Management Team</td>
<td>Continuously</td>
<td></td>
</tr>
</tbody>
</table>
## Risk Management Plan – Implementation ERP-system (Group 4)

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>c.</td>
<td>R015</td>
<td>Stakeholders Risk</td>
<td>Acceptance from employees: The employees do not accept the new ERP-system because they fear that they will be replaced by the system. They develop an active resistance against the system, do not work with the system as expected leading to a non-fulfillment of project objectives.</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>Mitigate: Prevention plan: Establishing a clear communication plan with weekly updates for the employees (clearly stating and explaining the strategic decision behind the implementation of increasing the customer satisfaction and sales with the gained capacity). Moreover establishing an overall change management plan.</td>
<td>Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td>j.</td>
<td>R016</td>
<td>External factors Risk</td>
<td>Environmental and market changes: Changing circumstances such as the change in customer’s needs, bankruptcy of the main customers, customers switching to competitors and new competitors entering the market causing a decrease in profits and incoming cash-flows and leading to a higher debt burden and a loan that is critical to be paid.</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>Transfer: Market analysis consultancy company analyzes market changes and trends. Accept: Project management team accepts the risk in an active way by creating a reserve in the cost management plan.</td>
<td>Market analysis consultancy Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td>a.</td>
<td>R017</td>
<td>Project Management Risk</td>
<td>ERP-system scope definition: A lack in the definition and presence of required features, areas, processes and requirements covered from the ERP-system leads to higher costs due to rework and software limitations.</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>Mitigate: Prevention plan: Establishing a quality gate after the ERP-system requirements definition phase that cannot be passed when requirements are not met. Several meetings with consultancy company, employees and experts for reviewing. Alerts: Testing phase before the go-live. Accept: Creating a reserve in the cost management plan.</td>
<td>Consultancy company and internal IT-expert Project Management Team</td>
<td>During requirements definition phase (1.2) and implementation phase (1.3)</td>
</tr>
<tr>
<td>j.</td>
<td>R018</td>
<td>Stakeholders Risk</td>
<td>Bankruptcy of the consultancy company: The consultancy company, responsible for the implementation of the ERP-system, goes bankrupt leading to a delay of the project schedule because a new one has to be selected.</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>Prevent: Select a strong and stable consultancy company with good financial background/organization structure. Having this as an important selection criteria for the provider (criteria with a specific weight in order to address the importance). Accept: Creating a reserve in the cost management plan.</td>
<td>Project Management Team</td>
<td>During evaluation of ERP-systems phase (1.2) and final decision-making phase (1.2.4)</td>
</tr>
<tr>
<td>j.</td>
<td>R019</td>
<td>Legal Risk</td>
<td>New political laws and regulations: The government establishes new laws and regulations especially in regard to data security and data protection causing a change/increase in the requirements for the ERP-system and leading to specific legal requirements that have to be fulfilled, a change in the project scope and increase of project costs.</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>Transfer: Legal analysis and clarification of impact performed by a lawyer in cooperation with the ERP-implementing consultancy company. Accept: Creating a reserve in the cost management plan.</td>
<td>Lawyer and Consultancy company Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td>Risk ID</td>
<td>Risk No.</td>
<td>Risk category</td>
<td>Risk item</td>
<td>Potential impact on project</td>
<td>Probability of occurrence</td>
<td>Project Risk score (impact * probability)</td>
<td>Mitigation Plan</td>
<td>Who</td>
<td>When</td>
</tr>
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<td>------</td>
</tr>
<tr>
<td>p.</td>
<td>R020</td>
<td>Stakeholders Risk</td>
<td>Key user/expert availability: The key users and experts for the ERP-system implementation are not available as required in the schedule leading to a delay in the schedule.</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>Mitigate</td>
<td>Project Management Team</td>
<td>Continuously</td>
</tr>
<tr>
<td>c.</td>
<td>R021</td>
<td>Stakeholders Risk</td>
<td>Acceptance from employees: The employees do not accept the ERP-system because they did not attend the training session. They develop an active resistance against the system, do not work with the system as expected leading to a non-fulfillment of project objectives.</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>Transfer</td>
<td>Consultancy company</td>
<td>During the training phase (1.4)</td>
</tr>
<tr>
<td>q.</td>
<td>R022</td>
<td>Technology Risk</td>
<td>Cyber attack: The ERP-system is faced to a cyber-attack before the final implementation leading to defects in the system, higher costs (rework), delay in schedule and legal clarifications due to data security.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>Prevent</td>
<td>Internal IT-expert</td>
<td>At the beginning of the implementation phase (1.3)</td>
</tr>
</tbody>
</table>

**Legend:**

- **Risk Impact**
  - 5 = Project failure
  - 4 = Significant time delay (61 and 90 days) or significant profit reduction (>5%)
  - 3 = Moderate time delay (31 and 60 days) or moderate profit reduction (20-30%)
  - 2 = Low time delay (11 and 80 days) or low profit reduction (6-20%)
  - 1 = Very little/nearly time delay (10 days or less) or very little/near benefits reduction (5% or less)

- **Likelihood of Occurrence**
  - 5 = >75% probability of occurrence
  - 4 = 51% to 75% probability of occurrence
  - 3 = 26% to 50% probability of occurrence
  - 2 = 11% to 24% probability of occurrence
  - 1 = <10% probability of occurrence

- **Risk Score**
  - **HIGH RISK** = (4+5). This risk prevents the Project to continue. **ACTION NEEDED.**
  - **MEDIUM RISK** = (from 9 to 15). Significant risk for the Project. Proceed with caution or prepare a contingency plan.
  - **LOW RISK** = (from 1 to 8). Trust the group opinion about reflecting this risk in the Risk Plan.

**Figure 29 - Risk Matrix**
9. Conclusions

To conclude, this present document illustrates the whole Project Risk Management Plan, that is aimed to describe all activities and approaches developed for the project in order plan the overall risk management of the project, identify the risks, perform risk analysis and to plan the risk responses for the project. With this, this Project Management Plan provides the description of how the project management team wants to manage the possible risks that are probable to occur within the project and that would have an impact on the overall project performance. All related activities to mitigate the risks are summarized in the risk matrix that is aimed to help the project management team to manage and control the risks during the project.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, data analysis, research, brainstorming and meetings were used for all parts to identify the main risks and to perform the risk analysis for the project of the ERP-system implementation.

The project team performed this fifth planning process for the knowledge area of Project Risk Management in order to create the Project Risk Management Plan. All generated documents, templates and outputs, especially the risk matrix, from this planning process will illustrate the input for the next planning processes such as for example the Procurement Management Plan.

Moreover, the Project Risk Management Plan represents part of the overall Project Management Plan.
References


Project Communication Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

<table>
<thead>
<tr>
<th>Document version and change history</th>
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<td>V000</td>
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</tbody>
</table>
Abstract

The present paper illustrates the Project Communication Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Communication Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Communication Management Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule, cost, quality and risk. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Communication Management Plan illustrates the sixth knowledge area (Project Communication Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Communication Management Plan first provides a short introduction about the Project Communication Management Plan in general and the Project Communication Management Plan itself in an overview and continues with the recall of the stakeholder identification by describing their specific communication needs. Subsequently, the developed communication matrix is shown. In accordance with this, a description of how the different communications in the project will be carried about in regard to the language, format, content and level of detail as well as the term and frequency of the distribution and sender of the communication is provided. This is followed by the explanation of the monitoring and control of communication within the project and the Project Communication Management Plan closes with a conclusion. With those points, the communication management approach for the project is described and developed at the current point in the planning phase.

Keywords: Project Communication Management Plan, Communication Needs, Communication Strategy, Communication Matrix, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract ..................................................................................................................................... II
List of Figures........................................................................................................................ IV
List of Tables.......................................................................................................................... IV
1. Introduction, Objective and Scope of the Communication Plan ........................................ 1
2. Communication Management Plan ............................................................................. 1
   2.1. Stakeholder ........................................................................................................... 1
   2.2. Information ......................................................................................................... 2
   2.3. Method ............................................................................................................... 2
   2.4. Timing or Frequency ......................................................................................... 3
   2.5. Sender ................................................................................................................. 4
   2.6. Constraints and Assumptions ........................................................................... 4
   2.7. Glossary ............................................................................................................ 4
3. Stakeholder Identification and their Communication Needs .......................................... 5
4. Communication Matrix .............................................................................................. 9
5. Description of how the different Communications will be carried out & Term and Frequency of Distribution ........................................................................................................... 13
   5.1. Communication Types Register ...................................................................... 13
   5.2. Communication Types Overview & Strategy .................................................. 16
   5.3. Communication and Information Flowchart....................................................... 16
6. Monitoring and Control........................................................................................... 18
   6.1. Meeting Minutes .............................................................................................. 18
   6.2. Pending Issue .................................................................................................. 20
   6.3. Project Status Report ....................................................................................... 21
7. Conclusions ............................................................................................................. 22
References ......................................................................................................................... V
List of Figures

Figure 1 - Communication Approach .................................................................3
Figure 2 - Communication Matrix ......................................................................12
Figure 3 - Communication Types Overview & Strategy .......................................16
Figure 4 - Communication and Information Flowchart .....................................17
Figure 5 - Meeting Minutes Template .................................................................19
Figure 6 - Pending Issue Template .....................................................................20
Figure 7 - Project Status Report .........................................................................21

List of Tables

Table 1 - High-level stakeholders .....................................................................2
Table 2 - Stakeholders Communication Needs ................................................8
Table 3 - Communication Type Register ............................................................15
1. Introduction, Objective and Scope of the Communication Plan

Project managers spend a lot of time communicating with the project stakeholders, either internal or external to the organization, which means that project managers have to pass the information to stakeholders with different backgrounds, expertise and interests. This is why effective communication needs to be acquired by the project managers (Project Management Institute, 2017, p. 361).

Communication in project management describes how the information will be sent/received, for example through communication activities like conferences, meetings or presentations, or also through artefacts such as emails, reports or shared platforms (Project Management Institute, 2017, p. 361).

The communication plan is the process that provides effective information exchanges between the stakeholders by ensuring the development of the activities and creating matrixes to bring a clear understanding of the way the communication will be performed and in which types (Project Management Institute, 2017, p. 359).

According to the PMBOK, the communication management plan is carried out following two parts. The first one consists of developing an approach and a strategy on how the communication will be performed, while the second one is implementing the strategy and monitoring its performance (Project Management Institute, 2017, p. 359).

2. Communication Management Plan

The communication management plan is a plan providing the general frame used regarding communication between the stakeholders of the project. It describes the processes and activities and gives an overview regarding the approach in order to engage stakeholders in an effective and efficient way (Project Management Institute, 2017, p. 366).

Moreover, the communication management plan has to be reviewed and modified when the stakeholder’s community changes and when a new phase of the project is going to be launched (Project Management Institute, 2017, p. 366).

2.1. Stakeholder

The communication in a project is mainly focusing on the stakeholders. This is the reason why the stakeholders have to be identified and listed first in order to precise who is going to receive the project information. The table below identifies the high-level stakeholders and their role in the implementation of the ERP project into Sysperto GmbH (please refer to the communication matrix for all the stakeholders of the project).
2.2. Information

The information is openly shared, discussed and agreed upon between the project stakeholders in order to have updates regarding the progress of the overall project, the occurring risks, the evaluation and acceptance of the deliverables.

The information transferred to the stakeholders are the analysis reports, the project progress reports, the evaluation and checking reports, reports regarding the schedule and cost of the project, meeting minutes and change requests when a change or improvement is needed.

2.3. Method

The communication within all levels and phases of the project will be clear, open and interactive communication between the project members and stakeholders in order to ensure the good progress and the success of the project by bringing continuous and transparent communication.

In order to communicate effectively, all ways of communication have to be considered such as the formal and informal writing through official reports, emails or memos, the formal and informal verbal communication like meetings, video conferences or calls, the non-verbal communication is to be considered as well.

According to the PMBOK, there are three communication methods that can be used while managing projects and its stakeholders – the interactive, push and pull communication.

Interactive communication and multidirectional communication that will be used in meetings with the stakeholders and/or when there is a possibility of misinterpretation of the information because a feedback is required from the receiver of the information. Therefore, a
face-to-face interaction is important and relied on during the project (Project Management Institute, 2017, p. 374).

Push communication will be used once it is preferable to distribute clear information not requiring an urgent response. It is done using emails or reports for example rather than a face-to-face meeting (Project Management Institute, 2017, p. 374).

However, the pull communication will be also used in order to provide information to be accessible at any time by the stakeholders when the need arises. The project management team for instance, uses a database for all the information and reports about the planning phase of the project (Project Management Institute, 2017, p. 374).

In addition, the project management team also defined the communication approach in regard to top-down, bottom-up or peer-to-peer communication. This was defined overall for the four main project deliverables/phases but it is important to mention that within each phase it can also be switched to another approach if the situation requires it.

![Figure 1 - Communication Approach](image)

### 2.4. Timing or Frequency

The timing and frequency of the communication between the different stakeholders is related to their level of influence and importance towards the project. Regarding the high-level stakeholders, the frequency of the communication is usually done weekly in the weekly meetings; while it could be also upon a request in the case some urgent matters have to be discussed. However, for the low-level stakeholders, the frequency of the communication is done upon a request.

The timing and frequency of the communication regarding each and all the stakeholders is developed in the communication matrix in the current document.
2.5. Sender

The main sender of the information is the project management team by providing data and updates to the stakeholders regarding the project. However, other stakeholders could be a sender of information by taking as an example, the IT manager or the employees that provides technical information to the project management team or other stakeholders.

The sender of the information for each of the project stakeholders is detailed and described in the communication matrix.

2.6. Constraints and Assumptions

The communication constraints and assumptions regarding the implementation of the ERP-system into Sysperto GmbH are as following:

- **Constraints:**
  - Different types of communication will be used depending on the stakeholders
  - Different types of communication will be used depending on the phase of the project
  - The stakeholders are not available at anytime
  - The communication needs of the stakeholders cannot be fully known and understood
  - Mainly existing communications channels from the company have to be used

- **Assumptions:**
  - Glossary regarding the IT technical terms and acronyms will not be used and needed
  - The communication within the project management team regarding the planning will be in English while the communication with the stakeholders will be in German
  - The communication channels that will be used are the ones already existing in the company

2.7. Glossary

Regarding the glossary of terms, the PMBOK will be used as a reference for the terms related to the project management side of the project as it provides a glossary as well as a dictionary for the terms of the project management area of knowledge.

However, for the technical terms and acronyms used in the implementation of the ERP-system project, a glossary will not be used as the company is operating in the IT-sector itself, meaning that the technical terms are acknowledged and known by the stakeholders.
3. Stakeholder Identification and their Communication Needs

In order to increase the probability of meeting the project’s goals and objectives, the analysis and definition of the needs and expectations from the different stakeholders at the planning process is crucial (Bulmer Santana, 2019, p. 12). Defining the information needs from the stakeholders is perceived according to the PMBOK as one of the main bases to fulfil the process of “Plan Communication Management” with the planning of the different communication activities (Project Management Institute, 2017, p. 359). Therefore, the communication plan refers to the already performed stakeholder identification. With knowing the identified stakeholders, their different needs and expectations can be analysed and documented.

For analysing and defining the needs from the stakeholders, several interviews were conducted to ensure that the documented needs illustrate the real needs from the stakeholders and do not only reflect the estimates and perceptions from the Project Management Team.

The documentation of the communication needs is developed in the following table and is divided into three parts – first the general statement of the communication need, secondly the desired or needed communication method, as a third criteria the communication technology and finally the approach or method used to meet the communication needs (Interpersonal, small group, public or mass communication (Project Management Institute, 2017, p. 374)). This is aimed to ensure a broad and holistic understanding of the communication needs of each corresponding stakeholder. Moreover, this analysis helps to define the overall communication strategy which is aimed to address the communication in an effective way and to support the stakeholder engagement. In addition, knowing the communication needs is seen as crucial from the project management team for the successful change management process.

The higher the stakeholder level of impact and with this their prioritization within the register was assessed, the more communication methods/types are going to be used in order to use “each” available channel for having a holistic communication with those main stakeholders. An example therefore are the employees from Sysperto who illustrate the final end-user of the ERP-system. As they are perceived as crucial for the success of the change management and the overall project, various communications types are defined. The broader definition thereof is aimed to ensure a higher participation and involvement of the employees. On the other side, a stakeholder with a low priority such as for example the company which developed the ERP-system base only is assigned two main communication types.

The developed communication needs table is shown in the following and in the Appendix:
# Stakeholder Communication Needs

## Stakeholder Identification Information

<table>
<thead>
<tr>
<th>Sr. ID</th>
<th>Name</th>
<th>Position</th>
<th>Organization / Company</th>
<th>Role in Project</th>
<th>Communication Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1</td>
<td>Andreas Zieher</td>
<td>Owner and CEO</td>
<td>Sysperto GmbH</td>
<td>Project Manager</td>
<td>Continuous, proactive and timely information in regard to project progress and potential changes or issues. Every meeting requires the provision of meeting minutes.</td>
</tr>
<tr>
<td>3/2</td>
<td>Vanessa Kauli, Omar Lanza, Alberto Molinarelli</td>
<td>Project Management Team</td>
<td>Sysperto GmbH</td>
<td>Project Manager</td>
<td>Continuously, proactive and daily updating the whole project management team about project progress, changes and risks.</td>
</tr>
<tr>
<td>3/3</td>
<td>Andreas Zieher, Joachim Zieher</td>
<td>Shareholders</td>
<td>Sysperto GmbH</td>
<td>Sponsor</td>
<td>Regular information about project progress.</td>
</tr>
<tr>
<td>3/4</td>
<td>Several</td>
<td>Employees of the company</td>
<td>Sysperto GmbH</td>
<td>End-user</td>
<td>Continuous, proactive and open involvement throughout all project phases, especially the restructuring, selection and implementation.</td>
</tr>
<tr>
<td>3/5</td>
<td>Andreas Domke</td>
<td>IT-Service Manager</td>
<td>Sysperto GmbH</td>
<td>End-user</td>
<td>Continuous, proactive and open involvement throughout all project phases, especially the restructuring, selection and implementation.</td>
</tr>
<tr>
<td>3/6</td>
<td>Acmeo GmbH</td>
<td>ERP system implementing company</td>
<td>Acmeo GmbH</td>
<td>Supplier (Device Provider &amp; Consultant)</td>
<td>Timely provision of the necessary company documentation and information.</td>
</tr>
</tbody>
</table>

## Communication Needs

<table>
<thead>
<tr>
<th>Communication Type</th>
<th>Communication Technology</th>
<th>Method/Approach to meet communication needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings</td>
<td>MS Office (MSProject, Outlook, PowerPoint)</td>
<td>Interpersonal communication</td>
</tr>
<tr>
<td>Meetings</td>
<td>MS Office (MSProject, Outlook, Word, Excel, PowerPoint, OneNote)</td>
<td>Small group communication</td>
</tr>
<tr>
<td>Meetings</td>
<td>MS Office (Outlook, PowerPoint)</td>
<td>Interpersonal communication</td>
</tr>
<tr>
<td>Meetings</td>
<td>MS Office (Outlook, Word, PowerPoint)</td>
<td>Interpersonal communication</td>
</tr>
<tr>
<td>Meetings</td>
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</tr>
<tr>
<td>Meetings</td>
<td>MS Office (Outlook, Word, PowerPoint)</td>
<td>Small group communication</td>
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<tr>
<td>Meetings</td>
<td>MS Office (Outlook, Word, PowerPoint)</td>
<td>Small group communication</td>
</tr>
<tr>
<td>Stakeholder Identification Information</td>
<td>Communication Needs</td>
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<td>----------------------------------------</td>
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<td></td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td><strong>Position</strong></td>
<td><strong>Organization / Company</strong></td>
</tr>
<tr>
<td>Several</td>
<td>Employees of Acneo GmbH</td>
<td>Acneo GmbH</td>
</tr>
<tr>
<td>Neumeier AG</td>
<td>ERP-system developing company</td>
<td>Neumeier AG</td>
</tr>
<tr>
<td>Several</td>
<td>Developers of Neumeier AG</td>
<td>Neumeier AG</td>
</tr>
<tr>
<td>NA (representing LBW-Bank)</td>
<td>Digitalization subsidy program</td>
<td>Government (State Baden-Württemberg)</td>
</tr>
<tr>
<td>Several</td>
<td>Clients of the company</td>
<td>Several</td>
</tr>
<tr>
<td>Joachim Zieher</td>
<td>Subsidiary Company</td>
<td>Mediziereh GmbH</td>
</tr>
<tr>
<td>Manfred Zage</td>
<td>Tax consultant and accountant</td>
<td>Steuerberater Kanzle Zage</td>
</tr>
<tr>
<td>Joachim Zieher</td>
<td>Data security &amp; protection representative/exceot</td>
<td>Mediziereh GmbH</td>
</tr>
<tr>
<td>Jürgen Hägge</td>
<td>Lawyer/Legal consultancy company</td>
<td>Rechtsanwaltspanzä Hägge</td>
</tr>
<tr>
<td>Joachim Zieher</td>
<td>Market analysis company</td>
<td>Mediziereh GmbH</td>
</tr>
<tr>
<td>Constanze Gehrif</td>
<td>Financial Institution</td>
<td>LBW-Bank</td>
</tr>
<tr>
<td>Stakeholder Identification Information</td>
<td>Communication Needs</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>Sth18 Jürgen Pracht</td>
<td>Lender</td>
<td></td>
</tr>
<tr>
<td>Development of the additional system (ticket system)</td>
<td>DocBee GmbH</td>
<td>Supplier (Technology Service Provider)</td>
</tr>
<tr>
<td>Development of sub-system for the ERP-system</td>
<td>Tiscape GmbH</td>
<td>Supplier (Technology Service Provider)</td>
</tr>
<tr>
<td>Distributors</td>
<td>Several</td>
<td></td>
</tr>
<tr>
<td>Development of ERP-system base</td>
<td>SAP Deutschland SE &amp; Co. KG</td>
<td>Supplier (Technology Service Provider)</td>
</tr>
<tr>
<td>N.A</td>
<td>Establishment of new laws and regulations</td>
<td>Government (Germany or Europe)</td>
</tr>
<tr>
<td>Competitors</td>
<td>Several</td>
<td></td>
</tr>
<tr>
<td>Radek Pemicky</td>
<td>Insurance company</td>
<td>Hiscox SA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication Need</th>
<th>Communication Type</th>
<th>Communication Technology</th>
<th>Method/Approach to meet communication needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timely provision of the necessary company documents and information for the loan as well as request if further information is required. Monthly repayment of the loan. Timely consultation and meeting if extraordinary payments are desired from Syntactic.</td>
<td>- Loan contract and documents - Meetings - Emails</td>
<td>MS Office (Outlook, Word)</td>
<td>Interpersonal communication</td>
</tr>
<tr>
<td>Timely request for consultation if secondary support is required.</td>
<td>- Videoconferences - Emails</td>
<td>MS Office (Outlook) Skype</td>
<td>Small group communication</td>
</tr>
<tr>
<td>Timely request for consultation if secondary support is required.</td>
<td>- Videoconferences - Emails</td>
<td>MS Office (Outlook) Skype</td>
<td>Small group communication</td>
</tr>
<tr>
<td>Timely request for consultation if secondary support is required.</td>
<td>- Phone Calls - Emails</td>
<td>MS Office (Outlook) Phone Calls</td>
<td>Interpersonal communication Public communication</td>
</tr>
<tr>
<td>Timely request for consultation if secondary support is required.</td>
<td>- Videoconferences - Emails</td>
<td>MS Office (Outlook) Skype</td>
<td>Small group communication</td>
</tr>
<tr>
<td>No direct communication desired and possible if concerns/questions regarding laws occur, referencing to legal consultants.</td>
<td>- Government Website - Laws</td>
<td>Internet</td>
<td>Public communication Mass communication</td>
</tr>
<tr>
<td>Open exchange of best practices</td>
<td>- Meetings - Emails - Phone Calls</td>
<td>MS Office (Outlook) Phone Calls</td>
<td>Public communication</td>
</tr>
<tr>
<td>Timely request for consultation if support is required. Provision of required company's documentation and information.</td>
<td>- Meetings - Emails - Phone Calls</td>
<td>MS Office (Outlook) Phone Calls</td>
<td>Interpersonal communication</td>
</tr>
</tbody>
</table>

*Table 2 - Stakeholders Communication Needs*
4. Communication Matrix

The purpose of the communication matrix is to define all the possible communication that could take place. As a result, the matrix aids to develop an effective communication plan, driving the project management team to have a clear picture not only to define all the stakeholders involved and the corresponding communication type but also when, how and the method in other words in order to predict and be aligned for the whole project time.

The communication matrix shown in the following is divided into two main parts: first the part which lists the main information about the stakeholders “stakeholder identification (information)” from here below there are information regarding if internal or external, name and role in the project. On the other hand, the second part called “communication strategy” traces the core part composed by: the possible information which will be transmitted and received from the sender, afterwards, are outlined the possible communication types which have a mere purpose to define the possible communication, however they do not exclude others channels. Moreover, it has been settled when the communication takes place for each stakeholder, in order to do not forget any possible interaction during the whole project life cycle. As a result, the communication matrix, plays a particularly task to help the project management team recognising diverse stakeholders needs that will interact during the project.

<table>
<thead>
<tr>
<th>Stakeholder identification (Information)</th>
<th>Communication strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible information to be transmitted</td>
<td>Possible information received</td>
</tr>
<tr>
<td>Sh001 Internal Owner and CEO</td>
<td>Project Client &amp; Sponsor</td>
</tr>
</tbody>
</table>

*Note: The communication matrix is a table with columns for project manager, project name, date, project category, sponsor, stakeholder identification, and communication strategy. The matrix is divided into two main parts: stakeholder identification and communication strategy.*
<table>
<thead>
<tr>
<th>Stakeholder Identification (information)</th>
<th>Communication strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stk002</strong> Internal Project Management Team</td>
<td><strong>Stk003</strong> Internal Shareholders</td>
</tr>
<tr>
<td>Stakeholder: Project Management Team</td>
<td>Sponsor</td>
</tr>
<tr>
<td>Role in Project:</td>
<td></td>
</tr>
<tr>
<td>Possible information to be transmitted:</td>
<td>Possible information received:</td>
</tr>
<tr>
<td>- All project related information, issues, knowledge and changes,</td>
<td>- Project alignment, project update during the planning phase,</td>
</tr>
<tr>
<td>- Project development update, request of meeting initiation, changes, etc.</td>
<td>- Update about the work done,</td>
</tr>
<tr>
<td>- Control request for determinate phase</td>
<td>- Project alignment, request, cost alignment, grant accepted, company configuration</td>
</tr>
<tr>
<td>Communication Type: Meetings, Meeting</td>
<td>Timing or Frequency: All stakeholder</td>
</tr>
<tr>
<td>Minutes, Emails, calls, phone messages, project documents and</td>
<td>Communication method:</td>
</tr>
<tr>
<td>systems</td>
<td>- Interactive</td>
</tr>
<tr>
<td>- Taken note of change request, cost alignment, grant accepted, company</td>
<td>- Pull</td>
</tr>
<tr>
<td>configuration, initiation accepted</td>
<td>All phases</td>
</tr>
<tr>
<td>When the communication takes place:</td>
<td></td>
</tr>
<tr>
<td>All phases</td>
<td></td>
</tr>
</tbody>
</table>

<p>| <strong>Stk004</strong> Internal Employees of the company | <strong>Stk005</strong> Internal IT-service Manager |
| Stakeholder: Employees of the company | Stakeholder: IT-service Manager |
| Role in Project: End-user | Role in Project: End-user |
| Possible information to be transmitted: | Possible information to be transmitted: |
| - General information about the project, its objective and plan, | - Request to research data and information about the software |
| - Instructions about operation during the project, | - Request for new information |
| - Request of ideas, experience, knowledge and perceptions, | - Project report, timetable aligned with the appointment, |
| - Project updates and information, surveys, | - Project assumptions about the data research, report fulfilled about |
| - Calendar alignment, request of support, establishing of dates, inspection | - Project report, timetable aligned with the appointment, |
| - Cost consultancy, timetable alignment, | - Project report, timetable aligned with the appointment, |
| - Research on software | - Project assumptions about the data research, report fulfilled about |
| Communication Type: Meetings, Emails, Meeting one-on-one, Surveys, | Timing or Frequency: weekly, upon request |
| Interviews, Workshops, Inhouse newsletters, Notices, Training material and documentation, etc. | Communication method: Project management team |
| - Taken note of new company configurations | - Interactive |
| When the communication takes place: | - Pull |
| All phases | |
| All phases | |</p>
<table>
<thead>
<tr>
<th>Stakeholder Identification (Information)</th>
<th>Communication strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stk095</strong> External ERP-system implementing company Supplier (Service Provider &amp; Consultant)</td>
<td>Role in Project: - Project selection, - Project planning, - Project draft, - Contract draft and final contract documents - Change request, - Time schedule, established time and established costs. Possible Information to be transmitted: - Acceptance of the change request, - Costs and time established or changed, - Confirmation of inspection, inspection scheduled. Communication Type: System demo meeting, Meetings, Emails, conference calls, contract documents. Timing or Frequency: Daily, upon request. Sender/Person responsible: Project management team, IT-service manager. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk097</strong> External Employees of Acmeo GmbH Supplier (Service Provider &amp; Consultant)</td>
<td>Role in Project: - Project planning, - Project execution update, - Change request, - Project clarification, - Project draft. Possible Information to be transmitted: - Project clarification, - Acceptance of internal deadline, - Acceptance of the change, - Inspection scheduled. Communication Type: System demo meeting, Meetings, Emails, conference calls, contract documents. Timing or Frequency: Daily, upon request. Sender/Person responsible: Project management team, IT-service manager. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk098</strong> External ERP-system developing company Supplier (Technology Service Provider)</td>
<td>Role in Project: - Software support, - Software issues to be clarified, - Consultancy support. Possible Information to be transmitted: - Clarification for the overall usage of the software, - Support. Communication Type: Emails, conference calls, support. Timing or Frequency: Upon request. Sender/Person responsible: Project management team, IT-service manager. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk099</strong> External Developers of Neurnier AG Supplier (Technology Service Provider)</td>
<td>Role in Project: - Software issues to be clarified, - Consultancy support. Possible Information to be transmitted: - Clarification about the software. Communication Type: Emails, conference calls, one-zone support. Timing or Frequency: Upon request. Sender/Person responsible: Project management team, IT-service manager. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk100</strong> External Digitalization subsidy program Lender/Subsidy Provider</td>
<td>Role in Project: - Subsidy request. Possible Information to be transmitted: - Response for the subsidy. Communication Type: Website, Emails, conference calls. Timing or Frequency: Upon request. Sender/Person responsible: Project management team, IT-service manager. Communication method: - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk101</strong> External Clients of the company</td>
<td>Company's Clients/ End-user or beneficiary Role in Project: - Feedback, - Survey to filled up - Changes of business operations influencing the client - Explanations of the online-shop. Possible Information to be transmitted: - Survey filled up, - Feedback. Communication Type: Website, Online-shop, Meetings, calls, press releases, internal conversation, survey. Timing or Frequency: Upon request. Sender/Person responsible: Project management team, employees. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td><strong>Stk102</strong> Internal Subsidiary Company Partner</td>
<td>Role in Project: - Feedback and lessons learned from the pilot project - Consultancy Request for tax expectation due to the project investment - Consultancy for structuring the financial processes. Possible Information to be transmitted: - Support for the software implementation. Communication Type: Informal conversation, survey, reports, Emails. Timing or Frequency: Upon request. Sender/Person responsible: Project management team, IT-service manager, employees. Communication method: - Interactive - Push, Pull.</td>
</tr>
<tr>
<td>Stakeholder Identification (Information)</td>
<td>Communication strategy</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Stakeholder ID</td>
<td>Internal/ External</td>
</tr>
<tr>
<td>Shk014</td>
<td>Internal</td>
</tr>
<tr>
<td>Shk015</td>
<td>External</td>
</tr>
<tr>
<td>Shk016</td>
<td>External</td>
</tr>
<tr>
<td>Shk017</td>
<td>External</td>
</tr>
<tr>
<td>Shk018</td>
<td>External</td>
</tr>
<tr>
<td>Shk019</td>
<td>External</td>
</tr>
<tr>
<td>Shk020</td>
<td>External</td>
</tr>
<tr>
<td>Shk021</td>
<td>External</td>
</tr>
<tr>
<td>Shk022</td>
<td>External</td>
</tr>
<tr>
<td>Shk023</td>
<td>External</td>
</tr>
<tr>
<td>Shk024</td>
<td>External</td>
</tr>
<tr>
<td>Shk025</td>
<td>External</td>
</tr>
</tbody>
</table>

**Figure 2 - Communication Matrix**
5. Description of how the different Communications will be carried out & Term and Frequency of Distribution

The following chapter provides a description of how the different communications will be carried out in the project (in regard to the language, format, content and level of detail), the term and frequency of distribution as well as who is going to send each communication. In order to describe those points, a kind of register for the different communication types was developed. Based on this, the communication type overview and strategy as well as the communication and information flowchart are shown.

5.1. Communication Types Register

The communication types within this register are the ones who were identified within the communication needs assessment prior. Out of this, overall 19 communication types were identified which will be used throughout the project for several stakeholders. Therefore, this register starts with the communication type ID and the communication type itself. It continues with stating whether this type is formal or informal, which language and which format (verbal and/or written) will be used as well as the content and the level of detail. Furthermore, the term and frequency of the distribution of this communication type and the sender(s) are described and listed.

In regard to the language, it is important to mention that due to the given frame of the master thesis for this project the languages within the project are English and German. English will be the chosen language between the project management team, whereas all other communications to all other stakeholders will be carried out in German as this is the existing and used language of the company and the other stakeholders. The project management team decided to follow this approach as it would not be possible to switch the whole project language into English without causing further, greater issues and changes. The employees of the company as well as all other stakeholders are used to carry out their operations in German and also the whole ERP-system will be in German. Switching everything into English could lead to a higher possibility of misunderstandings and risks occurring. In order to avoid this, the approach of the two languages is applied.

For the format for each communication type, the register states whether it will be carried out verbal, written or both. Most of the times, this depends also on the occasion and the stakeholder and would be needed to be adapted for each specific situation.

The register also provides a description of the content for each communication type. This is aimed to have a common and aligned used of the different communication types within the project management team.
The level of detail describes whether each communication type will be high-level, medium detailed, detailed, very detailed or depending on the occasion.

Moreover, the register clearly defines when and with which frequency the communication is distributed. For example, the stand-up meetings are defined for every day in the morning at 09:30 o’clock whereas the review meetings are on a weekly basis every Friday morning.

The sender of the communication is defined in general in this communication type register. The communication matrix describes in addition the sender of the communication related to each specific stakeholder. Having this information in mind, the communication type matrix is shown in the following:
<table>
<thead>
<tr>
<th>Communication Type</th>
<th>Formal/Informal</th>
<th>Language</th>
<th>Format</th>
<th>Content</th>
<th>Level of detail</th>
<th>Term &amp; Frequency of Distribution</th>
<th>Sender of Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm006 Project folders and share points</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Collecting and recording all project related documents</td>
<td>Very detailed</td>
<td>Continuously; at least daily</td>
<td>Project Management Team</td>
</tr>
<tr>
<td>Comm007 Interviews</td>
<td>Formal</td>
<td>German/English</td>
<td>Verbal/Written</td>
<td>Collecting information, knowledge, experiences and perceptions from employees and other stakeholders</td>
<td>Detailed</td>
<td>During 1.1 Business Processes</td>
<td>Project Management Team and involved employees/stakeholders</td>
</tr>
<tr>
<td>Comm008 Surveys</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Collecting information, knowledge, experiences and perceptions from employees and other stakeholders</td>
<td>High-level to medium detailed</td>
<td>During 1.1 Business Processes</td>
<td>Project Management Team and involved employees/stakeholders</td>
</tr>
<tr>
<td>Comm009 Project information sessions &amp; workshops</td>
<td>Formal</td>
<td>German/English</td>
<td>Verbal</td>
<td>Information and explanation about project objectives/inputs, project progress and current issues discussed and collecting project ideas, issues and topics</td>
<td>Detailed</td>
<td>Continuously; at least monthly</td>
<td>Project Management Team and involved employees/stakeholders</td>
</tr>
<tr>
<td>Comm010 World Café/ Knowledge Café</td>
<td>Formal/Informal</td>
<td>German/English</td>
<td>Verbal</td>
<td>Producer of a frame for the exchange of information about the project</td>
<td>Medium detailed</td>
<td>Continuously; at least monthly</td>
<td>Project Management Team and involved employees/stakeholders</td>
</tr>
<tr>
<td>Comm011 Notices/Noticeboards</td>
<td>Formal/Informal</td>
<td>German/English</td>
<td>Written</td>
<td>Recording and showing the current project progress and topics</td>
<td>High level</td>
<td>Continuously; after each employee meeting</td>
<td>Project Management Team and involved employees/stakeholders</td>
</tr>
<tr>
<td>Comm012 Training material and documentation</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Recording and explaining the use, working steps and specialties of the ERP system in the form of a reference document</td>
<td>Very detailed</td>
<td>During 1.4 End-user Training</td>
<td>Project Management Team and employees</td>
</tr>
<tr>
<td>Comm013 Contract and related legal documents</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Defining and recording legally binding clauses for services with external providers</td>
<td>Very detailed</td>
<td>Mainly during 1.2 ERP-selection</td>
<td>Project Management Team Legal consultant Government</td>
</tr>
<tr>
<td>Comm014 Government Website</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Illustrating specific information for the subsidy programs as well as general government related information</td>
<td>Medium detailed</td>
<td>Continuously</td>
<td>Government</td>
</tr>
<tr>
<td>Comm015 Phone Calls</td>
<td>Informal</td>
<td>German/English</td>
<td>Verbal</td>
<td>Discussing and explaining specific issues</td>
<td>Depending</td>
<td>Upon occasion/request/need</td>
<td>Project Stakeholders</td>
</tr>
<tr>
<td>Comm016 Syspro Website</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Providing company specific information</td>
<td>Medium detailed</td>
<td>Continuously</td>
<td>Project Management Team Project Client/Sponsor T-service manager</td>
</tr>
<tr>
<td>Comm017 Online-Shop</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Showing company specific products</td>
<td>Detailed</td>
<td>Continuously</td>
<td>Project Management Team Project Client/Sponsor T-service manager</td>
</tr>
<tr>
<td>Comm018 Loan contract and documents</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Defining and recording conditions for the loan</td>
<td>Very detailed</td>
<td>Mainly during 1.5.2 Planning Process and 1.2 ERP-selection</td>
<td>Project Management Team Project Client/Sponsor Financial Institutions Government</td>
</tr>
<tr>
<td>Comm019 Laws</td>
<td>Formal</td>
<td>German/English</td>
<td>Written</td>
<td>Defining and recording legally binding clauses and regulations</td>
<td>Very detailed</td>
<td>Continuously</td>
<td>Government Legal consultant</td>
</tr>
</tbody>
</table>

Table 3 - Communication Type Register
5.2. Communication Types Overview & Strategy

To summarize this register, the following graphic shows an overview about the different communication types for the present project and how those are clustered into groups. Moreover, this also shows the holistic approach that is planned to be applied for this project. The project management team decided to use all available communication types together in order to reach a continuously, active and transparent communication. This can be seen as the communication strategy for the project.

![Figure 3 - Communication Types Overview & Strategy](image)

5.3. Communication and Information Flowchart

Having in mind the stakeholder map from the stakeholder engagement plan, which shows the different relationships between the project management team and the stakeholders and also between the different stakeholders themselves, the following flowchart is aimed to illustrate the information flow within the project in a simplified version. This flowchart highlights that the project management team is the central and main stakeholder that manages all the communication within the project. Moreover, it also shows that the project management team illustrates the first contact person for the external stakeholders. After receiving information from external stakeholders, the project management team filters, manages and sends this information internally to all stakeholders that require this information.
Figure 4 - Communication and Information Flowchart
6. Monitoring and Control

Monitoring the project requires the use of various tools. This is because of the multitude of information, changes, different phases which require a different attention, that happen during the project life cycle. During the planning phase of the project various tools have been developed which will be used to simplify and make the tasks of the project manager much easier to handle and monitor. Vice versa, the same tools will help the project to create a well-structured communication flow. Indeed, the use of monitor and control tools such as change log, pending issue, lessons learned register, quality report, stakeholder register and also meeting minutes (Project Management Institute, 2017, p. 382) facilitate the creation of a well-structured workflow. Furthermore, those tools bring best practices to the project in order to prevent misunderstanding and miscommunication (Project Management Institute, 2017, p. 362).

6.1. Meeting Minutes

In particular, the meeting minutes will help to document and inform the stakeholders what has been discussed during the meeting and in consequence decided. The template carries out different parts: a general part for the information about the meeting, in this way, it is possible to keep track and record of every meeting having a chronology. A space dedicated to the decisions has been taken and a clear structure for possible project actions. Subsequently, at the end, a space has been included to sum up the important contents about the meeting useful for the other member that participated to the meeting.
**Meeting minutes**

**Information**

Meeting Purpose: ____________________________

Meeting Date: ____________________________

Meeting Location: ____________________________

Attendances: ____________________________

Minute issued By: ____________________________

**Decisions Made/ Project actions**

- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________

**Discussion**

- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________

*Figure 5 - Meeting Minutes Template*
6.2. Pending Issue

The table “Pending Issue” will carry out the aim to report any incident that has not yet occurred which could end in a conflict. However, it must be reported because it could happen.

The process to detect and report the issue does not essentially depend on which method you use, rather on the kind of matter is tracked. As a result, the “Pending Issue” template tries to collect all the possible communication issues that may happen during the project execution. In this case, the table has been divided in columns for aid to report the issue by describing it in detail. The issue reporting follows a numerical order called “Pending Issue No.”, afterwards, it has to be described by full description that could help the other stakeholder involved in the solving process. The column “Issued by” carries on the idea to describe in detail the matter, reporting whom reported the problem. Subsequently, the stakeholder which is describing the topic must describe the possible parties responsible and the current status. The second part of the table is dedicated to describe the hypothetical solution estimation which includes: “Solution deadline” last date possible to solve the issue, “Date of Solution” in this case if the solution is solved, the date must be reported. The relevancy to fill up this column is to have a clear overview of the time needed to solve and afterwards to have enough data in the future to estimate the time required. The last column describes how the solution has been found, giving the possibility to the stakeholder to report any relevant note.

![Pending Issue Template](image)

*Figure 6 - Pending Issue Template*
6.3. Project Status Report

Another important tool for the monitoring and control of the communication within the project is the project status report. This report was already described within the Cost Management Plan. As the project status report is defined as an important communication type, especially for the main stakeholders such as the owner/client and the sponsors, it is important to highlight this report here again in the following.

![Project Status Report](image)

**Figure 7 - Project Status Report**
7. Conclusions

To conclude, this present document illustrates the whole Project Communication Management Plan, that is aimed to describe all activities and approaches developed for the project in order to plan the overall communication strategy for the project. This is done by identifying the communication needs of the stakeholders, developing a communication matrix showing the communication strategy for each stakeholder and to describe the planned communications types and methods. With this, this Project Management Plan provides the description of how the project management team wants to communicate within the project in order to have a positive influence on the change management process and the overall success of the project. The related communication strategy for each stakeholder is outlined within the communication matrix and together with the developed templates, this is aimed to help the project management team to execute, monitor and control the communication within the project.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, research, brainstorming and meetings as well as specifically the communication technology, models, methods and skills were used for all parts to identify an overall, effective and holistic communication strategy for the project of the ERP-system implementation.

The project team performed this sixth planning process for the knowledge area of Project Communication Management in order to create the Project Communication Management Plan. All generated documents, templates and outputs, especially the communication matrix, from this planning process will illustrate the input for the next planning processes such as for example the Stakeholder Engagement Plan and the Procurement Management Plan.

Moreover, the Project Communication Management Plan represents part of the overall Project Management Plan.
References

Project Stakeholder Engagement Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
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Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

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Director: Marcelo Leporati

Document version and change history

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Abstract

The present paper illustrates the Project Stakeholder Engagement Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Stakeholder Engagement Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Stakeholder Engagement Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule, cost, quality, risk and communication. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Stakeholder Engagement Plan illustrates the seventh knowledge area (Project Stakeholder Engagement) within the Planning Process Group that is developed for this project.

Therefore, this Project Stakeholder Engagement Plan first provides a short introduction about the Project Stakeholder Engagement Plan in general and the Project Stakeholder Engagement Plan itself in an overview, continues with the stakeholder register that refers to the identification of the stakeholders and describes their expectations, influence and impact on the project. Subsequently, several corresponding stakeholder analysis matrices are described in detail. This is followed by the explanation of the monitoring and control of the stakeholder engagement. In accordance with the previously mentioned topics, the Project Stakeholder Engagement Plan concludes with the incident register and a conclusion of this plan. With those points, the stakeholder engagement approach for the project is described and developed at the current point in the planning phase.

Keywords: Project Stakeholder Engagement Plan, Stakeholder Register, Stakeholder Analysis Matrices, Incident Register, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract ........................................................................................................................................ II
List of Figures ............................................................................................................................. IV
List of Tables ............................................................................................................................... IV
1. Introduction, Scope and Purpose of the Stakeholder Engagement Plan ......................... 1
2. Stakeholder Engagement Plan ............................................................................................ 1
   2.1. Stakeholders Participation and Engagement .......................................................... 2
   2.2. Communication Needs .......................................................................................... 2
   2.3. Methods of Communication ................................................................................ 2
   2.4. Time & Frequency ................................................................................................. 3
   2.5. Stakeholders Changes ........................................................................................... 3
   2.6. Inter-relationships ................................................................................................. 3
   2.7. Stakeholders Engagement Approach ...................................................................... 4
3. Stakeholder Register .......................................................................................................... 4
4. Stakeholder Analysis Matrices .......................................................................................... 9
   4.1. Power-Interest Matrix ............................................................................................ 9
   4.2. Stakeholder-Engagement-Assessment-Matrix ....................................................... 10
   4.3. Participation and Involvement Matrix during Project Progress ......................... 12
   4.4. Stakeholder Mapping and Stakeholder Relationships ........................................... 14
5. Monitoring and Control .................................................................................................... 17
6. Incident Register .............................................................................................................. 17
7. Conclusions ....................................................................................................................... 19
References .................................................................................................................................. V
List of Figures

Figure 1 - Power-Interest-Matrix ........................................................................................................ 9
Figure 2 - Stakeholder-Engagement-Assessment-Matrix .................................................................. 11
Figure 3 - Stakeholder Mapping ...................................................................................................... 16
Figure 4 - Incident Register ............................................................................................................. 18

List of Tables

Table 1 - Scale stakeholders' level of influence .................................................................................. 5
Table 2 - Scale stakeholders' level of interest ....................................................................................... 5
Table 3 - Score for stakeholders' level of impact and priority ............................................................... 6
Table 4 - Engagement levels ............................................................................................................... 10
Table 5 - Participation and Involvement Matrix during Project Progress ........................................... 14
1. Introduction, Scope and Purpose of the Stakeholder Engagement Plan

Stakeholder satisfaction is an objective of any project. The key to a full engagement and participation of the stakeholders in the project is the continuous and open communication in order to understand their needs and expectations and managing conflicts and interests regarding the project activities and decisions (Project Management Institute, 2017, p. 505).

Project stakeholder management is the area of knowledge that requires to identify all the persons, natural or legal, participating and having an impact on the project, analyzing their expectations and requirements, their level of impact on the project, and developing an approach and a strategy in order to engage them effectively in the project decisions (Project Management Institute, 2017, p. 503).

According to the PMBOK (6th Edition), the processes of the project stakeholder management are described as following:

- Identification of the Stakeholders: the process of identifying all the parties participating in the project as well as analyzing their expectation and their level of impact on the project.
- Planning Stakeholder Engagement: the process of analyzing how to involve the stakeholders based on their relative information (expectations, level of impact, needs etc.)
- Manage Stakeholder Engagement: the process of working with the stakeholders to achieve their expectations and interests.
- Monitor Stakeholder Engagement: the process of monitoring the stakeholder relationships and modifying the engagement strategies.

2. Stakeholder Engagement Plan

The stakeholder engagement plan is a plan providing the general frame used in managing the stakeholders of the project by describing the strategies and actions required to have a productive stakeholder’s involvement (Project Management Institute, 2017, p. 522). It gives an overview regarding the approach in order to engage stakeholders in an effective and efficient way as well as to identify their expectations to assure the success of the project.

Moreover, the stakeholder management plan provides the approach and strategies to identify the stakeholder’s engagement level and how to improve and perfectionate it in all the phases of the project to improve their support and involvement to the project.
2.1. Stakeholders Participation and Engagement

In order to document, detail and describe the stakeholder’s participation and engagement to the project of the implementation of an ERP-system to Sysperto GmbH, an assessment matrix showing the current position and level of engagement of all the stakeholders as well as the desired position is created by the project management team following the PMBOK methodology. “A stakeholder engagement assessment matrix supports comparison between the current engagement levels of stakeholders and the desired engagement levels required for successful project delivery” (Project Management Institute, 2017, p. 521). It provides a clear transparent demonstration of their participation by classifying them into 5 levels of engagement:

- Unaware: inattentive to the project, its objectives and impacts.
- Resistant: resistant to the outcomes of the project and the change it may bring.
- Neutral: aware of the project and its impact but indifferent towards it.
- Supportive: supportive and in favor of the project and its objectives.
- Leading: actively engaged in the project and helping to the success of the project and its objectives.

The gap between the current and the desired state of a stakeholder indicate the level of communication needed in order to transform the current engagement of the stakeholder to the desired engagement (Project Management Institute, 2017, p. 522).

The developed Stakeholder-Engagement-Assessment-Matrix can be found in Chapter 4.2.

2.2. Communication Needs

The information to be transmitted and communicated to the stakeholders is described in the communication matrix created and contained in the Communication Plan report of the implementation of an ERP-system to Sysperto GmbH project, with a description of the content and method of distribution. Due to the strong link between communications and stakeholder management, is the communication management plan perceived as an important input and source for the stakeholder management (Project Management Institute, 2017, p. 509).

2.3. Methods of Communication

The communication within all levels and phases of the project will be clear, open and interactive communication between the project management team members and the stakeholders in order to ensure the good progress and the success of the project by bringing continuous and transparent communication.

The methods of communication that will be used following the PMBOK methodology are the interactive, the push and the pull communication as stated and described in more detail in the Communication Plan report.
2.4. Time & Frequency

The timing and frequency in regard to the project phase with the greatest interest is defined for each stakeholder in the stakeholder register. Regarding the timing and frequency of the communication between the different stakeholders, this is related to their level of influence and importance towards the project, also defined in the stakeholder register. Regarding the high-level stakeholders, the frequency of the communication is usually done weekly in the weekly meetings; while it could be also upon a request in the case some urgent matter has to be discussed. However, for the low-level stakeholders, the frequency of the communication is done upon a request. The timing and frequency of the communication regarding each and all the stakeholders is developed in the communication matrix contained in the Communication Plan report.

2.5. Stakeholders Changes

While managing stakeholder engagement, changes may be needed regarding the stakeholder’s involvement and impact on the project. Therefore, additions, deletions, changes or improvements of the current level of stakeholder engagement may be required. In response to this change, and as stated in the PMBOK Guide, a change request has to be dressed following the change processes in order to manage it in a right and effective way (Project Management Institute, 2017, p. 535).

Overall changes in regard to the identified stakeholders will be continuously reviewed during the project within the process of monitoring and controlling stakeholders.

2.6. Inter-relationships

The relationships between the different stakeholders of the project of the implementation of an ERP-system are different and depend mainly on the level of influence and impact they have on the project and its success as well as their role and participation.

Some of the stakeholders will have a close relationship as they will work together continuously in all the project phases such as the CEO, the managers and the employees of Sysperto GmbH who have to work closely and communicate continuously to ensure the success of the project.

While some of the stakeholders will be on a regular and normal relationship with the project management team, as they will require updates, audits or a specific consultancy at some points of the project. These stakeholders could be the shareholders of the Sysperto GmbH company, the lawyer/legal consultancy company or also the GDPR representative/expert.

However, the last group of stakeholders will require a relationship that does not require a continuous and close relationship because they do not need to be aware of all the details of the
project considering their background and field of work, such as the bank institutions or the subsidiary institution.

Moreover, there are inter-relationships among stakeholders when they have to discuss, communicate and work in order to achieve some deliverables. Inter-relationships are mainly between the company Acmeo GmbH, implementing the ERP software to the client Sysperto GmbH, and the company developing the software (Neumeier GmbH), or also the inter-relationship between the suppliers of the ticket-system (DocBee GmbH) and the one of the online-shop (ITscope GmbH) with Acmeo GmbH, the company implementing the ERP-system to the client company.

The main relationships between the different stakeholders can be seen in the stakeholder map in Chapter 4.4.

2.7. Stakeholders Engagement Approach

In order to develop an approach for the stakeholders engagement, a full understanding of the role, expectations and potential impact on the project by the stakeholders is required (Project Management Institute, 2017, p. 516).

The stakeholder engagement matrix will be used in order to identify and clarify the current engagement level as well as the desired engagement level of each one of the stakeholders. It will help to analyze the situation and participation of the stakeholders to the project and its success in order to close the potential gap between the current and desired state by using open communication and involving them more into the project and its objectives.

The overall engagement approach for each stakeholder is the continuously, open and transparent communication to each stakeholder having in mind their needs and expectations. Moreover, the project management team aims to involve the stakeholders through regular, open conversations in order to know the stakeholder’s current views and perceptions as well as to consider and incorporate their ideas, experiences and knowledge into the project.

3. Stakeholder Register

The stakeholder register is perceived as the main output of the first process of project stakeholder management, called “Identify Stakeholders” according to the PMBOK (Project Management Institute, 2017, p. 507/514). For the identification of the stakeholders the following tools and techniques were used: brainstorming sessions, interviews and expert judgements, data analysis, the review and analysis of the project phases (based on the WBS) and the project processes. Out of this, 25 stakeholders for this project are identified at the current point of the
project. The project management team developed as a consequence for those identified stakeholders the stakeholder register. The stakeholder register is a document which provides the information about the identified stakeholders for example in regard to the identification and assessment information as well as the stakeholder classification (Project Management Institute, 2017, p. 514).

For the present project, this proposed structure for the stakeholder register from the PMBOK was used and applied. Therefore, the register first states the stakeholder identification information. This includes the stakeholder ID, the name as well as the position of the identified stakeholder, the corresponding company or organization, location, role within the project and the contact information (telephone number).

The second category of information is assigned to the stakeholder assessment. Consequently, the main requirements (from the project management team to this stakeholder) as well as the main expectations (from the stakeholder to this project) are described. Those points are seen as crucial for having a better understanding of the stakeholders in order to develop an appropriate stakeholder engagement as well as the communication management plan. Based on this assessment, the level of influence and level of interest is analysed leading to the overall level of impact through the multiplication of both levels. The result of the level of impact is used for prioritizing the stakeholders. The assessment scale of the level of interest and influence can be seen in the following. For closing this category, the phase of the greatest interest and influence within the project from this stakeholder is determined in regard to the work packages from the WBS or a potential continuously involvement.

<table>
<thead>
<tr>
<th>Level of influence</th>
<th>5 = Highest level of influence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 = Significant level of influence</td>
</tr>
<tr>
<td></td>
<td>3 = Moderate level of influence</td>
</tr>
<tr>
<td></td>
<td>2 = Low level of influence</td>
</tr>
<tr>
<td></td>
<td>1 = Very little/null level of influence</td>
</tr>
</tbody>
</table>

*Table 1 - Scale stakeholders’ level of influence*

<table>
<thead>
<tr>
<th>Level of interest</th>
<th>5 = Highest level of interest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 = Significant level of interest</td>
</tr>
<tr>
<td></td>
<td>3 = Moderate level of interest</td>
</tr>
<tr>
<td></td>
<td>2 = Low level of interest</td>
</tr>
<tr>
<td></td>
<td>1 = Very little/null level of interest</td>
</tr>
</tbody>
</table>

*Table 2 - Scale stakeholders’ level of interest*
**Score for level of impact and prioritization**

**HIGH PRIORITY** = (> 15). This stakeholder has a high priority for the project and is crucial for project success. Special communication needed.

**MEDIUM PRIORITY** = (from 9 to 15). This stakeholder has a medium priority for the project. Continuous communication needed.

**LOW PRIORITY** = (from 1 to 8). This stakeholder has a low priority for the project. Monitoring and communication on a regular basis.

*Table 3 - Score for stakeholders' level of impact and priority*

The third category refers to the classification of the stakeholders whether the project management sees them as internal or external or as defender, neutral or opponent. Accordingly, seven stakeholders are assessed as internal and 18 as external. Whereas, 16 are perceived as defenders, eight as neutral and one as an opponent. The last category refers to the stakeholder participation, showing the current as well as the desired engagement level and is used and described in the next chapter for the stakeholder-participation-matrix as well as for the stakeholder monitoring.

In the following, the developed stakeholder register is shown and can also be found in the Appendix:
<table>
<thead>
<tr>
<th>Stakeholder Identification Information</th>
<th>Stakeholder Assessment Information</th>
<th>Stakeholder Classification</th>
<th>Stakeholder Participation</th>
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<tbody>
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<td><strong>Position</strong></td>
<td><strong>Organization/Company</strong></td>
<td><strong>Location</strong></td>
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<td>34005</td>
<td>Severin</td>
<td>Employees of the company</td>
<td>Topware GmbH</td>
</tr>
<tr>
<td>34005</td>
<td>Andreas Göhr</td>
<td>Private Manager</td>
<td>Topware GmbH</td>
</tr>
<tr>
<td>34005</td>
<td>Arne Gohler</td>
<td>Marketing Manager</td>
<td>Topware GmbH</td>
</tr>
<tr>
<td>34005</td>
<td>Almeli GmbH</td>
<td>Marketing Manager</td>
<td>Topware GmbH</td>
</tr>
<tr>
<td>34005</td>
<td>375/463</td>
<td>Stakeholder Engagement Plan – Implementation ERP-system (Group 4)</td>
<td></td>
</tr>
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<td>Stakeholder Assessment Information</td>
<td>Stakeholder Classification</td>
<td>Stakeholder Participation</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------------------------</td>
<td>---------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td><strong>Position</strong></td>
<td><strong>Organization/ Company</strong></td>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>Joachim Zehner</td>
<td>Market analyst</td>
<td>MediaGroup GmbH</td>
<td>Nürnberg, Germany</td>
</tr>
<tr>
<td>Corinna Oehlschlegl</td>
<td>Financial consultant</td>
<td>UBS</td>
<td>Stuttgart, Germany</td>
</tr>
<tr>
<td>Jörgen Pachek</td>
<td>Financial consultant</td>
<td>UniCreditLeasing</td>
<td>Nürnberg, Germany</td>
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<td>Dommex GmbH</td>
<td>Hannover, Germany</td>
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<tr>
<td>Several</td>
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<td>TecoraGmbH</td>
<td>Karlsruhe, Germany</td>
</tr>
<tr>
<td>Several</td>
<td>Distributors</td>
<td>Several</td>
<td>Germany</td>
</tr>
<tr>
<td>Several</td>
<td>Development of ERP system base</td>
<td>SAP Deutschland</td>
<td>Munich, Germany</td>
</tr>
<tr>
<td>N/A</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Several</td>
<td>Competitors</td>
<td>Several</td>
<td>South of Germany</td>
</tr>
<tr>
<td>Prelude</td>
<td>Insurance</td>
<td>BlueSky</td>
<td>Munich, Germany</td>
</tr>
</tbody>
</table>
4. Stakeholder Analysis Matrices

The following chapter provides a description of the different stakeholder analysis matrices, which were developed for the present project.

4.1. Power-Interest Matrix

The Power-Interest-Matrix is seen as a method of the data representation technique for the process of “Identify Stakeholders” (Project Management Institute, 2017, p. 512). This also refers overall to stakeholder mapping/representation which is seen as a method to categorize the stakeholders (Project Management Institute, 2017, p. 512). The Power-Interest-Matrix shows in an illustrative way the result of the stakeholders’ assessment of the level of interest and the level of influence from the stakeholder register (please refer to Chapter 3). With this matrix, a classification and grouping of the identified 25 stakeholders is reached. The matrix consists of four quadrants that clusters the stakeholders according to the appropriate strategies – manage closely, keep informed, monitor and keep satisfied – depending on their influence as well as interest. The developed Power-Interest-Matrix is shown in the following:

![Power-Interest-Matrix](image)
This assessment of the interest and influence, combined in the level of impact, leads to another technique for data representation, the prioritization. The prioritization goes from the highest to the lowest level of impact of each stakeholder and helps the project management team to focus on the most important stakeholders. This prioritization can be seen in the developed Stakeholder Register (please refer to Chapter 3).

The Power-Interest-Matrix shows that the stakeholders with high priority (>15) and medium priority (between 9 to 15) are within the category of “manage closely” whereas the stakeholders with low priority are mainly within the “keep satisfied” and “monitor” quadrant.

This matrix, on the one hand, helps to have an overview of the different stakeholders with their influence and interest. On the other hand, it helps to focus on the main stakeholders.

### 4.2. Stakeholder-Engagement-Assessment-Matrix

The Stakeholder-Engagement-Assessment-Matrix is seen as a data representation technique for the process of “Plan Stakeholder Engagement” (Project Management Institute, 2017, p. 521). This matrix shows and compares the current as well as the desired engagement level for each stakeholder. The desired engagement is “the level that the project team has assessed as essential to ensure project success” (Project Management Institute, 2017, p. 522). The Stakeholder-Engagement-Assessment-Matrix for the present project follows the classification of the engagement levels according to the PMBOK (Project Management Institute, 2017, p. 521). Those levels are unaware, resistant, neutral supportive and leading. The following table provides the definitions of these levels from the PMBOK.

<table>
<thead>
<tr>
<th>“Unaware”</th>
<th>Unaware of the project and potential impacts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistant</td>
<td>Aware of the project and potential impacts but resistant to any changes that may occur as a result of the work or outcomes of the project. These stakeholders will be unsupportive of the work or outcomes of the project.</td>
</tr>
<tr>
<td>Neutral</td>
<td>Aware of the project, but neither supportive nor unsupportive.</td>
</tr>
<tr>
<td>Supportive</td>
<td>Aware of the project and potential impacts and supportive of the work and its outcomes.</td>
</tr>
<tr>
<td>Leading</td>
<td>Aware of the project and potential impacts and actively engaged in ensuring that the project is a success.” (Project Management Institute, 2017, p. 521)</td>
</tr>
<tr>
<td>C</td>
<td>Current engagement level</td>
</tr>
<tr>
<td>D</td>
<td>Desired engagement level</td>
</tr>
</tbody>
</table>

*Table 4 - Engagement levels*
Out of these definitions, the current and desired engagement level of each stakeholder was assessed and is illustrated in the following Stakeholder-Engagement-Assessment-Matrix as well as in the last two columns of the stakeholder register. For the assessment of the engagement level the project management team consulted the perception and view of the owner/client as well as from selected employees from Sysperto GmbH who are seen as experts for this project.

**Figure 2 - Stakeholder-Engagement-Assessment-Matrix**
4.3. Participation and Involvement Matrix during Project Progress

In order to have a clear overview about the stakeholders’ participation in the different project process groups, the following matrix is used to define the participation and extent of involvement from the identified stakeholders.

<table>
<thead>
<tr>
<th>Project Process Groups</th>
<th>Inform</th>
<th>Consult</th>
<th>Partnership</th>
<th>Control</th>
</tr>
</thead>
</table>
| Initiating             | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- Shareholders/ Sponsor  
- Employees/ End-user  
- Subsidy Provider/ Government  
- Subsidiary  
- Tax Consultant  
- Distributors  
- Company's Clients | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- Shareholders/ Sponsor  
- Employees/End-user  
- Subsidy Provider/ Government  
- Subsidiary  
- Insurance company  
- Legal institution/ Government  
- Company's Clients  
- Legal Consultant  
- Market Analysis Consultant  
- Financial Institutions | - Project Client & Sponsor  
- Project Management Team  
- Employees/E nd-user | - Project Management Team  
- Competitors |
| Planning               | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- ERP implementing company  
- Shareholders/ Sponsor  
- Employees/ End-user  
- ERP developing company  
- Developers  
- Subsidiary  
- Company's Clients | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- ERP implementing company  
- Employees/End-user  
- ERP developing company  
- Developers  
- Subsidy Provider/ Government  
- Subsidiary  
- Tax Consultant  
- Data Security Consultant  
- Competitors  
- Insurance company  
- Distributors  
- ERP base developing company  
- Legal institution/ Government | - Project Client & Sponsor  
- Project Management Team  
- ERP implementing company  
- Financial Institutions | - Competitors |

Planning
<table>
<thead>
<tr>
<th>Stakeholder Engagement Plan – Implementation ERP-system (Group 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Process Groups</strong></td>
</tr>
</tbody>
</table>
| Executing | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- Shareholders/Sponsor  
- Employees/End-user  
- Subsidiary  
- Company's Clients | - Legal Consultant  
- Market Analysis Consultant  
- Financial Institutions  
- Ticket system developing company  
- Sub-system developing company | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- ERP implementing company  
- Employees of Acmeo GmbH  
- Employees/End-user  
- ERP developing company  
- Developers  
- Subsidy Provider/Government  
- Subsidiary  
- Tax Consultant  
- Data Security Consultant  
- Distributors  
- ERP base developing company  
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- Ticket system developing company  
- Sub-system developing company | - Project Client & Sponsor  
- Project Management Team  
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- Employees of Acmeo GmbH  
- Tax Consultant  
- Financial Institutions |
| | - ERP implementing company  
- Employees of Acmeo GmbH  
- Competitors | | | |
| Monitoring & Controlling | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- Shareholders/Sponsor  
- Employees/End-user  
- Subsidiary | - Project Client & Sponsor  
- Project Management Team  
- IT-service Manager  
- ERP implementing company  
- Employees of Acmeo GmbH  
- Employees/End-user  
- ERP developing company  
- Developers | - Project Client & Sponsor  
- Project Management Team  
- ERP developing company  
- Employees of Acmeo GmbH  
- Financial Institutions  
- ERP implementing company  
- Employees of Acmeo GmbH  
- Competitors | - ERP implementing company  
- Employees of Acmeo GmbH  
- Competitors |
| | | | | |
4.4. Stakeholder Mapping and Stakeholder Relationships

Stakeholder mapping/representation according to the PMBOK is a data representation technique used for the process of “Identify Stakeholders” (Project Management Institute, 2017, p. 512). The previous sub-chapters have already illustrated specific methods for stakeholder mapping. In addition, for the process “Plan Stakeholder Engagement” the data representation technique of mind mapping is stated (Project Management Institute, 2017, p. 516/521). For applying those techniques, the following stakeholder map was developed which is aimed to illustrate the relationship between the different identified stakeholders. As this stakeholder map was developed from the perspective from the project management team, it is placed in the middle. All relationship connections between the project management team and the stakeholders are shown through blue lines, whereas the main relationships between the stakeholders are shown with orange lines. For the sake of clarity and understandability, only the main and important relationship connections between the stakeholders are shown.

Besides illustrating the relationship connections, this stakeholder map also clusters the stakeholders in four groups. The first group represents the company’s internal stakeholders such as the project management team itself and the project client and sponsor for example. The second
group contains all external ERP-system related stakeholders, which are the different technology companies that are related to the system. Most of those illustrate the second-level support, as the first contact person for the project management team is the ERP implementing company which in turn has the partnership agreements with those companies. The third group is dedicated to all external stakeholders that provide any other consultant service required for the project such as the insurance company or the legal consultant. The last group shows the general external stakeholders such as the company’s clients and the distributors.

With this, this stakeholder map is aimed to provide the project management team an overview about the several relationship connections between the identified stakeholders. Moreover, it can also support the monitoring process.

The stakeholder map can be seen in the following and in the Appendix:
Stakeholder Engagement Plan – Implementation ERP-system (Group 4)

Direct relationship between Project Management Team and Stakeholder
Relationship between the stakeholders

Figure 3 - Stakeholder Mapping
5. Monitoring and Control

Keep monitored the stakeholders during the project will be carried out by the “Stakeholder Register Matrix”. That is because other tools to control and monitor the stakeholder performance are already settled in other parts of the planning. As a result, the stakeholder register provides information regarding how to keep monitored the people who take part, also in minimal part, to the project. In particular, the columns dedicated to the stakeholder assessment information, offer information regarding the influence, influence consequently impact them may have. The other two parts are related to the stakeholder classification and participation, they are linked to keep monitored the stakeholder because it is essential to keep one eye to the people with a lower level of interest or worse a resistant approach to the project. Nevertheless, keeping updated the “Stakeholder Participation Matrix” and the “Power Interest Matrix” facilitate the task to control the interest and participation of the stakeholders during the project.

6. Incident Register

The implementation of an ERP-system is not exempt from incidents. The “Incident Register” is a mechanism for recording incidents within a report where it is possible to keep track of what occurs during the project. The register will become the first source for any incident that could happen. For that reason, it is mandatory to report any event documenting any possible relevant detail. The table is developed to give the highest level of detail possible, hereby, the table is divided into three main parts: a general part dedicated to describe the main information about the incident, and the middle section, keen to show the kind and level of impact. Subsequently, the last part, is dedicated to estimate the possible losses which could influence the project and the company. Critically important is the impact part, that aids to estimate and give relevant information about the incident. The legend “Type of impact” defines what has had the impact: Environmental, Health & Safety, Assets damage and Production Losses. Moreover, the impact part is composed with another column the “Incident level”. It documents and measures the impact which could be: Extreme, High, Medium, and Low. To conclude, these aspects are filled up by the project management team which will attribute a certain level of impact based on a qualitative analysis. Furthermore, it will be reviewed by the CEO of Sysperto GmbH. The Incident Register is critically important to avoid that what occurred never happens again.
## Implementazione di un sistema ERP

### Incident Register

<table>
<thead>
<tr>
<th>No.</th>
<th>Date + Time</th>
<th>Location/Department area</th>
<th>Reported by</th>
<th>Description</th>
<th>Type of Impact</th>
<th>Incident level</th>
<th>Estimate cost</th>
<th>Estimate lost hours</th>
<th>Corrective actions</th>
<th>Responsible person</th>
<th>Completion date</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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**Impact Legend**
- **E**: Environmental
- **H**: Health & Safety
- **A**: Assets Damage
- **P**: Production loss

**Incident Level**
- **Extreme**: Strong impact
- **High**: Significant issue
- **Medium**: Serious issue
- **Low**: Minor matter

*Figure 4 - Incident Register*
7. Conclusions

To conclude, this present document illustrates the whole Project Stakeholder Engagement Plan, that is aimed to describe all activities and approaches developed for the project in order to ensure a continuous stakeholder engagement. With this, this Management Plan provides the description of how the project management team wants to manage the identified stakeholders within the project. All related results of the stakeholder analysis in regard to their expectations, influence and impact are shown within the stakeholder register and the stakeholder analysis matrices which are aimed to help the project management team to manage and control all stakeholders effectively during the project.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, data analysis, gathering and representation as well as research, brainstorming and meetings were used for all parts. Those tools helped to identify the stakeholders and their impact and influence and to perform the stakeholder analysis for the project of the ERP-system implementation.

The project team performed this seventh planning process for the knowledge area of Project Stakeholder Engagement in order to create the Project Stakeholder Engagement Plan. All generated documents, templates and outputs, especially the stakeholder register, from this planning process will illustrate the input for the next planning processes such as for example the Communication as well as the Procurement Management Plan.

Moreover, the Project Stakeholder Engagement Plan represents part of the overall Project Management Plan.
References

Project Procurement Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

<table>
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<tr>
<th>Document version and change history</th>
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</table>
Abstract

The present paper illustrates the Project Procurement Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Procurement Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Procurement Management Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule, cost, quality, risk, communication and stakeholder. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Procurement Management Plan illustrates the eighth knowledge area (Project Procurement Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Procurement Management Plan first provides a short introduction about the Project Procurement Management Plan in general and the Project Procurement Management Plan itself in an overview and continues with the make or buy analysis. This is followed by the chapter covering the instructions/process for bidding and awarding contracts mainly by describing the tender criteria for the selection of supplier and the evaluation of offers but also with the request for proposal and a corresponding draft of the contract. Subsequently, the risk and responses as a Risk Contractual Management Strategy for the risk transfer policy between the signatory parties, the monitoring and control audit as well as the integrated change control and the restrictions and assumptions are developed. In accordance with the previously mentioned topics, all this information is collected in the procurement management matrix. This matrix includes the description of the contract type according to the PMBOK classifications as well as the quality and scope criteria to validate the deliverables, the time and cost contract requirements as well as the monitoring and control audits.
With those points, the overall procurement management approaches for the project are described and developed at the current point in the planning phase.

Keywords: Project Procurement Management Plan, Make or buy analysis, contract types, contracts, time contract requirements, cost contract requirements, tender process, bidding, Procurement Management Matrix, offers assessment matrix, Risk Contractual Management Strategy, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract .............................................................................................................................. II
List of Figures.................................................................................................................... VI
List of Tables ..................................................................................................................... VI
1. Introduction, Scope and Purpose of the Project Procurement Management Plan ..........1
2. Procurement Management Plan (overview) ................................................................. 1
   2.1. Procurement Authority ..................................................................................... 1
   2.2. Roles and Responsibilities ............................................................................. 2
   2.3. Standard Procurement Documents ................................................................. 2
   2.4. Contract Type .................................................................................................. 3
   2.5. Insurance Requirements .................................................................................. 3
   2.6. Selection Criteria ............................................................................................ 4
   2.7. Procurement Constraints and Assumptions ..................................................... 4
   2.8. Integration Requirements ............................................................................... 4
   2.9. Performance Metrics ...................................................................................... 5
3. Budget (Make-Buy Analysis) ..................................................................................... 5
4. Criteria for the Selection of Supplier and Evaluation of Offers .................................. 10
   4.1. Overall Conduct Procurement Process .......................................................... 10
   4.2. Tender Criteria to Select Providers ............................................................... 12
   4.3. “Request for Proposal” Draft/Template ........................................................... 14
       4.3.1. Introduction to the Request for Proposal ........................................... 14
       4.3.2. Company and Project Background Information .............................. 14
       4.3.3. Proposal Requirements .................................................................. 15
       4.3.4. Project Scope ............................................................................... 16
       4.3.5. Specific Proposal Requirements ..................................................... 17
       4.3.6. Project Time Frame ....................................................................... 18
       4.3.7. Proposal Assessment Criteria ......................................................... 18
   4.4. Proposals Assessment Matrix Template ........................................................... 19
   4.5. Provider Awarding/Bid Award Report Template ............................................ 21
4.6. Drafting Proposal of the Contract ................................................................. 22

5. Risk and Responses .......................................................................................... 36

6. Monitoring and Control Audit ........................................................................ 39

7. Integrated Change Control .............................................................................. 41

8. Restrictions and assumptions ........................................................................ 43
   8.1. Procurement Constraints ........................................................................... 43
   8.2. Procurement Assumptions ....................................................................... 44

9. Procurement matrix ........................................................................................ 44
   9.1. Quality and Scope Criteria to Validate Deliverables ................................. 47
   9.2. Time Contract Requirements .................................................................... 48
   9.3. Cost Contract Requirements .................................................................... 48
   9.4. Contract Tolerance .................................................................................... 48

10. Conclusion ..................................................................................................... 49

References .......................................................................................................... VII
List of Figures

Figure 1 - WBS according to Make or Buy Analysis .................................................................9
Figure 2 - Conduct Procurement Process Flowchart.................................................................11
Figure 3 - Proposal assessment and comparison matrix template .............................................20
Figure 4 - Bid award report template .......................................................................................21
Figure 5 - Risk transfer policy table (Part 1)............................................................................37
Figure 6 - Risk transfer table (Part 2)....................................................................................38
Figure 7 - Contract closure validation template ........................................................................40
Figure 8 - Change control procurement activities ....................................................................42
Figure 9 - Procurement Management Matrix (Part 1)...............................................................45
Figure 10 - Procurement Management Matrix (Part 2).............................................................46
Figure 11 - Contingency tolerance for the contract ..................................................................49
Figure 12 - Tolerance impact graph .......................................................................................49

List of Tables

Table 1 - Procurement authority .............................................................................................2
Table 2 - Roles and Responsibilities .......................................................................................2
Table 3 - Integration requirements .........................................................................................5
Table 4 - Make or Buy Analysis ..............................................................................................8
Table 5 - Criteria matrix for provider selection .....................................................................14
Table 6 - Procurement Constraints .......................................................................................43
Table 7 - Procurement assumptions ......................................................................................44
Table 8 - Quality and scope criteria to validate deliverables ....................................................47
1. Introduction, Scope and Purpose of the Project Procurement Management Plan

In general, the procurement management is the area of knowledge including the processes of acquiring products or services needed from outside the project team due to incapability or incapacity (PMI, 2017, p. 459). Procurement management provides a way of creating, managing and controlling contracts and purchase orders (PMI, 2017, p. 459).

According to the PMBOK Guide (6th Edition), procurement management includes the following processes:

- Plan Procurement Management: The process of identifying the procurement requirements, responsibilities, approach and decisions in order to carry out the contracts or purchase orders for a project
- Conduct Procurement: The process including the establishment of proposals, analysis of the providers, the selection criteria and the award of the contract to a provider.
- Control Procurement: The process of controlling and monitoring the work of the established contract, measuring and evaluating the performance of the contractor and closing the contract.

Moreover, the procurement management is related to the laws and regulations of contracts, that is why the project manager is supported by the procurement department of the organization in the establishment of procurement management deliverables.

2. Procurement Management Plan (overview)

The procurement management plan aims to document and define the procurement requirements for the project in order to define the approach needed and to take the procurement decisions. This process helps the project management team on deciding what products or services to acquire or to transfer to an external organization (PMI, 2017, p. 466), when it is necessary or profitable for the company undertaking the project.

2.1. Procurement Authority

In the following table, the people who are responsible and having the authority for the procurement process for the project of the implementation of the ERP-system in Syperto GmbH are named and described.
2.2. Roles and Responsibilities

The project management team is mainly responsible of managing the procurement aspect of the implementation of the ERP-System for Sysperto GmbH, with identifying all the requirements needed to be available in the work aimed to be procured, which is mainly the implementation of the ERP-System itself with the complete training provided for the employees.

However, a good definition and clarification of the roles and responsibilities of all the parties involved in this process are necessary. The table below lists the responsibilities of the different parties.

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management Team</td>
<td>- Identify the services and products needed to be procured</td>
</tr>
<tr>
<td></td>
<td>- Identify the procurement requirements</td>
</tr>
<tr>
<td></td>
<td>- Define the acceptance criteria</td>
</tr>
<tr>
<td>Procurement Department</td>
<td>- Define the type of contract to be used</td>
</tr>
<tr>
<td></td>
<td>- Define the risks related to the contract</td>
</tr>
<tr>
<td></td>
<td>- Define the clauses and obligations in the contract</td>
</tr>
<tr>
<td>The contracted company</td>
<td>- Accept the terms of the contract</td>
</tr>
<tr>
<td></td>
<td>- Fulfill all the clauses of the contract</td>
</tr>
<tr>
<td></td>
<td>- Comply with the standards and quality level specified in the contract</td>
</tr>
</tbody>
</table>

Table 2 - Roles and Responsibilities

2.3. Standard Procurement Documents

“Standard documents provide adequate levels of detail which allows for easier comparison of proposals, more accurate pricing, more detailed responses, and more effective management of contracts and vendor” (Coué, Siebenbrunner, & Sanfiel, 2015). The standard documents are used in all the processes of procurement management as it gives reference and guidance.
According to the PMBOK Guide (6th Edition), the standard procurement documents used as inputs are the Business case, Scope management plan, Quality management plan, Cost management plan, Evaluation criteria, Standard request for proposal template (RFP) and the Bid award template.

2.4. Contract Type

The project of the implementation of the ERP-System to Sysperto GmbH will rely on one contract only, which is the implementation of the ERP-software itself with the training of the employees. This contract is chosen to be, with the support of the in-house project management team, a Fixed-price Contract (Firm fixed price contract (FFP) set to be agreed upon with the supplier. The project management team alongside the CEO had already defined the scope, the criteria and the requirements for the implementation of the selected ERP-system further the additional tools which are the ticket-system as well as the online-shop.

The fixed price contract is adopted because the scope of the ERP-system implementation project is clear and well defined, with detailed deliverables (PMI, 2017, p. 471). It also provides the company a predictable scenario as a certain and specific budget is determined for the work. Moreover, the contract does not need a lot of management work from the project management team while the supplier has the tendency to complete the work quickly within the standards required.

The contract allows having a workflow defined for both parties. More specifically the contract does not need to establish particular clauses for the project management team. Moreover, the contract set up with clearness the execution for the supplier and its parts.

The contract of maintenance for the ERP-system has not been defined in the fixed contract for the project namely the implementation as it is not part of the project.

2.5. Insurance Requirements

Establishing insurance requirements is important in the project procurement management plan in order to mitigate the risks related to the compliance of the contractor to the agreed-on contract (Arias, Cabrera, & Carrasquero, 2016).

In this sense, the contract contains clauses that clearly state the penalties toward the provider in case the statement of work and its circumstances are not respected, such as a delay in the schedule or failing to deliver the quality required by Sysperto GmbH. Besides that, the company already has an overall business insurance covering several issues.
2.6. Selection Criteria

In order to choose a provider to implement the ERP software, the selection criteria will be based on the references, experience with the desired software, company size and structure, years in the business, availability of consultants and experts, financial security, quality standards, certifications, and reputation. The criteria listed above will be measured and evaluated by the project managers and the procurement manager in order to take a final decision and award the contract to a provider. Those are described in detail in chapter 4.2.

2.7. Procurement Constraints and Assumptions

Several constraints must be taken into account in the project procurement management. These constraints will be given to the knowledge of the contractors in order to prevent any possible misunderstandings or negligence (Balsells, Aubin, & Ferrer). The main constraints are related to the following areas:

- **Schedule**: The project schedule has to be strictly respected and followed
- **Cost**: The project cost has to be respected, and the contingency reserve is only the case when a change in the project scope is approved
- **Scope**: The work of the contractor has to follow the project’s scope. If the work is not aligned with the scope statement, it will be disapproved.

Procurement assumptions are made in order to be prepared for the circumstances and conditions that might occur (Coué, Siebenbrunner, & Sanfiel, 2015). Below are the assumptions made for the project procurement management:

- **Deliverability**: all resources will be working at a high level in order to satisfy the client
- **Procurement requirement**: will be maintained with a possible acceptance of 5% of change
- **Technology**: will be at high quality standards

2.8. Integration Requirements

The contractor must respect the requirements of Sysperto GmbH regarding several aspects that are coordinated with the project procurement management (Balsells, Aubin, & Ferrer). According to the Project Manager’s Book of Forms, the contractor has to ensure that the integration of all the following aspects is defined in his offer:
## Procurement Management Plan – Implementation ERP-system (Group 4)

### Table 3 - Integration requirements

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBS</td>
<td>The Work Breakdown Structure is an important tool that the contractor has to use and to comply with its deliverables and activities.</td>
</tr>
<tr>
<td>Schedule</td>
<td>The schedule planned has to be followed and respected with all the milestones and phases.</td>
</tr>
<tr>
<td>Documentation</td>
<td>Every phase will be documented and stored in order to be useful as a source when necessary.</td>
</tr>
<tr>
<td>Performance reporting</td>
<td>All performance data and reports will be evaluated in order to measure the performance and effectiveness of the provider in achieving the objectives listed in the contract.</td>
</tr>
<tr>
<td>Risk</td>
<td>The risks related to procurement are identified as well as their impact, affected baseline and the strategy aimed to be counter those risks, in order to be used as an input for the procurement management of the project.</td>
</tr>
</tbody>
</table>

### 2.9. Performance Metrics

The performance metrics are used to evaluate the performance of the contractor regarding the work and its circumstances specified in the contract. Some of the performance metric for the project are the duration of the implementation of the ERP-system, costs, support for end-users, offered technology and the payment conditions.

### 3. Budget (Make-Buy Analysis)

A make-or-buy analysis is aimed to define if a certain work will better be accomplished by the project team or has to be outsourced because of incapacity or incapability (PMI, 2017, p. 473).

For the project of the implementation of the ERP-system to Sysperto GmbH, the decision of make or buy is performed on the first level of the deliverables, as this level already defines the decision for all work packages under this level. The following table shows the deliverables meant to be made or bought:
### Procurement Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Project deliverables</th>
<th>Make or buy decision</th>
<th>Justification</th>
<th>Estimate percentage of project outsourcing related to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Scope (no. activities)</td>
</tr>
</tbody>
</table>
| 1.1 Business Processes | Make                | - Experience and knowledge of business processes and current way of operating as well as the current problems and with this the desired state is already known within the company  
- No further explanations for the external company are required  
=>would involve unnecessary time and cost efforts  
- Integration in daily operations is easier  
- Capacity already existing  
- Higher control | 42 | 37,980.00 € |
| 1.2 ERP-Selection     | Make                | - Capacity already existing  
- Knowledge about requirements already existing in the company  
- Procurement skills for IT-sector already available in the company (as they are an IT-service provider)  
- Easier integration in daily operations  
- Higher control over the selection | 20 | 17,200.00 € |
| 1.3 ERP-implementation | Mixed (mainly buy)  | - Knowledge of the selected software is not available in the required depth within the company  
- No skills and experiences with the implementation of this software type  
- Specialization and experience of the supplier is used | 30 | 126,710.00 € |
<table>
<thead>
<tr>
<th>Project deliverables</th>
<th>Make or buy decision</th>
<th>Justification</th>
<th>Estimate percentage of project outsourcing related to Scope (no. activities)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- Own capacity is limited due to SME structure and on-going customer orders</td>
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<td></td>
<td></td>
<td>- Mixed: because of internal IT-expert assigned to the project for the overall control, ensuring that requirements are met, for the follow-up and learning/training of the employee (establishing knowledge for the support in the daily business with the system)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 End-user Training</td>
<td>Buy</td>
<td>- Knowledge of the supplier from the implementation is required for the training</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No skills and experiences for the training with this software are available so far in the company</td>
<td></td>
<td>12.380,00 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Easier integration in the operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 Project Management</td>
<td>Make</td>
<td>- Better control over the whole project</td>
<td></td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Direct control is maintained over the whole project</td>
<td></td>
<td>129.570,00 €</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Higher guarantee that project requirements and desires from sponsor/client are met</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Stabilization of the workforce of the organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Increase of knowledge in this area (employees learn for a similar implementation for their)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4 - Make or Buy Analysis

<table>
<thead>
<tr>
<th>Project deliverables</th>
<th>Make or buy decision</th>
<th>Justification</th>
<th>Estimate percentage of project outsourcing related to</th>
<th>Scope (no. activities)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>customers; equal to a training and further employee development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>MAKE 76.65% BUY 23.35%</td>
<td>MAKE 55.6% BUY 44.4%</td>
<td>323,840,00 €</td>
</tr>
</tbody>
</table>
Therefore, 76.65% of the scope of the project will be made by the project team within the company, while 23.35% will be outsourced. However, in terms of cost, 55.6% of the budget will be made internally and 44.4% of the budget will be meant to outsourcing services.

The result of the make or buy analysis is shown in the following by using the WBS therefore:

Figure 1 - WBS according to Make or Buy Analysis
4. Criteria for the Selection of Supplier and Evaluation of Offers

The following chapter is aimed to describe which instructions and processes the project management team has developed for the bidding and awarding of contracts as well as for monitoring and control. Therefore, the actions, responsible and the documentation involved is outlined. Moreover, the tender criteria in order to select the providers for the implementation of the ERP-system, the Request for Proposal as well as how to evaluate the offers is determined. In alignment with this, the proposal assessment matrix template is developed and shown. Continuing the process, the provider awarding with the bid award report template and a contract draft is detailed.

With covering those mentioned points, this illustrates the project procurement management processes of “conduct procurements” according to the PMBOK (PMI, 2017, p. 459). “Conduct procurement” is described as “[t]he process of obtaining seller responses, selecting a seller, and awarding a contract” (PMI, 2017, p. 459).

4.1. Overall Conduct Procurement Process

In order to cover the full process of conducting the procurements, several steps are required. This ranges from defining the requirements and scope for the request for offers, establishing the tender criteria to select the providers, receiving the offers as responses from the providers, assess those offers proposals and, out of this, select one provider and award it. Those mentioned steps are outlined in the following flowchart that is established to receive an overview and clearly describe the sequence of steps needed to be followed for the execution of the procurement process. The main roles and responsibility within this process is assigned to the purchaser of the company as she also performs the procurement processes for the daily operations of the company. This ensures that the specific knowledge, skills and experience is used for this process. After showing the overall process, several steps out of it are depicted and developed in more detail.
Figure 2 - Conduct Procurement Process Flowchart
4.2. Tender Criteria to Select Providers

To perform the market analysis for identifying the available providers for the ERP-system, it is crucial to define the selection criteria for those providers. This means, that those specific criteria are defined in order to analyze and assess the suitability of this provider in general. Some criteria are defined to be met as mandatory (marked in red). If a provider does not meet one of the mandatory requirements, this company will not be considered further in the process. Herewith, Sysperto GmbH wants to ensure a certain quality standard and level as well as to reduce risks. During the market analysis, the available information from those providers is gathered and structured according to those criteria. Out of this assessment, the providers are selected that receive the request for proposal. The CEO has given the requirement that he wants to have at least the proposals from ten different systems and with that from at least ten providers. The goal of this requirement is to achieve an overall view of the available systems in order to have a wide range for the selection of the most appropriate system. Due to this, the ten providers with the highest score will receive the request for proposal. The following table shows the criteria for the selection of the providers:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Criteria Description</th>
<th>Criteria Score</th>
</tr>
</thead>
</table>
| References              | References of similar ERP-system implementation within other SMEs exist and are provided. | 0 = no references available  
1 = under 5 references available  
2 = under 10 references available  
5 = over 20 references available  
10 = over 50 references available |
| Experience with ERP-system for IT-sector/system house | The provider has experience with the implementation specifically for the IT-sector itself | 0 = no  
10 = yes |
| Company Size            | The company size of the provider is relevant as it refers to the combination of several criteria such as flexibility, staff availability, strategy, tendency for legal conflicts, etc. Sysperto GmbH prefers a SME instead of a multinational provider in order to “be on the same level” | 0 = provider > 1.000 employees  
1 = provider > 500 employees  
3 = provider > 250 employees  
5 = provider > 100 employees  
10 = provider > 50 employees |
## Procurement Management Plan – Implementation ERP-system (Group 4)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Criteria Description</th>
<th>Criteria Score</th>
</tr>
</thead>
</table>
| Company (legal) Structure         | The legal structure of the provider is relevant in regard to the financial background and stake-/shareholder influence. | 0 = e.K. / UG / GbR  
|                                   |                                                                                      | 5 = OHG / KG  
|                                   |                                                                                      | 10 = GmbH / AG                                    |
| Years in the Business             | Out of the number of years in this business of the provider, the experience can be concluded. | 0 = experience < 1 year  
|                                   |                                                                                      | 2 = experience > 2 years  
|                                   |                                                                                      | 5 = experience > 5 years  
|                                   |                                                                                      | 8 = experience > 10 years  
|                                   |                                                                                      | 10 = experience > 15 years                                    |
| Availability of specific consultants and experts | The provider has specific consultants and experts available who have the skills, knowledge and experience for the implementation of an ERP-system for the IT-sector itself | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
| Official corporation with software development companies | The provider has established official corporation agreements with the software developing company. | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
| Financial security/data/capability | Financial data (balance sheets etc.) from the provider are available and illustrate a good financial background (focus on equity ratio and liability grade) | Liability 2nd grade = 100%  
|                                   |                                                                                      | 0 = no  
|                                   |                                                                                      | 10 = yes  
|                                   |                                                                                      | Equity ratio = over 70%  
|                                   |                                                                                      | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
| Applied (quality) standards       | The provider applies the common quality standards for the implementation               | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
| Certifications                   | The provider has specific certifications (issued from the software developing company) | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
| Reputation                        | According to recommendations from customers of this provider, customer satisfaction results and | 0 = no  
|                                   |                                                                                      | 10 = yes                                    |
### Table 5 - Criteria matrix for provider selection

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Criteria Description</th>
<th>Criteria Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>market opinion the overall reputation of the provider is perceived as good.</td>
<td></td>
</tr>
</tbody>
</table>

* red = mandatory requirement to be fulfilled

#### 4.3. “Request for Proposal” Draft/Template

The following sub-chapter provides the first draft for the template for the “Request for Proposal” (RFP). With this RFP, Sysperto GmbH wants to request from the selected providers their proposal for the implementation of the additional systems (ticket-system and online-shop) as well as the ERP-system itself. Therefore, the RFP provides several information and data in order to ensure a clear understanding for the provider what Sysperto GmbH is requesting specifically.

#### 4.3.1. Introduction to the Request for Proposal

Under this point, a first introduction to the RFP is provided by giving the high-level description of the requested deliverable. This point serves as a short summary for the RFP and is aimed to help the provider to have a first overview and assessment/valuation of the request and with this the scope of the proposal. An example of a possible introduction is shown in the following:

**Dear Mr./Mrs. XXYY**

*With reference to our phone call last XXX, the system demo presentation from Mr. XXX on the XX of XX, 2019 and the provided information on your website, we would like to request your proposal for the implementation of an ERP-system to our company, Sysperto GmbH. This requested implementation covers the ERP-system itself as well as the implementation of the additional systems of a ticket-system and online-shop and the subsequent end-user training. Further, detailed information is provided in the following.*

#### 4.3.2. Company and Project Background Information

This point provides background information about Sysperto GmbH as a company itself and the project. This should give the provider a better understanding of the frame and the corresponding sector. The company description of Sysperto GmbH is outlined in the following.
Sysperto GmbH is a German company within the IT-sector acting as an IT-system house. This means that the company is offering software and hardware solutions customized for several other companies from different sectors. Moreover, doing business as a system house means that the company is offering ready-for-use IT complete solutions. The company represents an IT-service provider acting as an intermediary between the users and the producers of IT soft- and hardware. Therefore, the products sold to the market can be seen as the overall IT-services the company is offering. The services include all the steps offered by an IT-system house from the selling of IT hard- and software, the overall implementation of a ready-for-use IT complete solutions, the customization of IT hard- and software to a company, the development, implementation and update service for IT hard- and software as well as the overall IT-consulting in regard to business process improvements. The company’s unique selling point is the offer of a 360-degree IT-service that is customized to the needs of each customer. The company represents a smaller company with 20 employees that was founded three years ago.

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

4.3.3. Proposal Requirements

This section describes the requirements to the proposal in regard to the overall frame, format and time restriction. Those requirements are mandatory and have to be fulfilled by each provider. Those requirements can be described in the RFP in the following way:

If your company is interested in this project, we would expect your written proposal in pdf-format till the 9th of December, 2019 addressed to our email kontakt@sysperto.de. All proposals that we receive after that deadline will be rejected immediately and returned to the sender without further notice. Please clearly indicate on the proposal the following information:

- Full company name and address
- Contact Person
- Contact details
- Payment conditions
- Responsibilities
- General upgrade and support information
4.3.4. Project Scope

This section should clearly describe the specific scope/statement of work for the implementation of the ERP-system. Besides illustrating the work packages through the WBS, the WBS Dictionary will be attached to the RFP. The first draft of the detailed scope description/statement of work within the RFP is outlined in the following:

The requested scope of the implementation of the ERP-system is described in the following. For further details of the required work packages and activities please refer to the attached WBS Dictionary. If any unclarities of the scope exist, please do not hesitate to contact us. We expect a clear work description with the corresponding costs and estimated time to each of the following listed activities in this order.

1.3. Implementation

1.3.1. Implementation of additional systems
   1.3.1.1. Implementation of ticket-system
   1.3.1.2. Implementation of online-shop

1.3.2. Implementation of the ERP-system
   1.3.2.1. Configuration and Development
   1.3.2.2. Installation of the software
   1.3.2.3. Data Migration
      1.3.2.3.1. Assessment for Data Migration
      1.3.2.3.2. Collection of the data
      1.3.2.3.3. Server Go-Live
   1.3.2.4. System and performance testing
   1.3.2.5. Go-Live

1.4. End-user training
   1.4.1. End-user training plan
   1.4.2. End-user training execution
   1.4.3. End-user support
1.3.2.4. System and performance testing
1.3.2.5. Go-Live

1.4. End-user Training
   1.4.1. End-user training plan
   1.4.2. End-user training execution
   1.4.3. End-user support

4.3.5. Specific Proposal Requirements

This section gives a clear introduction for the providers about the specific requirements that have to be fulfilled in the proposals. This refers to the more technical frame of the proposal. An example therefore is outlined in the following.

In order to have a clear understanding of your offer and also to have it comparable, we set the following requirements that have to be met by the proposal. If we have the perception that the proposal does not follow the below listed requirements, we are not able to take your proposal into account for the comparison process. The mandatory requirements are:

- Introduction of your company by naming the following points:
  - Legal structure
  - Years of experience in this sector
  - References of similar projects
  - Project Management Methodology applied and followed
  - Number of experts (full- and part-time assigned to the project)

- Overall project information:
  - Timeframe for completing this project
  - Estimated resources
  - Assumptions and constraints

- Proposal for each activity:
  - Clear technical description of each activity containing the required steps you would propose that have to be taken
  - Clear indication of the estimated hours and corresponding costs for each activity

- General conditions proposed:
  - Payment conditions
4.3.6. Project Time Frame

This section is aimed to provide a clear description of the planned time frame for the implementation according to the developed schedule (in MS Project) for this project. The reason therefore is to give the provider the exact time frame in order that each provider can check if they have the required experts available during this time and if they can fulfill this time frame in general. This can be described as in the following:

According to your project planning in regard to the schedule, the implementation is planned between the 07.01.2020 and the 06.04.2020, followed by the end-user training phase from the 06.04.2020 till the 05.05.2020. Please state in your proposal if and how you are going to fulfill this time frame also by outlining your personnel plan therefore.

4.3.7. Proposal Assessment Criteria

In order to ensure a transparent and open tender process, for Sysperto GmbH it is important, also in regard to their values and practices, that they clearly describe the assessment criteria for the proposals. A first draft therefore is shown in the following.

For having a clear and transparent tender process, we would like to state the relevant criteria that we apply for the assessment of your proposal. If you have any questions or concerns regarding those criteria, please do not hesitate to contact us.

- **Price/cost criteria**
  - Number of end-user licenses
  - Price for each license
  - One-time license cost
  - Offered services
  - Software maintenance/upgrades
  - Monthly license costs

- **Qualitative criteria**
  - System quality
  - Implementation duration/time
  - Offered complete solution
  - Payment conditions
4.4. Proposals Assessment Matrix Template

After having received all proposals from the providers, the next step within the process of conducting the procurement is the assessment of the proposals. Therefore, all available information from all proposals are gathered in the developed “Proposal assessment and comparison matrix template” in order to be able to compare all proposals and make the proposals valuation. The expected outcome of this assessment and comparison is the final decision for one provider that will be awarded for this project. For this assessment, two categories for criteria were determined. The first category refers to the price/cost of the proposals and illustrates the hard factor. For this category, the information can be extracted from each proposal and the comparison of the different proposals is directly based on their specifications and statements in the proposal. The total costs are influenced by the number of the end-user licenses they have offered, as well as the price for each license and the one-time license costs and the offered services. As Sysperto GmbH aims to have the provider for the implementation also for the maintenance after the project of the implementation, also those monthly costs are taken in consideration. The overall result, as ranking of the total price, is stated as the first criteria in the second factor but is based on these hard factors. The second category is for the soft factors, which are based on the perception and assessment the purchaser and the project management team receive from the system demo presentation from the provider as well as from the overall frame of the proposal. Therefore, the perception is given on grades from 1 to 5 where 1 illustrates that the criterion is met insufficiently, whereas 5 illustrates that the criteria is fulfilled over expectations. Each criterion has a specific weighing according to the importance it has. The main criteria are the system quality and the offered complete solution (meaning that the provider offers the implementation for the additional systems and the ERP-system). Further criteria are the proposed duration of the implementation, the rating of the provider as well as the payment conditions.

Taking into account all criteria, the total value is calculated in order to receive the order of the rankings between the proposals. The best proposal is assessed and will be awarded.

The developed matrix is shown in the following (Figure 3). For a detailed view and understanding of the used calculations and formulas, please refer to the Appendix.
## Proposal assessment and comparison matrix template

<table>
<thead>
<tr>
<th>Price/cost criteria (hard factors)</th>
<th>Provider 1</th>
<th>Provider 2</th>
<th>Provider 3</th>
<th>Provider 4</th>
<th>Provider 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of end-user licenses</strong></td>
<td>20</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Price for each license</strong></td>
<td>2,548.00 €</td>
<td>6,00 €</td>
<td>2,900.00 €</td>
<td>1,500.00 €</td>
<td>0.00 €</td>
</tr>
<tr>
<td><strong>One-time license costs</strong></td>
<td>4,750.00 €</td>
<td>85,000.00 €</td>
<td>10,000.00 €</td>
<td>0.00 €</td>
<td>0.00 €</td>
</tr>
<tr>
<td><strong>Offered services</strong></td>
<td>16,008.00 €</td>
<td>20,000.00 €</td>
<td>13,000.00 €</td>
<td>16,000.00 €</td>
<td>18,000.00 €</td>
</tr>
<tr>
<td><strong>Fixed costs</strong></td>
<td>71,808.00 €</td>
<td>105,000.30 €</td>
<td>81,000.00 €</td>
<td>40,000.00 €</td>
<td>18,000.00 €</td>
</tr>
<tr>
<td><strong>Software maintenance/upgrades</strong></td>
<td>942.84 €</td>
<td>1,000.00 €</td>
<td>0.00 €</td>
<td>500.00 €</td>
<td>0.00 €</td>
</tr>
<tr>
<td><strong>Monthly license costs</strong></td>
<td>0.00 €</td>
<td>0.00 €</td>
<td>0.00 €</td>
<td>0.00 €</td>
<td>199.00 €</td>
</tr>
<tr>
<td><strong>Monthly costs</strong></td>
<td>942.84 €</td>
<td>1,000.00 €</td>
<td>0.00 €</td>
<td>500.00 €</td>
<td>3,980.00 €</td>
</tr>
<tr>
<td><strong>Operational time (in months)</strong></td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td>128,378.40 €</td>
<td>165,000.00 €</td>
<td>81,000.00 €</td>
<td>70,000.00 €</td>
<td>256,800.00 €</td>
</tr>
</tbody>
</table>

**Qualitative criteria (soft factors)**

<table>
<thead>
<tr>
<th>Weighting (G)</th>
<th>Perception/Assessment (P)</th>
<th>Score (G x P)</th>
<th>Perception/Assessment (P)</th>
<th>Score (G x P)</th>
<th>Perception/Assessment (P)</th>
<th>Score (G x P)</th>
<th>Perception/Assessment (P)</th>
<th>Score (G x P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Subscription Price (results from above)</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>2. System quality</td>
<td>4</td>
<td>5</td>
<td>20</td>
<td>5</td>
<td>20</td>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>3. Duration of implementation</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>4. Provider rating</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>5. Complete Solution (all three systems)</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>6. Payment conditions</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total value</strong></td>
<td>15</td>
<td>62</td>
<td>48</td>
<td>49</td>
<td>56</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Order of ranking</strong></td>
<td></td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend for the perception/assessment (P) grades:**

1 = insufficient
2 = below average
3 = average
4 = good
5 = over expectations

---

*Figure 3 - Proposal assessment and comparison matrix template*
4.5. Provider Awarding/Bid Award Report Template

After the assessment and comparison of the proposals, the final decision has to be communicated to the providers and the chosen provider has to be awarded in order to proceed with the steps (finalization of negotiation and signing of the contract). Out of the “Proposal assessment and comparison matrix template” the “bid award report” template (shown in the following) has to be completed. This illustrates the official and approved decision.

![Bid Award Report Template](image)

*Figure 4 - Bid award report template*

For the communication of the tender process decision, for Sysperto GmbH it is important that they first call the providers to communicate the decision and give a brief explanation about the criteria which influenced this decision. In this call, they also invite the providers for a personal meeting for further explanations of the decision. Subsequently to this phone call, they also issue a letter/email that illustrates the formal, written communication of the decision. The first drafts of the letters, both for the winning provider and the rejected providers, are outlined in the following:

**Awarded Provider:**

*Dear Mr./Mrs. XXX*

*with reference to our phone call on the XX.XX.XXXX we would first like to thank you for your proposal that you have sent to us on the XX.XX.XXXX based on our “Request for Proposal” number 1234. After the overall assessment and comparison of your proposal, we came to the conclusion that your company wins the bid for this project.*

*Therefore, we would like to schedule the next meeting in order to discuss the next steps.*

*Best regards,*

*XXX*
Rejected Provider:

Dear Mr./Mrs. XXX

with reference to our phone call on the XX.XX.XXXX we would first like to thank you for your proposal that you have sent to us on the XX.XX.XXXX based on our “Request for Proposal” number 1234. After the overall assessment and comparison of your proposal, we came to the conclusion, that your company is not winning the bid for this project. We would like to invite you for a personal meeting in order to explain the factors that influenced this decision. Please suggest a date therefore.

Moreover, we hope that we stay in this business connection and that we receive your proposal for our next tender process again.

Best regards,

XXX

4.6. Drafting Proposal of the Contract

The next step, after the awarding of the selected provider, is to prepare the first contract draft. In order to clearly define the scope of the contract work and deliverables, the responsibilities and to address the developed risk transfer policy, the contract has to include several clauses. As the company does not have a legal department or expert, due to its SME size, the contract will be developed and finalized by a legal consultancy company. In the following paragraphs, the initial contents and issues that the project management team is thinking of are described and a contract draft was developed. These will be the input for the legal consultancy company for developing the final contract.

**General frame of the contract:**

The project management team decided to use the FIDIC standard contract template as a reference point for the structure, clauses and proposed contents. With this, the team wants to ensure that the contract contains all relevant data to minimize the risk of identifying gaps in the contract afterwards when a specific issue has already arisen.

**Specific clauses (drafts):**

Moreover, the project management team decided that the following issues have to be addressed and developed by a specific clause in the contract. The first proposal for these clauses is illustrated in italic:
- List of all deliverables and work that has to be performed through the contract and with this describing the whole scope (statement of work) that is included in the fixed-price

“The contract work has to fulfill the following deliverables and activities to its full extent and highest quality (please also refer to the quality conditions):

1.3. Implementation

1.3.1. Implementation of additional systems
   1.3.1.1. Implementation of ticket-system
   1.3.1.2. Implementation of online-shop

1.3.2. Implementation of the ERP-system
   1.3.2.1. Configuration and Development
   1.3.2.2. Installation of the software
   1.3.2.3. Data Migration
      1.3.2.3.1. Assessment for Data Migration
      1.3.2.3.2. Collection of the data
      1.3.2.3.3. Server Go-Live
    1.3.2.4. System and performance testing
    1.3.2.5. Go-Live

1.4. End-user Training
   1.4.1. End-user training plan
   1.4.2. End-user training execution
   1.4.3. End-user support”

- Change request procedure:
  o The change request procedure has to be explained in the contract. Therefore, the flowchart of the change request is attached as well as the change request template that is used for the whole project.

“Each change request that is identified from the provider has to follow the sequence and steps described in the change request flowchart (please refer to the Appendix XX) and to be submitted to the project management team in written form by using the provided change request template (please refer to the Appendix XX). The template has to be submitted after 5 days of identifying the required change. All change requests that are identified by Sysperto
GmbH will follow the same procedure and an official meeting to discuss the change request will be conducted.”

- The calculation of the costs from a change request has to be described. Therefore, the hourly rate from the provider (125€) is stated as well as the maximum of the change request costs

“A change request (which is work/activities that are not covered and mentioned within the actual contract or within this frame) is out of the fixed-price and will be paid according to the agreed hourly rate of 125€.”

- Responsibility and payment of the travel expenses (including car/train travel and the hotel costs) → provider will bear those costs

“All arising costs in regard to travel and hotel expenses will be completely borne by the provider. Moreover, the provider is independently responsible, therefore, in order that all bookings are made.”

- Payment conditions (as described in the Procurement Management Plan)

- Delay in the schedule

“Any delay in the schedule that is caused by the provider and exceeds five days leads to a penalty of 10% for each exceeding week of the total contract price.”

- Responsibility division between the consultancy company (which is implementing the software) and the software developing company

- Availability of experts and consultants

“The provider ensures the availability of the experts and consultants for the agreed time period. Therefore, a clear personnel plan with the assigned proxies is provided.”

- Criteria and requirements for the business relationship continuation for the maintenance contract

- Data migration problems

“The provider guarantees to make a backup of the available data in the old system, in case any data get lost during the migration, that they can be restored afterwards. The requirement is the 100% migration of all available and existing data.”

- No special agreements or individual adjustments

“No special agreements or individual adjustments, besides the content listed in the present contract, were agreed on or are valid. If further agreements have to be made on a later point in time, an official, written and approved addendums have to be signed from all parties (Sysperto GmbH and the consultancy company as well as the software developing company)”.
Procurement Management Plan – Implementation ERP-system (Group 4)

- Contract closure

“Specific requirements have to be met in order that the contract is closed at the end. The main requirement is the appropriate system performance without any interruptions into the daily operations of the business. The detailed definition of the closing requirements can be found in the Appendix XX.”

Out of this initial brainstorming and the drafted clauses, the following contract draft was developed in order to provide it to the legal consultant.

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**Technology Services and Consulting Contract**

*for the Implementation of an ERP-system to the company Sysperto GmbH*

**Receiver Company:** Sysperto GmbH  
**Sender Company:** Acmeo GmbH

This Contract, dated 5th of April, 2019 (the “Effective Date”) for Technology Services and Consulting (the “Contract”) is between Acmeo GmbH, represented by Henning Meyer (“Sender Company”), and Sysperto GmbH, represented by Andreas Zieher (“Client and Receiver Company”) (together known as the “Parties”), for the performance of said Technology Services and Consulting for the Implementation of an ERP-system and all additional systems (ticket-system and online-shop) to the company Sysperto GmbH and the production of Deliverables, as described in detail in the Appendix XX, attached hereto and incorporated herein by reference.

The Parties agree as follows:

1. **Confidential Information**

   Each Party acknowledges that in connection with this Agreement it may receive certain confidential or proprietary technical and business information and materials of the other Party, including, but not limited to, Preliminary Works (“Confidential Information”). In consideration of the disclosure of the Confidential Information from Sysperto GmbH for Acmeo GmbH to use it for the Implementation of an ERP-system, the corresponding signed Confidentiality Agreement is binding for this present contract as well.

   Acmeo GmbH agreed to treat such Confidential Information as secret if it is so marked, otherwise identified as such, or when, by its very nature, it deals with matters that, if generally known, would be damaging to the best interests of the Company, other
Procurement Management Plan – Implementation ERP-system (Group 4)

contractors or potential contractors with the Company, or individuals or organizations about whom the Company keeps information especially in regard to its customers and employees. By way of example but not by way of limitation, information should be treated as confidential if it includes any personal data from customers or employees, proprietary documentation, materials, flow charts, codes, software, computer instructions, techniques, models, information, diagrams, know-how, trade secrets, data, business records, or marketing information. This information may include, but is not limited to, information pertaining to the Sysperto GmbH systems, which information may be of value to a competitor. Each Party, its agents and employees shall hold and maintain in strictest confidence all Confidential Information, shall not disclose Confidential Information to any third party, and shall not use any Confidential Information except as may be necessary to perform its obligations pursuant to this Agreement, except as may be required by a court or governmental authority. Acmeo GmbH agreed to use any Confidential Information solely for the purpose described in the introductory provisions of this Agreement. The terms of this Agreement are continuing obligations. Acmeo GmbH may not assign this Agreement or any of its rights or obligations under this Agreement without the prior, written consent of Sysperto GmbH.

2. Engagement Details

2.1 Company Description

Sysperto GmbH is a German company within the IT-sector acting as an IT-system house. This means that the company is offering software and hardware solutions customized for several other companies from different sectors. Moreover, doing business as a system house means that the company is offering ready-for-use IT complete solutions. The company represents an IT-service provider acting as an intermediary between the users and the producers of IT soft- and hardware. Therefore, the products sold to the market can be seen as the overall IT-services the company is offering. The services include all the steps offered by an IT-system house from the selling of IT hard- and software, the overall implementation of a ready-for-use IT complete solutions, the customization of IT hard- and software to a company, the development, implementation and update service for IT hard- and software as well as the overall IT-consulting in regard to business process improvements. The company's unique selling point is the offer of a 360-degree IT-service that is customized to the needs of each customer. The company represents a smaller company with 20 employees that was founded three years ago.
2.2 Project Description

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

2.3 Project Scope and Deliverables

The requested scope of the implementation of the ERP-system is described in the following. For further details of the required work packages and activities please refer to the attached WBS Dictionary (Appendix XX). The contract work has to fulfill the following deliverables and activities to its full extend and highest quality (please also refer to the quality conditions in Appendix XX). The provider guarantees to make a backup of the available data in the old system, in case any data get lost during the migration, that they can be restored afterwards. The requirement is the 100% migration of all available and existing data.
1.3.2.3.1. Assessment for Data Migration
1.3.2.3.2. Collection of the data
1.3.2.3.3. Server Go-Live
1.3.2.4. System and performance testing
1.3.2.5. Go-Live

1.4. End-user Training
   1.4.1. End-user training plan
   1.4.2. End-user training execution
   1.4.3. End-user support

### 2.4 Project Timeline

According to the project planning in regard to the schedule, the implementation is planned and scheduled between the 07.01.2020 and the 06.04.2020, followed by the end-user training phase from the 06.04.2020 till the 05.05.2020. The compliance with this period is mandatory.

Any delay in the schedule that is caused by the provider and exceeds five days, leads to a penalty of 10% for each exceeding week of the total contract price.

### 2.5 Timing and Acceptance

**Timing.** Acmeo GmbH shall prioritize performance of the Services as may be necessary or as agreed upon by the Parties, and will undertake commercially reasonable efforts to perform the Services. Sysperto GmbH agrees to review deliverables within the time identified for such reviews and to promptly either,

(i) approve and accept the deliverables in writing (which will then become the Final Deliverables) or

(ii) provide written comments and/or corrections sufficient to identify the Client’s concerns, objections or corrections to Acmeo GmbH.

**Acceptance.** Sysperto GmbH, within three (3) business days of receipt of each deliverable, shall notify Acmeo GmbH, in writing, of any failure of such deliverable to comply with the specifications as agreed upon by the Parties, or of any other objections, corrections, changes or amendments Sysperto GmbH wishes made to such deliverable. Any such written notice shall be sufficient to identify with clarity any objection, correction or change or amendment, and Acmeo GmbH shall undertake to make the same in a commercially timely manner. Any and all objections, corrections, changes or
amendments shall be subject to the terms and conditions of this Agreement. In the absence of such notice from Sysperto GmbH within said stated time period, the deliverable shall be deemed accepted.

3. Staffing and Professional Fees

3.1 Project Team & Organization

During the length of the engagement, the project team structure and organization shall be the following. Acmeo GmbH ensures the availability of the experts and consultants for the agreed time period. Therefore, a clear personnel plan with the assigned proxies is provided from Acmeo GmbH.

3.2 Professional Fees & Expenses

Acmeo GmbH will charge 85.00€ for the project with the agreed upon scope. Therefore, this contract illustrates a fixed-price agreement. If the scope is increased to include additional scope, a revised estimate will be agreed and amended to this contract (further details under “Change Request Procedure”).

Sysperto GmbH will pay for recurring monthly hosting fees, estimated to be 1.000€/month.

The continuation of the business relationship after the completion of the system implementation for the ongoing maintenance of the systems does not illustrate part of this contract. Specific clauses therefore can be found in the corresponding maintenance contract.
Both fees do not include travel costs. All arising costs in regard to travel and hotel expenses will be completely borne by Acmeo GmbH. Moreover, the Acmeo GmbH is independently responsible, therefore, in order that all bookings are made.

Sysperto GmbH shall make an initial payment in the amount of 30% of the stated professional fees after the order placement, a second payment in the amount of 30% of the stated professional fees after the installation of the licenses and the full balance (remaining 40%) will be payable at the end of the project, once the systems have been delivered and deployed referring to the successful completion of the overall implementation. Payments to Acmeo GmbH must be made within thirty (30) days of receipt of proper invoice. The client will pay any and all monies owed to Acmeo GmbH in the event of a termination of services.

3.3 Change Request Procedure

Each change request that is identified from both parties has to follow the sequence and steps described in the change request flowchart (please refer to the Appendix XX) and to be submitted to the project management team from Sysperto GmbH in written form by using the provided change request template (please refer to the Appendix XX). The template has to be submitted after five (5) days of identifying the required change. All change requests that are identified by Sysperto GmbH will follow the same procedure and an official meeting to discuss the change request will be conducted.

A change request (which is work/activities that are not covered and mentioned within the actual contract or within this frame) is out of the fixed-price and will be paid according to the agreed hourly rate of 125€. A change request cannot exceed 10% of the fixed-price fee of the contract.

* * * * *

**General Business Terms**

1 Services. It is understood and agreed that the services provided by Acmeo GmbH, hereafter referred to as "Service Provider", may include advice and recommendations, but all decisions in connection with the implementation of such advice and recommendations shall be the responsibility of and made by, Sysperto GmbH, hereafter referred to as "Client".

2 Payment of Invoices. Properly submitted invoices are due within thirty (30) days of the date of receipt of a correct invoice. Without limiting its rights or remedies,
Service Provider shall have the right to halt or terminate entirely its services if payment is not received

i. on undisputed invoiced amounts that remain unpaid thirty (30) days after the due date, and

ii. on disputed invoiced amounts that remain unpaid sixty (60) days after the due date.

3 Term. Unless terminated sooner in accordance with its terms, this engagement shall terminate on the completion of Service Provider’s services hereunder. Specific requirements have to be met in order that the Service Provider’s services are perceived as completed and the contract can be closed. The main requirement is the appropriate system performance without any interruptions into the daily operations of the business from Sysperto GmbH. The detailed definition of the closing requirements can be found in the Appendix XX. Either party may terminate this engagement at any time by giving written notice to the other party not less than two (2) weeks before the effective date of termination, provided that, for termination for cause, the breaching party shall have the opportunity to cure within such period. The maintenance of the system does not illustrate part of this underlying agreement.

4 Ownership.

a Service Provider Technology: Service Provider has created, acquired or otherwise has rights in, and may, in connection with the performance of services hereunder, employ, provide, modify, create, acquire or otherwise obtain rights in, various concepts, ideas, methods, methodologies, procedures, processes, know-how, and techniques (including, without limitation, models; templates; the generalized features of the structure, sequence and organization of software; user interfaces and screen designs; general purpose consulting and software tools, utilities and routines; and logic, coherence and methods of operation of systems) (collectively, the “Service Provider technology”).

b Ownership of Deliverables: Except as provided below, upon full and final payment to Service Provider hereunder, the tangible items specified as deliverables or work product in the engagement letter to which these terms are attached (the “Deliverables”) will become the property of Client. To the extent that any Service Provider technology is contained in any of the Deliverables, Service Provider hereby grants Client, upon full and final payment to Service Provider hereunder, a royalty-free, fully paid-up, worldwide, non-exclusive license to use such Service Provider technology in connection with the Deliverables.

c Ownership of Service Provider Property: To the extent that Service Provider utilizes any of its property (including, without limitation, the Service Provider technology or any hardware or software of Service Provider) in connection with the performance of services hereunder, such property shall remain the property of Service Provider and, except for the license expressly granted in Paragraph 4(b), Client shall acquire no right or interest in such property. Notwithstanding anything herein to the contrary, the parties acknowledge and agree that
a) Service Provider will own all right, title, and interest, including, without limitation, all rights under all copyright, patent and other intellectual property laws, in and to the Service Provider technology and

b) Service Provider may employ, modify, disclose, and otherwise exploit the Service Provider technology (including, without limitation, providing services or creating programming or materials for other clients). Service Provider does not agree to any terms that may be construed as precluding or limiting in any way its right to (a) provide consulting or other services of any kind or nature whatsoever to any person or entity as Service Provider in its sole discretion deems appropriate.

d) Service Provider shall indemnify, defend and hold harmless the Client, its affiliated companies, and its and their directors, officers, employees and agents from and against any and all claims, actions, damages, losses, liabilities, costs and expenses (including reasonable attorneys’ fees and expenses) arising out of a third party claim that the Deliverables, the Service Provider Technology or any aspect of the services provided hereunder (the “Work Products”) infringe or misappropriate any patent, copyright, trade secret, trademark, service mark or other intellectual property rights of a third party, except to the extent that such infringement or misappropriation arises from

(i) Client's modification of the Work Products or use thereof in a manner not contemplated by this Agreement,

(ii) the failure of Client to use any corrections or modifications made available by Service Provider,

(iii) information, materials, instructions or specifications provided by or on behalf of Client,

(iv) Client's distribution, marketing or use for the benefit of third parties of the Work Products, or

(v) the use of the Work Products in combination with any product or data not provided by Service Provider. If any such Work Product, or any portion thereof, becomes, or in the reasonable opinion of Service Provider is likely to become, or is found by final, non-appealable order of a court of competent jurisdiction to be such an infringement or misappropriation, Service Provider, at its option and expense, shall have the right to

(x) procure for Client the continued use of such Work Product,

(y) replace such Work Product with non-infringing work product, or

(z) modify such Work Product so it becomes non infringing;

provided that, if (y) or (z) is the option chosen by Service Provider, the replacement or modified Work Product is capable of performing substantially the same function.

As a condition to the foregoing indemnity obligations, Client shall provide Service Provider with prompt notice of any claim for which indemnification shall be sought hereunder and shall cooperate in all reasonable respects with Service Provider in connection with any such claim. Client’s failure to give prompt notice shall not constitute a waiver of the Client’s right to indemnification and shall affect Service Provider’s indemnification obligations only to the extent that Service Provider’s rights are materially prejudiced by such failure or delay. Service Provider shall be entitled to control the handling of any such claim and to defend or settle any such claim, in its sole discretion, with counsel of its own choosing, provided that Client’s written approval shall be required for any settlement other than the payment of money or release of any claim. Notwithstanding anything to the contrary set forth herein, (i) the Client may participate,
at its own expense, in any defense and settlement directly or through counsel of its choice. If Service Provider elects in writing not to defend or settle any such claim for which it is obligated to do so hereunder, or if Service Provider fails to do so promptly after receipt of notice of such claim and Client notifies Service Provider of Client’s intent to defend or settle the claim and Service Provider still fails to do so within five (5) business days of receipt of such notice, the Client will have the right to defend or settle the claim as it may deem appropriate, at the cost and expense of Service Provider, and Service Provider will promptly reimburse the Client for all costs, expenses, and settlement amounts for which it is obligated to indemnify and hold harmless Client hereunder. The foregoing provisions of this paragraph constitute the sole and exclusive remedy of Client, and the sole and exclusive obligation of Service Provider, relating to a claim that the Work Products infringes or misappropriates any patent, copyright or other intellectual property rights of a third party.

5 Limitation on Warranties. This is a services engagement. Service Provider warrants that it has all necessary rights to provide the Deliverables, the Service Provider technology and the services as provided hereunder and Service Provider will perform the services hereunder in a professional manner.

6 Limitation on Damages. Client agrees that Service Provider and its personnel shall not be liable to Client for any claims, liabilities or expenses relating to this engagement for an aggregate amount in excess of the fees paid by Client to Service Provider for work performed pursuant to this engagement, and Client and its personnel shall not be liable for any claims, liabilities, or expenses relating to this engagement for an aggregate amount in excess of the amounts paid or payable by Client to Service Provider for work performed pursuant to this engagement. The preceding sentence shall not apply to

(i) breaches of a party’s obligations set forth in the Confidentiality Agreement or
(ii) Service Provider’s indemnity obligations under Section 4(d) above.

In no event shall Client or Service Provider or their respective personnel be liable for consequential, special, indirect, incidental, punitive or exemplary loss, damage or expense relating to this engagement. In furtherance and not in limitation of the foregoing, Service Provider will not be liable in respect of any decisions made by Client as a result of the performance by Service Provider of its services hereunder. The foregoing provisions shall apply to the fullest extent of the law, whether in contract, statute, tort (such as negligence), or otherwise.

7 Cooperation.

a Client shall cooperate with Service Provider in the performance by Service Provider of its services hereunder, including, without limitation, providing Service Provider with reasonable facilities and timely access to data, information and personnel of Client.
b Client shall be responsible for the performance of its employees and agents and for the accuracy and completeness of all data and information provided to Service Provider for purposes of the performance by Service Provider of its services hereunder.

8 Force Majeure. Service Provider shall not be liable for any delays resulting from circumstances or causes beyond its reasonable control, including, without limitation, fire or other casualties, act of God, strike or labour dispute, war or other violence, or any law, order or requirement of any governmental agency or authority.

9 Limitation on Actions. No action, regardless of form, arising under or relating to this engagement, may be brought by either party more than one year after the cause of action has accrued, except that an action for non-payment may be brought by a party not later than one year following the date of the last payment due to such party hereunder.

10 Independent Contractor. It is understood and agreed that each of the parties hereto is an independent contractor and that neither party is, nor shall be considered to be, an agent, distributor or representative of the other. Neither party shall act or represent itself, directly or by implication, as an agent of the other or in any manner assume or create any obligation on behalf of, or in the name of, the other.

11 Survival. The provisions of Paragraphs 1 through 7 and 9 through 15 hereof shall survive the expiration or termination of this engagement.

12 Assignment. Except as provided below, neither party may assign, transfer or delegate any of the rights or obligations hereunder without the prior written consent of the other party. Service Provider may assign or subcontract its rights and obligations hereunder to any affiliate of Service Provider, without the consent of the Client. Any changes in regard to the cooperation relationship with the software system developing company (Neumeier AG) require immediate written information to Sysperto GmbH. At any point, Acmeo GmbH stays the direct contract party for Sysperto GmbH as stated through this contract. Acmeo GmbH is responsible for its cooperation with Neumeier AG in order to be authorized to implement their developed software and systems.

13 Entire Agreement. These terms, and the Proposal or Engagement Letter, to which these terms are appended, including the exhibits, constitutes the entire agreement between Service Provider and Client with respect to the subject matter hereof and supersedes all other oral and written representations, understandings or agreements relating to the subject matter hereof. No special agreements or individual adjustments, besides the content listed in the present contract, were agreed on or are valid.

14 Modification/Waiver. This Agreement may be modified on a later point in time by the Parties (Sysperto GmbH and Acmeo GmbH), but any modification of this
Agreement must be in writing and executed by both Parties illustrating an official, written and approved addendums. Failure by either Party to enforce any right or seek to remedy any breach under this Agreement shall not be construed as a waiver of such rights, nor shall a waiver by either Party of default in one or more instances be construed as constituting a continuing waiver or as a waiver of any other breach.

15 Governing Law and Severability. These terms, and the proposal, engagement letter or contract to which these terms are appended, including the exhibits, shall be governed by, and construed in accordance with, the laws of the Federal Republic of Germany (without giving effect to the choice of law principles thereof). If any provision of these terms is found by a court of competent jurisdiction to be unenforceable, such provision shall not affect the other provisions, but such unenforceable provision shall be deemed modified to the extent necessary to render it enforceable, preserving to the fullest extent permissible the intent of the parties set forth herein.

16. Headings. The numbering and captions of the various sections are solely for convenience and reference only and shall not affect the scope, meaning, intent or interpretation of the provisions of this Agreement, nor shall such headings otherwise be given any legal effect.

17. Integration. This Agreement comprises the entire understanding of the Parties hereto on the subject matter herein contained and supersedes and merges all prior and contemporaneous agreements, understandings and discussions between the Parties relating to the subject matter of this Agreement.

By their execution, the Parties hereto have agreed to all of the terms and conditions of this Agreement effective as of the last date of signature, and each signatory represents that it has the full authority to enter into this Agreement and to bind her/his respective Party to all of the terms and conditions herein.

If you have any questions, please contact Henning Meyer at +49 (0) 511 / 5151510 (sender company) or Andreas Zieher at +49 (0) 7951 / 31 790 70 (receiver company). If the above is in accordance with your understanding and wishes, you may indicate your approval in the space provided below.

______________________________  ___________________________
Acmeo GmbH                    Sysperto GmbH
(Sender company)               (Receiver company)
Henning Meyer                  Andreas Zieher
03.04.2019                     05.04.2019
5. Risk and Responses

The company Sysperto GmbH could have several risks that have a critical impact on the overall project. The type of contract chosen, allows on the one hand, to mitigate part of the risks with a clear level of scope, on other hand possible defects from Sysperto GmbH have to be carefully reviewed to understand the possible fault.

The following table shows a short list of the possible risks, not exhaustive, that could occur during the implementation. The table presents the possible risks, causes why it is happening, the possible impact on the project as well as the affected baseline. To conclude, the potential risk transfer policy it stated that describes how to prevent or mitigate the risk and the probable person responsible. For a detailed view, please refer to the Appendix with the excel file.
### Figure 5 - Risk transfer policy table (Part 1)

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk category</th>
<th>Risk</th>
<th>Cause</th>
<th>Impact</th>
<th>Baseline affected</th>
<th>Risk strategies through the contract</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>R001</td>
<td>Project management risk</td>
<td>Change request: online-shop (Scenario 1)</td>
<td>Project schedule: After the implementation of the online-shop and before the implementation of the ERP-system Sysperto GmbH figured out that an important tool/function is missing within the online-shop to align the transaction with the administration part.</td>
<td>- Time delay on the overall project to adjust the online-shop - Cost impact on the overall project</td>
<td>Time + Cost + Quality</td>
<td>- Quality control executed more accurately during the selection of the ERP-system and its tools</td>
<td>PM team</td>
</tr>
<tr>
<td>R002</td>
<td>Technology risk</td>
<td>Change request: online-shop (Scenario 2)</td>
<td>Customization of the ERP-system: The consultancy company does not respect the requirements for the online-shop and the interface with the ERP-system.</td>
<td>- Time delay on the overall project to adjust the online shop - Inappropriate customization may create lacks in the project scope - Cost impact on the overall project</td>
<td>Time + Cost + Quality</td>
<td>- Conduct accurate quality control - Incentive fee for on time work - Split the consultancy company the cost of the change request</td>
<td>Consultancy company</td>
</tr>
<tr>
<td>R003</td>
<td>Project Management Risk</td>
<td>Delay in the Project Schedule</td>
<td>Project Schedule: A delay of the project schedule due to unexpected work, problems with the migration or the customization of the system leads to a high influence on the daily business operations as the company terminates their existing program licenses for a certain date.</td>
<td>Delay of the overall project (due to several risks) and possible impact on company's operations</td>
<td>Time + Costs</td>
<td>Clause: Including a penalty of 5% if delay is caused by the supplier and is over 3 weeks</td>
<td>Consultancy company</td>
</tr>
<tr>
<td>R004</td>
<td>Stakeholders risk</td>
<td>Miss an expert from the consultancy company to complete a crucial phase for implementation of the ERP-System</td>
<td>Influence on daily business: The consultancy company has underestimated the timeline established by the PM team. For that reason one essential expert is not available because is assigned to a specific expert of the implementation</td>
<td>- Time delay - Loss of trust for possible future</td>
<td>Time</td>
<td>- Penalty fee due for not respect the timeline - Provider is responsible to provide a human resource schedule plan including the definition of proxies. If the key user availability changes a written communication has to be performed at least on week before and a proxy has to be</td>
<td>Consultancy company</td>
</tr>
<tr>
<td>R005</td>
<td>Technology risk</td>
<td>During the data migration the consultancy company lose part of the data or files</td>
<td>Migration of the data: The data migration is aimed to be performed successfully and completely. The risk is that not all existing data and information from the company are migrated into the new system leading to a loss of important company data, knowledge and intellectual property/asset as well as a delay in the project schedule.</td>
<td>- Time delay to retrieve the data - Consultancy company were not able to deliver the quality standard expected - Lose of trust for possible future works (maintenance)</td>
<td>Time + Cost + Quality</td>
<td>- The consultancy company has to guarantee a certain level of quality if they lose completely some files they will receive a fee - If the defect cause a certain amount of delay it will be sanctioned - Clause: Final payment (40%) will be retained till all data are migrated successfully and perfectly into the system.</td>
<td>Consultancy company</td>
</tr>
</tbody>
</table>
### Procurement Management Plan – Implementation ERP-system (Group 4)

#### Risk ID | Risk category | Risk | Cause | Impact | Baseline affected | Risk strategies through the contract | Responsibility
--- | --- | --- | --- | --- | --- | --- | ---
R006 | Stakeholders risk | The consultancy company goes in bankrupt during the implementation | Bankruptcy of the provider: The consultancy company, responsible for the implementation of the ERP-system, goes bankrupt leading to a delay of the project schedule because a new one has to be selected. | - Time delay for the overall project - Impossibility to carry on the project implementation with the current development - Impact on the system performance | Time + Cost | - The consultancy company has to guarantee a certain level of financial stability before sign the contract. - Clause: Clause: Splitting of the payment into three parts (initial payment 30%, payment after installation of licences 30% and final completion 40%). With this 70% are only going to paid after the work was completed by the company. | Consultancy company
R007 | Technology Risk | The ERP-system lacks in performance | Stability of system performance: The stability of the system performance and the usability of the system are not met before the final implementation leading to higher costs (rework), delay of the schedule, inefficiency of the system as well as a decrease in the expected project benefits. | The software instability leads to higher costs (rework), delay of the schedule, inefficiency of the system as well as a decrease in the expected project benefits. | Time + Cost + Quality | Clause: Final payment (40%) will be retained till system performs in a stable way | Consultancy company
R008 | Technology Risk | Customization did not perform accurately, it lead inefficiency of the system and lose time and quality | Software system design/customization: The supported standard and design from the ERP-system do not match with the company's processes, mistakes in the development/customization of the system as well as with the interface to the online-shop and the ticket-system occur, leading to higher costs (rework), inefficiency of the system as well as a decrease in the expected project benefits. | Leads to higher costs for rework the customization to match the scope and project requirements. | Quality + Costs | Clause: Final payment (40%) will be retained till the design/customization fits according to the requirements and needs | Consultancy company
R009 | Stakeholders Risk | End-users lack of knowledge to use the ERP-system that lead to invest more time in courses | Knowledge and expertise from end-users: The end-users do not have the required knowledge and expertise for working with the new ERP-system because they did not attend to the training session or the training was insufficient leading to an inappropriate and inefficient execution of the ERP-system. | This leads to an inefficiency of the execution which lower the performance resulting to a decrease of the profitability of the company. | Quality + Time | Clause: The end users are evaluated at the end of the training to determine their level of knowledge acquired. In the the case their knowledge and expertise turns out to be low an average, the company responsible of the training will proceed to a training extension at it own expenses. | Consultancy company

*Figure 6 - Risk transfer table (Part 2)*
6. Monitoring and Control Audit

The procurement management process requires to be efficient, especially to avoid possible misunderstanding during phase particularly delicate as the contract and the selection of the possible supplier for the implementation of the ERP-system. In order to keep a follow up for the procurement process phases, the project management team will be aided by some templates to carry out each phase.

The first template – Bid award report – will be used in order to simplify the process selection for the eligible contract. This is previously described in detail in the Chapter 4.5 - Instructions/Process for Bidding and Awarding Contracts.

Nevertheless, during the contract closure, where all the work has been performed, the overall work will be evaluated throughout a validation document, i.e. Contract closure validation template, shown in the following. It is used to understand whether all the tasks are completed, partially or not completed, subsequently to validate the effective closure of the project, the document will be signed by the interested stakeholders for the ERP-system implementation. The control for the closure is structured following the WBS because the implementation is carried out with one project and a unique supplier. The audit is performed by the project management team, Sysperto GmbH CEO and the consultancy company.
## SySPerto GmbH implementation

### Contract closure VALIDATION

#### ERP-System implementation

<table>
<thead>
<tr>
<th>Requirement</th>
<th>YES</th>
<th>PARTIALLY</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1.1 Implementation of ticket-system</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1.2 Implementation of online-shop</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.1 Configuration and Development</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.2 Installation of the software</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration of SySPerto GmbH processes in the ERP-system</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>1.3.2.3 Data migration (refer to the Survey 1)</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of all data and information in the ERP-system</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>1.3.2.4 System and performance testing</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guarantee of high-level data security according GDPR</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2.5 Go-Live</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance stability</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall performance</strong></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

### Overall implementation performance

- **YES**: 8
- **PARTIALLY**: 3
- **NO**: 1

### Contract closure

- **CEO**
  - signature_____________________  

- **PM team**
  - signature_____________________  

- **Supplier (Consultancy company)**
  - signature_____________________  

**Figure 7 - Contract closure validation template**
7. Integrated Change Control

The integration process 4.6 of “Perform Integrated change control” provides the input of approved change requests for the “Control Procurements” process (PMI, 2017, p. 493). It refers to any procurement-related changes in regard to “modifications to the terms and conditions of the contract, including the procurement statement of work (SOW), pricing, and descriptions of the products, services, or results” (PMI, 2017, p. 496). For the present project, the detailed and overall description for the change management process, activities and strategy can be found in the corresponding Change Management Plan. The following chapter is aimed to specify the integrated change control process and activities for the possible changes occurring related or affecting to the Procurement Management.

Therefore, as a first step, it was crucial to include a change clause in the contract draft which can be found in Chapter 4.6 of the present document with clause 3.3. The project management team decided to include this clause in detail in order to ensure a common understanding from both parties how change requests are planned to be handled. This is aimed to avoid unnecessary discussion for the situation the possible change occurs also in order to save time. This clause specifies that each change request can be identified from both parties, meaning Sysperto GmbH or the provider, it has to be submitted after five days of identifying the required change to the other party in written form using the change request template. Moreover, the contract also states that the submitted change request will be followed by an official meeting. As the only contract for the present project was defined as a fixed-price contract, the contract also mentions the hourly rate of 125€ if a change request leads to work that was not specified within the frame of the contract.

With having this in mind, the following flowchart specifies the change control process for the procurement activities.
Figure 8 - Change control procurement activities
8. Restrictions and assumptions

8.1. Procurement Constraints

Constraints are imposed by Sysperto GmbH to the provider of the service in order to be explicit as much as possible and to clarify all the “shadow zones” that might happen to the exist in the contract. The following table lists the procurement constraints regarding the implementation of the ERP-system project.

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Constraint description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>The project schedule has to be strictly respected and followed. Penalties will be imposed on the provider of the service in case he is responsible for any delay of the project schedule.</td>
</tr>
<tr>
<td>Cost</td>
<td>The project cost has to be respected by the contractor, and the contingency reserve is only for the case when a change in the project scope is approved. However, following the type of the contract chosen (FFP), the provider is paid a fixed price for the agreed upon work units.</td>
</tr>
<tr>
<td>Scope</td>
<td>The work of the contractor has to follow the project’s scope. If the work isn’t aligned with the scope statement, it will be disapproved.</td>
</tr>
<tr>
<td>Quality</td>
<td>The quality of the work desired and highlighted in the quality plan of the project as well as in the contract with all the standards required have to be respected and taken into consideration by the provider. After the quality evaluation of the work submitted and performed, in the scenario in which the quality given is under the expectations and do not match the requirements defined, the deliverable will not be accepted.</td>
</tr>
<tr>
<td>Change</td>
<td>All changes that might occur have to follow the change control process including the submission of a change request with the template provided by the company as well as the formal related reports.</td>
</tr>
</tbody>
</table>

*Table 6 - Procurement Constraints*
8.2. Procurement Assumptions

The procurement assumptions of this project are made in order to ensure the good on-going of the project work during its execution phase and to raise the awareness thereof within the project management team. The table below shows the assumptions made regarding the project.

<table>
<thead>
<tr>
<th>Project Aspect</th>
<th>Assumption Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliverability</td>
<td>All resources will be working at a high level in order to complete the project successfully and reach the desired objectives and expectations shared by the project stakeholders.</td>
</tr>
<tr>
<td>Project requirement</td>
<td>All the requirements, desired by the client, will be respected and maintained by the potential contractor to satisfy Sysperto GmbH.</td>
</tr>
<tr>
<td>Technical aspect</td>
<td>The software implemented will be up-to-date regarding the technological development and will be at high quality standards as well showing no signs of errors or malfunctions.</td>
</tr>
<tr>
<td>Cost contingency</td>
<td>The contingency reserve will cover the cost following all the unknown and unplanned risks that may occur while the work is being performed.</td>
</tr>
<tr>
<td>End-user training</td>
<td>The employees will be able to handle and perform the work efficiently and perfectly after the training provided by the service provider.</td>
</tr>
</tbody>
</table>

Table 7 - Procurement assumptions

9. Procurement matrix

The Procurement matrix collects summarizing as an all-in-one document all the main information regarding the contract of the ERP-system implementation. As the project has one contract, the validation in terms of scope, cost, time has been settled following the WBS dictionary. It provides a clear division useful as a best practice for the whole project. The second part of the table presents the scope part, which determines stakeholders scope, reflecting project needs and strategy. The third part shows the costs meaning in regard to project cash-flow, the initial budget with an estimation of the possible further costs not included as the tolerance. The fourth part shows an overall division of the project’s timeline which means main milestones and tolerance. The fifth and last part includes standards, requirements and metrics to accomplish the work. Here below the matrix is represented through the division in parts of the whole table.
## Procurement Management Plan – Implementation ERP-system (Group 4)

### Figure 9 - Procurement Management Matrix (Part 1)

<table>
<thead>
<tr>
<th>General Control Information</th>
<th>Scope</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB ID</td>
<td>Reference</td>
<td>Contract</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>1.3</td>
<td>Implementation of the ERP-system to Sysperto GmbH</td>
<td>Fixed Contract (Firm fixed price contract (FFP))</td>
</tr>
<tr>
<td>1.9</td>
<td>Confidentiality Agreement</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Implementation of ticket-system</td>
<td>Fixed Contract (Firm fixed price contract (FFP))</td>
</tr>
<tr>
<td>1.2</td>
<td>Implementation of the online-shop</td>
<td>Fixed Contract (Firm fixed price contract (FFP))</td>
</tr>
<tr>
<td>1.3</td>
<td>Consultancy work</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Installation</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Software/Licence</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Consultancy Contract for Business Process analysis and restructuring</td>
<td></td>
</tr>
</tbody>
</table>

This optional contract refers to the consultancy that may be required as well-defined support for the analysis and restructuring of the business processes. According to the scope, this is planned to be performed at the end but if problems appear, this contract is seen as a backup.

5,000.00 € | Payment after the received consultancy work | No | 5,000.00 € |
### Figure 10 - Procurement Management Matrix (Part 2)

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Start Date</th>
<th>End Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of the ERP-system to Synergis GmbH</td>
<td>04/11/2019</td>
<td>17/12/2019</td>
<td>31.5 days</td>
</tr>
<tr>
<td>Confidentiality Agreement</td>
<td>17/12/2019</td>
<td>17/12/2019</td>
<td>1 day</td>
</tr>
<tr>
<td>Implementation of ticket-system</td>
<td>07/01/2020</td>
<td>08/02/2020</td>
<td>20.5 days</td>
</tr>
<tr>
<td>Implementation of the online-shop</td>
<td>07/01/2020</td>
<td>08/02/2020</td>
<td>2.5 days</td>
</tr>
<tr>
<td>Consultancy week</td>
<td>07/01/2020</td>
<td>08/04/2020</td>
<td>3.5 days</td>
</tr>
<tr>
<td>Installation</td>
<td>27/02/2020</td>
<td>05/03/2020</td>
<td>5.5 days</td>
</tr>
<tr>
<td>Software/License</td>
<td>08/02/2020</td>
<td>08/04/2020</td>
<td>3.25 days</td>
</tr>
<tr>
<td>Training</td>
<td>08/02/2020</td>
<td>08/04/2020</td>
<td>3.5 days</td>
</tr>
<tr>
<td>Consultancy Contract for Business Processes analysis and restructurin</td>
<td>12/07/2019</td>
<td>16/08/2019</td>
<td>25.75 days</td>
</tr>
<tr>
<td>12/07/2019</td>
<td>04/11/2019</td>
<td>81.25 days</td>
<td>4 days</td>
</tr>
</tbody>
</table>

**Quality Auditing:**
- **Check appearance and control if the supplier performs what was defined according to the scope through functionality testing:** Complete the checklist e.g., of data migration, training, etc.
- **Performance testing integration testing:** Weekly

**Mandatory Contract**
- **Meeting with supplier and all involved employees in order to discuss the confidentiality of the data:** Once at the beginning of the contract as the initial action
- **Signed confidentiality agreement:** Close at the beginning of the contract as the initial action
- **Effective operation: Yes/No part of it:** Weekly
- **Effective communication at the beginning:** Weekly as a starting point.

**Optional Contract**
- **The training is done perfectly meaning that the end users can operate on the system efficiently:** At the beginning of the installation.
- **Lotus: The suitability of the license:** At the end of the installation.

**Frequency and pace to meet:**
- **Every two weeks:** After each meeting
### 9.1. Quality and Scope Criteria to Validate Deliverables

In order to validate and accept the deliverables by Sysperto GmbH, the criteria specified in the contract have to be met by the contractor regarding quality and scope as well. The table below shows the criteria for quality and scope required by Sysperto GmbH regarding the contract of the implementation of the ERP-system.

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Scope Criteria</th>
<th>Quality Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality Agreement</td>
<td>Respect the confidentiality of the company regarding the sensitive data and information shared.</td>
<td>The confidential terms are clear for the contractor which will comply completely with those terms.</td>
</tr>
<tr>
<td>Implementation of the ticket-system</td>
<td>The successful implementation of the ticket-system (including the preparation of the interface of the ERP-system).</td>
<td>The implementation of the ticket-system following the specified international standards of quality.</td>
</tr>
<tr>
<td>Implementation of the online-shop</td>
<td>The successful implementation of the online-shop (including the preparation of the interface of the ERP-system).</td>
<td>The implementation of the online-shop following the specified international standards of quality.</td>
</tr>
<tr>
<td>Consultancy work</td>
<td>The integral data migration as well as the development and configuration of the ERP software.</td>
<td>Comply with the specified standards for the data migration and the development of the ERP-system as well as the use of experts and professionals for performing the tasks.</td>
</tr>
<tr>
<td>Installation the ERP-system</td>
<td>The correct installation of the ERP-system following the specified requirements.</td>
<td>The installation of the ERP-system has to show no sign of dysfunctions after the functionality and performance tests.</td>
</tr>
<tr>
<td>Software/Licenses</td>
<td>The legal purchase of the right licenses needs to follow the laws and regulations.</td>
<td>The purchase of the right and correct licenses needed for the legal use of the software.</td>
</tr>
<tr>
<td>Training of the employees</td>
<td>The training provided to the end-users enabling them to use the new system efficiently.</td>
<td>The training is provided by professionals while the contractor has to ensure that the end-users are ready to use the software properly.</td>
</tr>
</tbody>
</table>

*Table 8 - Quality and scope criteria to validate deliverables*
9.2. Time Contract Requirements

As it could be seen in the procurement matrix, the time scheduled for the contract of implementing the ERP-system is required to be 63.75 days. However, Sysperto GmbH has specified some clauses in the contract to prevent any delay occurrence from the provider and to plan for any possible situation and circumstance.

The clauses related to time and schedule are as follows:

1. A penalty of 5% is set to be paid by the provider when the schedule delay is over 3 weeks.
2. The final payment (40%) will be retained until the implemented system is proven to be having stability, performance and the right customization (after a specified period of time).
3. The training of end-users will be subject of extension on the provider’s expenses if the end-users are proved to be unable to perform with the ERP software properly.

9.3. Cost Contract Requirements

The procurement matrix shows in overall the contract cost for the ERP-system implementation. Indeed, the company has agreed with the supplier, to the following method of payment:

1. The first payment of 30% after the order placement
2. Payment of 30% after the installation of the licenses
3. Payment of 40% after the successful completion of the overall implementation. The last payment of the work, it is due within 30 days after the completion.

The contract has established a fee per hour by € 125/h for the extra adjustment, namely all the change requests follow a procedure to be eligible, afterwards the consultancy company process the request has established with the standardized rate. The payment will be done by bank transfer to the consultancy company chosen following the percentage established.

9.4. Contract Tolerance

The tolerance for the possible costs which may occur in the contract are referred to a large extent to possible change requests. The reason is explained also in the previous paragraph, namely due to the fixed contract. Therefore, what is not included in the contract must follow the established fee per hour. The assessment of tolerance has been calculated throughout the Monte Carlo analysis. The analysis performed a possible impact referring to estimations assessed by the consultancy company and Sysperto GmbH. They used their expertise to evaluate the optimistic, pessimistic and most likely impact. The table here below gives an overview of how the tolerance for the contract has been estimated and the possible impact.
The resulting estimation is given by a probabilistic impact. Afterwards, the impact has been subtracted with a pessimistic impact having as outcome the tolerance of the contract.

This graph proposed above, determined a tolerance of 90% for the possible costs when change requests occur. Whether it happens there is a 90% probability that the costs will be between € 3,342 to € 33,253.

10. Conclusion

To conclude, this present document illustrates the whole Project Procurement Management Plan, that is aimed to describe all activities and approaches developed for the project in order to have a clear understanding which procurement steps have to be undertaken when and how. This is done by first performing the make or buy analysis which provided the crucial result that there is only one but a major contract for this project. Based on that, the following steps of the provider selection, the offer assessment and the contract preparation for the one, main contract for the present project are defined. With this, this Management Plan provides the description of how the project management team plans to execute the procurement for the project. This detailed planning is crucial for the project success as one of the main project deliverables – the
implementation of the ERP-system and the additional systems – will be purchased from an external provider. The developed procurement process flowchart with the corresponding templates for each step as well as the procurement management matrix providing the whole overview for the contract is aimed to help the project management team to execute, monitor and control the procurement activities for the project.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, research, brainstorming and meetings were used for all parts to prepare a detailed procurement planning and strategy for the project of the ERP-system implementation.

The project team performed this eighth planning process for the knowledge area of Project Procurement Management in order to create the Project Procurement Management Plan. All generated documents, templates and outputs, especially the proposal assessment and comparison matrix template as well as the procurement matrix, from this planning process will illustrate the input for other planning processes such as for example the Communication Management Plan and the Stakeholder Engagement Plan.

Moreover, the Project Procurement Management Plan represents part of the overall Project Management Plan.
References


Project Change Management Plan

Project Title:
Implementation of an ERP-system to the company Sysperto GmbH

Group 4:
Kolb, Veronika; Lansari, Omar; Molinarelli, Alberto

Program: Master in Project Management
EAE Business School
Universidad Rey Juan Carlos (URJC)

Director in Charge: Elena Maria Bulmer Santana
Director: Marcelo Leporati

<table>
<thead>
<tr>
<th>Document version and change history</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>V000</td>
</tr>
<tr>
<td>V001</td>
</tr>
<tr>
<td>V002</td>
</tr>
</tbody>
</table>
Abstract

The present paper illustrates the Project Change Management Plan for the project of the implementation of an ERP-system to the company Sysperto GmbH. Therefore, this Project Change Management Plan follows the explanations and contents in accordance with the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI).

The overall objective of the project is the implementation of an ERP-system to the company Sysperto GmbH, a German company of IT-services with 20 employees. After three years of operations, the company is changing its operations from hours billing to Managed-Service solutions. At this point, the company evaluates its own IT-infrastructure and current processes. Due to the fast growth of the company within the first three years of operations, the owner and manager of the company decided to evaluate and implement an ERP-system.

The present Project Change Management Plan continues the project planning process for this project after the project analysis, planning and development for the Project Charter, the Business Case as well as the Management Plans for the knowledge areas of scope, schedule, cost, quality, risk, communication, stakeholder and procurement. Those previously developed documents illustrate the basis and main inputs for this management plan. Moreover, this Project Change Management Plan illustrates part of the ninth knowledge area (Project Integration Management) within the Planning Process Group that is developed for this project.

Therefore, this Project Change Management Plan first provides a short introduction about the overall integrated management procedure and the Project Change Management Plan itself in an overview and continues with the template for the change requests as well as the definition of the change control committee organization. Subsequently, the overall change request process, including all defined steps that have to be followed for an appropriate change request for this project, and the process for the assessment of the change requests is shown and described. In accordance with this, the matrix of assignment of responsibilities and roles is defined and the Project Change Management Plan closes with a conclusion. With those points, the change management approach for the project is described and developed at the current point in the planning phase.

Keywords: Project Change Management Plan, Change Request, Change Request Template, Change Request Process, Assessing Change Requests, RACI-Matrix, Implementation, ERP-system, IT-sector, IT-services
Table of Contents

Abstract ........................................................................................................................................................................ II
List of Figures ................................................................................................................................................................ IV
List of Tables ................................................................................................................................................................. IV
1. Introduction, Objective and Scope of the Integrated Management Procedure ............. 1
2. Change Management Plan ....................................................................................................................... 1
   2.1. Change Management Approach ....................................................................................................... 1
   2.2. Definition of Change .......................................................................................................................... 2
   2.3. Change Control Board ....................................................................................................................... 2
   2.4. Change Control Process ...................................................................................................................... 3
3. Requests for Change Template ............................................................................................................... 3
4. Change Control Committee Organization/Definition ............................................................... 6
5. Change Request Process ......................................................................................................................... 7
6. Process for Assessing Change Requests ............................................................................................. 9
7. Matrix of Assignment of Responsibilities and Roles ................................................................. 11
8. Conclusions .................................................................................................................................................... 12
References ......................................................................................................................................................... V
List of Figures

Figure 1 - Change Request Register .................................................................4
Figure 2 - Change Request Template ...............................................................5
Figure 3 - Change Management Process Flowchart .......................................8
Figure 4 - Assessing of Change Requests Process Flowchart .......................10

List of Tables

Table 1 - Responsible and role attribution .....................................................2
Table 2 - Change Control Board .....................................................................6
Table 3 - RACI Matrix .................................................................................11
1. Introduction, Objective and Scope of the Integrated Management Procedure

Change management is the area of knowledge providing and allowing the implementation of the approved changes leading to the achievement of the project objectives (Project Management Institute, 2017, p. 90). The overall benefit of this process is enhancing and improving the project success probability throughout its execution (Project Management Institute, 2017, p. 90). Perform Integrated Change Control illustrates the sixth process of the Project Integration Management (Project Management Institute, 2017, p. 70).

The work performance data is collected during the project execution to be analyzed regarding several aspects, which provides an effectiveness and completion status of the project deliverables and processes in order to evaluate the on-going of the work and if a change is needed.

Thus, once unplanned issues or unknown risks occur while performing the project work, the already planned project process and baseline cannot be followed, consequently a change is needed to adapt and overcome the issue (Project Management Institute, 2017, p. 96). However, the change is reviewed regarding its impact on the project objectives and then, the implementation of the change is approved when the impact of the change is favourable to the project (Project Management Institute, 2017, p. 90). The change can be in the form of corrective or preventive actions or/and even a defect repair (Project Management Institute, 2017, p. 90).

Moreover, every change desired has to follow specific directives which are gathered in the change control process with formally and detailed documentation.

2. Change Management Plan

The change management plan provides an overview of the overall plan by highlighting and the approach used, the processes used in these management areas as well as the group of stakeholders responsible for the approval of changes.

2.1. Change Management Approach

In order to succeed in the project change management, a clear approach of how a change will be performed is needed. The stakeholders chosen for the Change Control Board are identified in a way that their decisions come from a wide variety of interests once a change demand is submitted. The change demand will be submitted as a Change Request document with specific information which will be accepted or refused by the board. The resistance to change will be taken into consideration while the change is being generated by the responsible manager as well as
while the request is being evaluated by the board. The change is set to be implemented and adopted when the request is authorized by the CCB.

2.2. Definition of Change

In the project of the implementation of the ERP-system, the changes that might occur or might be required will concern several areas, such as the schedule, the budget, the scope and the project documents.

The change will be adopted once it is agreed that one of the areas above needs changes such as corrective actions, preventive actions or defect repair while following a change process and on the supervision of a change control board.

2.3. Change Control Board

Changes can be accepted or refused after its evaluation. The responsibility and the authority to accept a change is given to a group of stakeholders (Change Control Board). Moreover, their participation level and authority will also be defined (in the RACI Matrix) in order to clarify their responsibility in function of the different aspect of the change decision.

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Manager</td>
<td>Consultant role on the gathering of the change requirements and responsible for the post-implementation review as well as recording the change.</td>
</tr>
<tr>
<td>Change Control Board (CCB)</td>
<td>Responsible for taking the final decision of authorizing or refusing the change after reviewing and evaluating it.</td>
</tr>
<tr>
<td>Change Analyst</td>
<td>Raising the need for change and providing consultancy for the CCB in taking the final decision.</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Raising the need for change and providing consultancy on the reviewing and evaluation of the change.</td>
</tr>
<tr>
<td>Change Owner</td>
<td>Responsible for the pre-implementation review of the change as well as the post-implementation review.</td>
</tr>
<tr>
<td>Consultancy Company</td>
<td>Provider for consultancy in the prioritization and the review of the change.</td>
</tr>
</tbody>
</table>

*Table 1 - Responsible and role attribution*
2.4. Change Control Process

Every change required in the project has to be documented and presented by submitting a change request to the project management team using the developed change request template and highlighting the nature, reason, classification, effect and benefits of the desired change on the project. The change request has to be followed by reports status documenting the progress and status of the change (University of Wisconsin System, 2015).

In order to proceed successfully to a change regarding a deliverable, an activity or a process, several steps and processes have to be taken into account and followed. The process of change is explained and shown as follows (University of Wisconsin System, 2015):

- Spot the need for the change: The need for change is perceived to bring solutions or to rectification or ameliorate a project deliverable or process.
- Generate the Change Request: A change request is generated with all the details such as the submitted and required date, the submitter of the request, the responsible department and also the desired change, its description, its effect, impact and benefits.
- Evaluate the Change Request: The change request is evaluated by the change board in order to analyze in every aspect if the change required will be advantageous or not by taken into consideration its priority and type.
- Authorize the change: If the change is favorable after the analysis, the authorization is given by a Change Control Board, which is constituted by a group of stakeholders responsible for approving or refusing changes. By this process, the change is authorized to be implemented or rejected.

3. Requests for Change Template

The implementation of the ERP-system to Sysperto GmbH follows certain procedures to avoid and/or reduce the mistakes’ number and to have a clear workflow. The change management is no exception; indeed, a change request template has been developed as a medium through which the project management team may describe in detail a proposed change.

The template provides a base structured to control the process ensuring to use the form in every phase of the project. For that matter, to guarantee a greater awareness of any circumstances the change request could follow a normal procedure (green template), or an emergency one (red template). Every request is numbered with a unique number with its date of submission. The change requester details have various parts dedicated to cover as many situations as possible. The left part is dedicated for who submitted the request and the other left part for the department or responsible of the matter involved.
The part “Basic Details” is composed of:

- Change classification, aid to cluster where the change could have an impact
- Change affect shows what leads to the change within the project and/or company.

The part dedicated to the description i.e. describes the change being requested, the reason for the change and any technical changes to implement this change, leads to explain as long as possible the matter with the purpose to be evaluated to the CCB (Change Control Board). The estimate parts, which includes: estimate resources, estimate cost and risks to be considered, gives an idea of the consequences in terms of stakeholders, budget and risks which will affect the project. The disposition part must be left free since every change request needs to be either approved, deferred, or rejected by the CCB. To conclude, the last part has been given to write down the documents that will be attached to the change request template.

All developed and analysed Change Requests from this project are collected in one overall change request register. This register is aimed to provide an overview about all change requests with their corresponding current status. After the project this will be a base and input for the lessons learned.

In the following, first the change request register and afterwards the change request template is shown.

Figure 1 - Change Request Register
## Change Request Template

**Change Requester Details**

- Date submitted: ________________  
- Request: __________________________________________________________________________
- Date required: ________________   
- Department: _______________________________________________________________________
- Requester name: ________________  
- Manager: _________________________________________________________________________
- Email: ________________           
- Email: __________________________________________________________________________
- Other: ________________           
- Other: __________________________________________________________________________

### Basic Details

**Change Classification (Check all that apply):**
- [ ] Testing/quality  
- [ ] Cost  
- [ ] Requirements/Deliverables
- [ ] Schedule  
- [ ] Scope  
- [ ] Resources

**Does this Change affect (Check all that apply):**
- [ ] Corrective Action  
- [ ] Updates  
- [ ] Preventative Action
- [ ] Other  
- [ ] Defect Repair

**Describe the change being requested:** __________________________________________________________________________________________________

**Describe the Reason for the change:** __________________________________________________________________________________________________

**Describe any Technical changes to implement this change:** ________________________________________________________________________________

**Estimate Resources:** __________________________________________________________________________________________________________________

**Estimate Cost:** ______________________________________________________________________________________________________________________

**Describe risks to be considered for the change:** ________________________________________________________________________________________

**Disposition:**
- [ ] Approve
- [ ] Reject
- [ ] Defer

**Documents attached:**
- -
- -
- -

---

*Figure 2 - Change Request Template*
4. Change Control Committee Organization/Definition

In order to perform a change management process within Sysperto GmbH, a board has been established which will facilitate the manner. The Change Control Board, also known as Change Advisory Board, is a formal group responsible to examining, evaluate, approving or rejecting changes to the ERP-system implementation (Project Management Institute, 2017, p. 115). In the latter case, the specific board is composed of:

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Responsibility</th>
<th>Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andreas Zieher</td>
<td>Head of the CCB</td>
<td>Change approbation</td>
<td>Full authority (1 vote)</td>
</tr>
<tr>
<td>Joachim Zieher</td>
<td>Co-Head of the CCB</td>
<td>Change approbation</td>
<td>Full authority (1 vote)</td>
</tr>
<tr>
<td>Veronika Kolb</td>
<td>Change Analyst</td>
<td>Consulting</td>
<td>Member (no vote)</td>
</tr>
<tr>
<td>Omar Lansari</td>
<td>Change Analyst</td>
<td>Consulting</td>
<td>Member (no vote)</td>
</tr>
<tr>
<td>Alberto Molinarelli</td>
<td>Change Manager</td>
<td>Management role</td>
<td>Authority (1 vote)</td>
</tr>
<tr>
<td>Andreas Domke</td>
<td>IT internal consultant</td>
<td>Consulting</td>
<td>No Authority</td>
</tr>
<tr>
<td>IT External</td>
<td>ERP-system External</td>
<td>Consulting</td>
<td>No Authority</td>
</tr>
<tr>
<td>consulting member</td>
<td>consulting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 - Change Control Board

The table “Table 2 – Change Control Board”, shows the members and their responsibility during a change application. The role expresses the position which each member will be in charge of to pursue during the change management. The responsibility is the task assigned to each member, the idea is to prevent any conflict or overlapping. To conclude, a level of authority has been established in order to define the weight of each member has within the CCB. Moreover, only three members have the possibility to make a vote.

The voting system of the CCB works that before any change process execution, the members of it have to make a vote in order to approve or reject the proposal. It falls to Andreas Zieher and Joachim Zieher, as head of the CCB and to Alberto Molinarelli, being Change Manager and coordinator of the consultants. This relevance to the change process has been given as a result that most changes have a sort of impact on time, cost, resources, or risks. Evaluating the impact of the changes is an essential part of the meeting. To conclude the other members, consultants, has been considered to be part of the board because a change request may require cost estimation, scope evaluation, activity evaluation and/or assessment of risk during the ERP-system implementation (Project Management Institute, 2017, p. 115). They will advise the change manager during the process.
5. Change Request Process

The following chapter is dedicated to describe and show the overall change request process. According to the PMBOK, the four main activities for change management are to identify, document, decide and track the changes (Project Management Institute, 2017, p. 119). The developed flowchart process includes those activities but in addition, the existing processes and best practices from the company were considered as well.

Therefore, the developed flowchart shows all activities, steps and decisions from the initial identification of a necessity, opportunity, improvement or problem till the final approved and implemented change. The flowchart is composed of four different groups/stakeholders that participate in this process. The first column is the Change Control Board (CCB) with the major importance assigned to the CEO of Sysperto GmbH, as already described previously in this document. The CCB is mainly responsible for the approval, rejection or deferment of the change request. The second group is dedicated to the internal stakeholders, which are mainly the employees of the company who can identify the need for a change request and who also may have to execute an approved change request. The third group refers to the project manager and the whole project management team. As the flowcharts shows, the majority of the process steps falls under the responsibility of the project management team. This refers also to the statement from the PMBOK that the whole Integrated Change Control process is the “ultimate responsibility of the project manager” (Project Management Institute, 2017, p. 115). The fourth column shows the steps dedicated to all external stakeholders such as mainly the provider or the different consultant companies. Besides the identification of a change request, they also may execute a change request. A detailed and specific change management flowchart for possible change requests related to procurement with the external provider can be found in the Procurement Management Plan.

The overall, general change management process for the present project starts with the identification of the change. Out of this, the change request is developed and the change is analyzed and assessed. Subsequently, the approval process of the change request follows, which is described in more detail through the process for assessing change requests in the next chapter. For an approved change request, the process continues with several steps to prepare and execute the change request as well as to register the change request. The process ends with the updating of the documents affected through the change, the communication of the final result of the change to all stakeholders and the identification of the lessons learned.
With having this in mind, the developed change management process, illustrated in the following, shows all steps for a change request within the project, bringing the change request from an initial idea to a formally approved and implemented change.

Figure 3 - Change Management Process Flowchart
6. Process for Assessing Change Requests

The process for the assessing of change requests illustrates an incorporated sub-process of the overall change management process, shown in the previous chapter. The main steps and sequence are thereby already shown in the change management process. The following chapter is aimed to describe this sub-process in more detail with all steps as the assessment of the change request – leading to the approval or rejection of the change request – illustrates a crucial part for the overall change management process. The process for the assessing of change requests starts after the change has been identified and the change request is developed and ends with the approval, rejection or deferment of the change request before the approved change request is executed. For the assessment of the change request, the main involved parties are the project managers and the project management team, as well as the Change Control Board (CCB). The initial analysis and assessment of the change request is performed by the project management team and this illustrates the preparation for the CCB. The preparation includes the overall assessment of the change request in regard to which influences and impacts this change request might have on the overall project, the different baselines and project documents. Therefore, the project management team may decide to seek for further data, information and supporting materials. Moreover, the previously performed steps, such as the evaluation of the gap between the current and the potential situation, are used as an input as well. In addition to the assessment of the impact and influence of the change – mainly in regard to scope, schedule and costs – this also includes the definition of the priority of the change request. The change request and the analysed data and information are then provided and sent to the CCB. The CCB first reviews this assessment and, if necessary, proceeds with further analysis and research about the change request. When the CCB members decide in their weekly meeting that they have all the required information in order to make an appropriate decision for the change request, the members discuss the change request. At the end of the discussion, the board decides whether to approve, reject or to defer the change request at the current point in time. Besides the actual decision for the change request, the board also provides a detailed justification for their decision. This justification is on the one side used for the communication to the person requesting the change and to all other influenced stakeholders as well. On the other side, this justification is also used for documenting purposes in order to have this information registered and stated officially in the change request register for the present project, but also for future projects as lessons learned. After the final decision of the CCB, the change request follows its defined steps and sequences from the overall change request process. The process for the assessing of the change requests is shown through the following flowchart:
Figure 4 - Assessing of Change Requests Process Flowchart
7. Matrix of Assignment of Responsibilities and Roles

A key factor of project management is that anything should not be taken for granted. In consequence, in such an extraordinary occasion as a change, it is important to define the stakeholder’s position when and how they are involved. The RACI matrix may aid to demarcate the roles and responsibilities in the change management process. RACI stands for Responsible, Accountable, Consulted, and informed role (Swapnil, 2018). The matrix here below represents the assessment of the roles and responsibilities. On the one hand, the column for the activities has been established, which will be carried out during the change management process, according to the suggestion and template from Swapnil (Swapnil, 2018). On the other hand, the main stakeholders involved during the process are listed.

Table 3 - RACI Matrix

(Swapnil, 2018)

The rest of the matrix shows the different role/activities assignments: Roles that are tagged as “responsible”, will perform the mentioned task/tasks. For the role tagged as Accountable, will have complete power, in order to make decisions and are responsible for the
success or failure of the task. Meanwhile, roles that are tagged as Consulted, will be a component topic expert, who will be an adviser for recommendations and feedback. To conclude roles that are tagged as Informed, means a stakeholder who should be kept informed about the actions that will be carried out in performing the specific task (Swapnil, 2018).

8. Conclusions

To conclude, this present document illustrates the whole Project Change Management Plan, that is aimed to describe all activities and approaches developed for the project in order to plan the overall change strategy for the project management. This is done by developing the change request template, defining the overall change request process and the process for the assessment of change requests as well as the corresponding responsibilities. With this, this Project Management Plan provides the description of how the project management team plans to manage the possible occurring changes within the project to still continuously ensure the overall success of the project and minimize or even eliminate the negative impact and influence from the change on the project, for example in regard to time and cost. The related change request process defines the different steps and their defined sequence and together with the developed template for change requests and the RACI-Matrix, this is aimed to help the project management team to execute, monitor and control the occurring changes within the project.

Therefore, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the tools of expert judgment, research, brainstorming and meetings were used for all parts to identify an overall, effective and holistic change strategy for the project of the ERP-system implementation.

The project team performed this ninth planning process for the knowledge area of Project Integration Management in order to create the Project Change Management Plan. All generated documents, templates and outputs, especially the change request process, change request template and the RACI-Matrix, from this planning process will illustrate the input for the next planning processes such as for example the Communication Management Plan.

Moreover, the Project Change Management Plan represents part of the overall Project Management Plan.
References


Conclusion

To conclude, this present document illustrates the whole development of the two Project Management Processes of Initiation and Planning, that is aimed to describe all activities and approaches developed for the project in order to continue with the following Process Groups of Execution, Monitoring and Control as well as Closing.

Therefore, the Project Management Team started with the Project Initiation through the development of the Business Case and the Project Charter.

This initiation is followed by the overall Planning process for the project which included the elaboration of the different knowledge areas. The team established the different Management Plans for the knowledge areas for Project Scope, Schedule, Cost, Quality, Risk, Communication, Stakeholder and Procurement Management as well as part of the Project Integration Management knowledge area through the Change Management. All management plans are collected into the overall Project Management Plan. Besides the Project Management Plan, this thesis provides several project documents such as the Project Scope Statement, WBS Dictionary, Project Schedule in MS Project, duration estimates, milestone list, risk register, several flowcharts etc. Moreover, the thesis also encompasses several templates such as the different templates for quality control (checklists and surveys) as well as the change request template. With this detailed and overall planning, the Project Management Team aims to have a deep understanding of how to execute, monitor and control as well as to close the project.

Accordingly, the project team applied the related contents from the “Guide to the Project Management Body of Knowledge” (PMBOK Guide) from the Project Management Institute (PMI) as well as the “A Project's Managers Book of Forms” as a base. Moreover, the main tools used for this project planning are expert judgment, data gathering through interviews, research, brainstorming and meetings as well as specifically different data analysis for each knowledge area to identify an overall, effective and holistic Project Management Plan for the project of the ERP-system implementation.

To close, it is crucial to mention that this present document only illustrates the planning result and approaches at the current point in time. It is mandatory to review this document continuously throughout the whole project and to make the necessary changes when required.