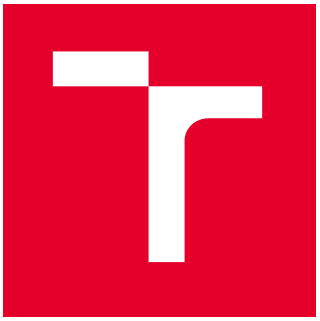


# BRNO UNIVERSITY OF TECHNOLOGY

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

## FACULTY OF BUSINESS AND MANAGEMENT

FAKULTA PODNIKATELSKÁ

## INSTITUTE OF INFORMATICS

ÚSTAV INFORMATIKY


# THE USE OF THE PROJECT MANAGEMENT TOOLS IN PRACTICE

VYUŽITÍ NÁSTROJŮ PROJEKTOVÉHO MANAGEMENTU V PRAXI

**BACHELOR'S THESIS**

BAKALÁŘSKÁ PRÁCE


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AUTOR PRÁCE

**SUPERVISOR** — **Ing. Lenka Širáňová, Ph.D.**

VEDOUCÍ PRÁCE



**BRNO 2023**

BRNO UNIVERSITY OF TECHNOLOGY
FACULTY OF BUSINESS AND MANAGEMENT

# Assignment Bachelor's Thesis

| | |
|---|---|
| Department: | Institute of Informatics |
| Student: | **Richard Tomek** |
| Supervisor: | **Ing. Lenka Širáňová, Ph.D.** |
| Academic year: | 2022/23 |
| Study programme: | Managerial Informatics |

Pursuant to Act no. 111/1998 Coll. concerning universities as amended and to the BUT Study Rules, the degree programme supervisor has assigned to you a Bachelor's Thesis entitled:

## The Use of the Project Management Tools in Practice

**Characteristics of thesis dilemmas:**

Introduction
Goals of thesis and methods
A theoretical review of a problem
Analysis of the contemporary situation
Proposal of solution
Conclusion
References

**Objectives which should be achieve:**

The aim of the bachelor thesis is to use the theoretical knowledge, tools and methods of project management in the project of the chosen company.

**Basic sources of information:**

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Deadline for submission Bachelor's Thesis is given by the Schedule of the Academic year 2022/23

In Brno dated 5.2.2023

L. S.

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|---|---|
| Ing. Jiří Kříž, Ph.D.<br>Branch supervisor | doc. Ing. Vojtěch Bartoš, Ph.D.<br>Dean |

**Abstract**

The bachelor's thesis focuses on the use of project management tools in a specific company operating in the information technology industry. The project addressed by this thesis aims on the integration of duplicate systems resulting from the merger of two companies with the use of the PRINCE2 framework. The thesis is divided into three parts. The first part describes the theoretical methods and techniques used to process the thesis. The second part analyses the current state of the company and the initial information for the project. The thesis concludes with the third part, which contains the practical application of the methods for project design and the evaluation of benefits for the company.

**Abstrakt**

Bakalářská práce pojednává o využitím nástrojů projektového managementu v konkrétní společnosti působící v odvětví informačních technologií. Projekt, kterým se práce zabývá, je zaměřený na integraci duplicitních systémů vzniklých na základě sloučení dvou společností za pomoci využití metodiky PRINCE2. Práce je rozdělena do tří částí. V první části jsou popsány teoretické metody a postupy použité pro zpracování práce. Ve druhé části je analyzován současný stav společnosti a výchozí informace k projektu. Práce je zakončena třetí částí, která obsahuje praktické využití metod pro návrh projektu a zhodnocení přínosů pro společnost.

**Keywords**

Project management, project, PRINCE2, SMART objective, Gantt chart, WBS, RACI matrix, 7S model, SWOT analysis, logical framework

**Klíčová slova**

Projektový management, projekt, PRINCE2, SMART cíl, Ganttův diagram, WBS, RACI matice, 7S model, analýza SWOT, logický rámec

**Rozšířený abstrakt**

Tato bakalářská práce se zabývá využitím nástrojů projektového managementu v praxi na projektu anonymní firmy operující v odvětví informačních technologií. Projekt samotný je zaměřen na integraci duplicitních systémů konkrétního oddělení, které vznikly následkem vzniku firmy sloučením dvou menších. Zároveň vedení firmy požaduje, aby byl návrh projektu zpracován v rámci metodiky PRINCE2 a mohl sloužit jako předloha pro jeho případnou celofiremní implementaci.

Práce je rozdělena na několik samostatných na sebe navazujících částí. První teoretická část se zabývá obecným přiblížením problematiky projektů, projektového managementu a nejznámějších standardů. Vzhledem k tomu, že vedení firmy vyžaduje použití PRINCE2 je značná část teorie věnována popisu dané metodiky zejména jejích principů, témat, procesů a jejich minimálním požadavkům pro implementaci. Zbytek kapitoly obsahuje popis a definice použitých metod a postupů v rámci analytické a praktické části bakalářské práce. Jmenovitě se jedná o model 7S a SWOT analýzu použitou pro účely analytické části. Pro samotný návrh projektu jsou zmíněny metody logického rámce, RACI matice, SMART cíle, RIPRAN, rozpočet, Ganttův diagram a WBS.

Analytická část práce začíná obecným představením firmy, jejíž projekt je zpracován. Z důvodu nutnosti utajení poskytovaných informací, je firma v rámci práce anonymizována a s tím i určité údaje. Jedná se o mezinárodní firmu vytvářející softwarová řešení v oblasti B2B a B2C.

Model 7S byl využit pro analýzu vnitřního stavu prostředí firmy, a to z důvodu zajištění správného nastavení projektu v rámci neustále se vyvíjejícího se prostředí pramenícího z nedávného vzniku firmy spojením dvou větších. Model pomáhá zjistit, zda projekt zapadá do strategie podniku, jak nastavit komunikaci vzhledem k organizační struktuře, na jaké systémy se lze spolehnout a celkově porozumět prostředí co se týče schopností zaměstnanců, stylu práce, vedení týmů a sdílených hodnot.

Poté je přiblížen projekt samotný. Jak již bylo zmíněno, cílem projektu je integrace duplicitních systémů. Tento cíl vychází z požadavků vedení firmy na snížení nákladů, kdy spojením dvou firem vznikly určité duplicity, týkající se interních systémů a poskytovaných produktů. Úspor má být dosaženo převážně sjednocením systémů, přičemž zůstane zachován počet nabízených značek produktů na trhu. Na celý projekt byl

vyhrazen jeden rok, přičemž po půl roce musí být zaměstnanci pracující na projektu schopni začít vyvíjet nové funkcionality pro zmíněné produkty.

Na základě modelu 7S a úvodních informací o projektu je dále zpracována SWOT analýza projektu, která slouží jako vstup pro samotný návrh projektu. Analýza zkoumá vnitřní silné a slabé stránky projektu a zároveň příležitosti a hrozby, které na projekt působí zvenku.

Poslední a hlavní část práce obsahuje samotný návrh projektu, a to v rozsahu určeném pro schválení pro začátek projektu. Z pohledu PRINCE2 se jedná o procesy zahájení a nastavení projektu.

Zahájení projektu, první část, začíná definicí cíle projektu za pomoci SMART metody a dále obsahuje jako výstupy záznam zkušeností, který firma nemá implementovaný a byl vytvořen na základě rozhovorů s projektovými manažery firmy. Dále logický rámec, který spolu s analýzou zainteresovaných stran pokrývá potřeby obchodního případu a projektového záměru, a zároveň slouží jako centrální dokument pro detailnější výstupy ve fázi nastavení projektu a je v průběhu projektu revidován.

Z pohledu nastavení projektu je hlavním výstupem PID (Dokumentace zahájení projektu), což je dokument shromažďující detailní popisy různých aspektů projektu. Je zde popsána strategie řízení rizik, při níž byla využita metoda RIPRAN, kterou byla zároveň provedena úvodní analýza rizik a jejich ošetření vycházející z předpokladů v logickém rámci, SWOT analýzy a získaných zkušeností. Následně byly popsány strategie řízení kvality a změn. Větší část PID je věnována projektovému plánu, který je stěžejním dokumentem pro řízení projektu z pohledu času, postupu a zdrojů. Plán začíná vymezením klíčových milníků, které slouží obecně pro kontrolu postupu projektu. V další části je vypracovaná WBS, která dělí cíl projektu na nižší konkrétní výstupy a ty dále na jednotlivé aktivity, které je nutné udělat pro naplnění cíle. Na základě WBS a ohodnocení jednotlivých aktivit v logickém rámci byla dále zpracována časová analýza formou tabulky a graficky zobrazena pomocí Ganttova diagramu, kde byla vyznačena kritická cesta projektu. Tyto podklady by měli převážně sloužit projektovému manažerovi pro sledování postupu projektu a jeho řízení. Z časové analýzy je patrné, že projekt má tříměsíční rezervu, ale je nutné počítat s letními dovolenými, vánočními svátky a případným zpožděním. Projektový plán je zakončen návrhem rozpočtu, který z důvodu

utajení údajů o výplatách zaměstnanců a cenách kontraktů obsahuje obecný rozpočet skládající se z nákladů na člověkodny, náklady na rizika a desetiprocentní rezervu z celkových nákladů. Firma si poté může rozpočet doplnit o přesné ceny člověkodnů i s daněmi v závislosti na zemi ve které daná osoba pracuje a zároveň operační cenu systémů.

Na závěr jsou zhodnoceny přínosy, které projektový návrh přináší. Návrh projektu obsahuje vše potřebné pro jeho následné schválení projektovým manažerem a projektovou radou pro zahájení samotných prací na projektu.

Dále je návrh zpracován v souladu s metodikou PRINCE2 a jako takový může být ve stejném stylu projekt dokončen, nebo případně sloužit jako šablona pro posouzení vhodnosti metodiky a její implementaci v rámci celé firmy.

Metody použité v návrhu byly zvoleny na základě požadavků projektu a metodiky PRINCE2 a jako takové mohou být projektovými manažery implementovány pro zlepšení řízení projektů nebo k porovnání stávajících metod.

**Bibliographic citation**

TOMEK, Richard. *The Use of the Project Management Tools in Practice* [online]. Brno, 2023 [cit. 2023-04-26]. Available at: https://www.vutbr.cz/studenti/zav-prace/detail/152550. Bachelor's Thesis. Brno University of Technology, Fakulta podnikatelská, Ústav informatiky. Supervisor Ing. Lenka Širáňová, Ph.D.

**Statutory declaration**

I declare that the submitted bachelor's thesis is an original work that I have written myself. I declare that the citations of the sources used are complete, that I have not infringed upon any copyright (pursuant to Act. no 121/2000 Coll.).

Brno dated 9th May 2023

Richard Tomek

author's signature

**Acknowledgement**

I would like to express my sincere gratitude to my thesis supervisor, Ing. Lenka Širáňová, PhD. for her unwavering support and guidance throughout the entire process. Her expertise and insights have been invaluable in shaping the direction of my work, and her encouragement and feedback have kept me motivated and focused.

# CONTENTS

# INTRODUCTION

Projects surround us on all sides and accompany us through our lives, no matter if we are aware of it or not. Whether we are writing a bachelor's thesis or building a house, there are many situations that can be viewed as projects.

With every project comes a certain amount of uncertainty and therefore it is advisable to manage the project to ensure its benefits and desirability. Here comes the ever-evolving topic of project management and its tools and methods that have become more important than ever in complex business environments. These tools offer a structured approach to managing projects, enabling teams to stay on track, meet deadlines, and achieve project objectives thus reducing the risk of failure. However, a one-size-fits-all approach cannot be applied here, and it is always necessary to choose and integrate the right approach to project management.

This bachelor’s thesis examines and applies specific project management methods in combination with the PRINCE2 framework to a company project and as such serves as a basis for the management of the project and all its subparts. Among other things, the project proposal thus tries to respond directly to the situation of a company that has been created by the merger of two companies, resulting in a clash of different approaches to project management and to show which tools and methods could be integrated.

# GOALS OF THESIS AND METHODS

The goal of the bachelor's thesis is the usage of tools and theoretical knowledge from project management in practice on a project of a company operating in the information technology sector. The project is focused on the integration of duplicate systems that resulted from the merger of two companies while implementing the PRINCE2 framework. By undergoing this project, the company wants to achieve lower costs and resources required for these systems.

The thesis is divided into three parts. The first part aims to introduce the reader to the topic of project management in general and its known standards. After the introduction, the PRINCE2® framework is described as well as several other tools and methods of the project management that are used throughout the thesis.

The second part starts off with the 7S model in order to analyze the new post-merger environment in which the project will be implemented. Furthermore, the project is introduced in more detail and a SWOT analysis is done to provide background information as an input for the project design.

The last part is dedicated to the solution and design of the project to the extent of starting up a project and initiating a project processes and implementing well-known methods of project management with principles and themes of PRINCE2 in mind. The resulting proposal for the project is a combination of outputs resulting from used methods and techniques like SMART objective, logical framework, lessons log, stakeholder analysis, RACI matrix, WBS, Gantt chart, milestones, RIPRAN and budget analysis. The project proposal is concluded with the evaluation of the benefits for the company.

# 1 A THEORETICAL REVIEW OF A PROBLEM

## 1.1 Project

Naturally, projects are the heart of the project management thematic, therefore it is necessary to first define the term project correctly.

According to PMI (Project Management Institute), a project is a temporary effort to create a unique value or change within a certain period of time (1, p. 4).

The time period or temporariness means that a project must have a start and an end. In this context this can be achieved by a specific date of project initiation and either the date of completion, fulfilment of the project's objective or termination due to conditions preventing the continuation of the project (2, p. 20).

A project can be composed of multiple sub-projects and also clustered by affinity into programs (1, p. 4).

The definition by PRINCE2 framework is: "A project is a temporary organization that is created for the purpose of delivering one or more business products according to an agreed business case." (3, p. 8).

## 1.2 Project Management

Based on the definition of a project, project management can be described as an activity that includes all the knowledge, tools and techniques necessary for the best possible management of the project itself, and especially for achieving the desired results (1, p. 4).

As project management is a vast and dynamically evolving topic, several standards have been developed worldwide that provide a kind of guidance or recommendations on how to proceed while managing projects. Among the well-known standards are IPMA's ICB, PRINCE2® or PMI's PMBoK®. The aim of these standards and the organizations that develop them is also to certify project managers to ensure a certain quality of project management (4, p. 24).

With the progressive evolution of project management new methods are emerging. Such as agile methodologies which bring a different approach to project management and offer tools for better responsiveness in dynamically changing industries (3, p. 6).

### 1.2.1 Standards Comparison

**PMBoK®** by PMI divides project management into five processes that define the chronological progress of the project and most importantly ten knowledge areas that play a great role throughout the project's lifetime. According to this, the standard could be considered knowledge-based standard as PMI considers them to be vital for successful project management. On top of that the PMBoK also provides best practices in the terms of each knowledge domain determining what should be done and hinting how (5).

**ICB** by IPMA views the project management from the perspective of the project manager and his team focusing primarily on their skills and abilities. This competence-based standard does not provide any framework for project management, nor does it focus on project processes (4, p. 26).

**PRINCE2®** methodology, unlike the previous is process-based providing a structured framework for managing projects. The framework is characteristic by its versatility for any size and type of a project and it gives its users a certain ability to tailor the methodology to their liking. However, it must be said that PRINCE2 provides the project managers with what should and must be done, but it does not specify how (6, p. 33).

In summary all three standards offer some strong approaches to project management although it is nowhere explicitly stated that project management must adhere to a single standard, suggesting the possibility of combining various standards to incorporate the best practices from each. However, the approach taken should ultimately be tailored to the specific needs of the company conducting the project.

## 1.3 The Triple Constraint

The Triple Constraint are three principal requirements monitored in project management. These are namely cost, time and results. All three variables are interdependent i.e., when

one is changed in any way the other two must necessarily change too. This implies an attempt to balance them in the most optimal way in project management (4, p. 66).

The three requirements can be displayed in a form of a triangular graph, where the individual points can be seen as differently defined SMART goals (4, p. 66).

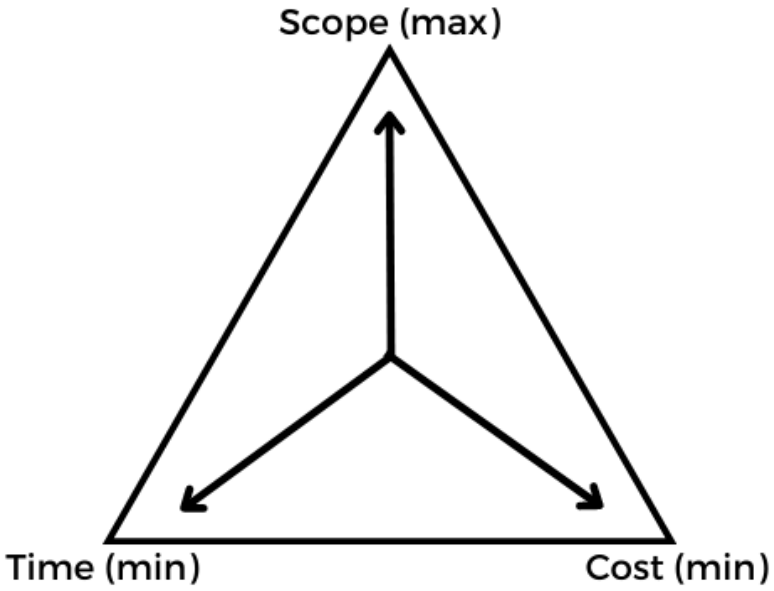


**Figure 1: The Triple Constraint**
(Source: Own processing according to: 4, p. 66)

## 1.4 SMART Objectives

The very definition of a project implies that the main aim is to achieve the stated objective in the best possible way. For this reason, it is important for the success of the project that its objective and all sub-objectives are well defined. This means that the objective makes it absolutely clear to the stakeholders what is to be achieved, to what extent and why. To facilitate the setting of objectives that meet these aspects, it is useful to use the SMART technique (4, pp. 65–66).

The SMART technique helps to choose the appropriately defined objectives. The name is an acronym defining all the aspects of a SMART goal that should be met.

(S)pecific – The objective must be concrete and answer the What question.

(M)easurable – The objective must be measurable and have clearly defined metrics.

(A)greed – The objective must be accepted/agreed upon by all its stakeholders.

(R)ealistic – The objective must be achievable.

(T)imed – The objective must time-limited.

The abbreviation SMART can also be extended to SMARTi where the letter “i” denotes a goal integrated into the organizational strategy (4, p. 66).

## 1.5 SWOT Analysis

The SWOT method allows us to analyze a specific subject of interest (e.g., project, company, project team etc.) from four perspectives. These are namely the strengths and weaknesses of the subject of analysis, which can also be identified as being of internal origin, and on the other hand the opportunities and threats whose nature is of an external kind. To clarify, it should be said that the name SWOT is an abbreviation formed from the initial letters of these four aspects (4, p. 102).

In the case of SWOT analysis for any project, the individual aspects can be looked at as follows:

**Strengths** are internal factors that are beneficial for the project and their identification allows us to leverage them for the success of the project. Examples include an experienced team, an actively involved customer or detailed project requirements (7).

**Weaknesses** also originate from the internal environment of the project and represent harmful elements for the project itself. Their identification might be used in the risk analysis. As an example, we can reverse the strengths i.e., an inexperienced team, an uncooperative customer or lack of funding (7).

**Opportunities** can be seen as external factors beneficial for our project that we cannot control. For instance, a sudden discount from a supplier, the launch of a new software tool, or the sudden completion of another project freeing up resources (8).

**Threats**, as well as opportunities, are external factors that cannot be influenced, but on the contrary pose a danger to the project. A recent example of such a threat is the Covid-19 pandemic, which affected the entire economy (8).

A table format can be used for the actual analysis (Figure 2) (4, p. 61).

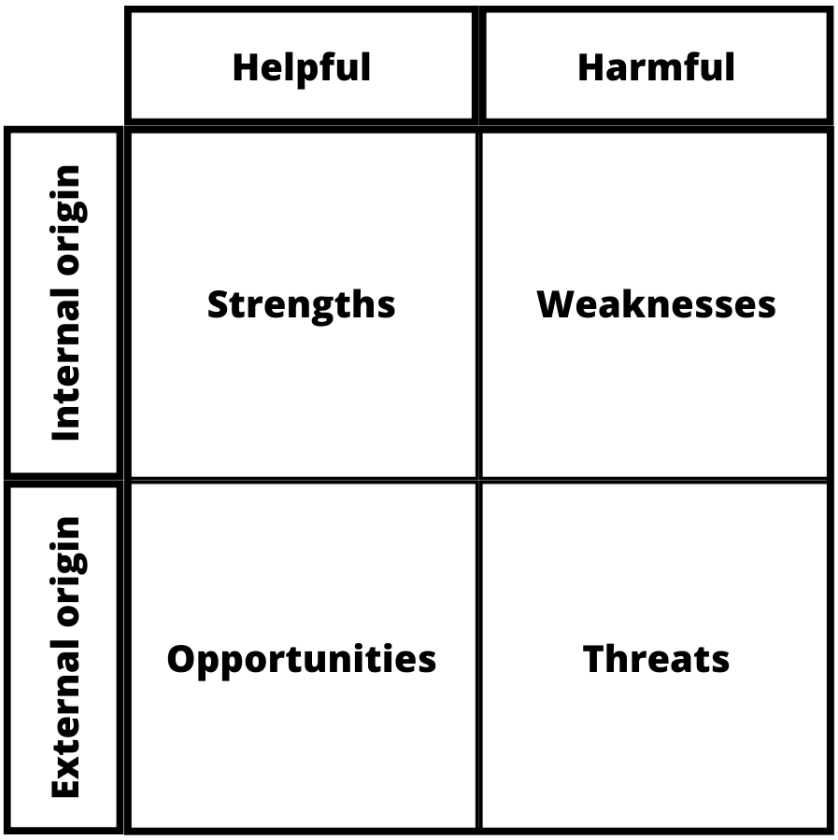


**Figure 2: SWOT analysis matrix**
(Source: Own processing according to: 4, p. 61)

## 1.6 McKinsey 7S Model

McKinsey 7S model belongs to the recognized methods of strategic analysis, which views the company as seven interconnected internal factors. As a result, we are able to look specifically at whether all the factors are aligned with each other and in case of adjustments better identify how change of one aspect will necessarily affect the others. The purpose in terms of corporate strategy is to also place greater emphasis on human resources and their importance to the company's performance (9).

All seven factors are divided into two groups e.g., "Hard S's" and "Soft S's". Among the "Hard S's" are the company's strategy, structure, and systems. The name hard is derived from the fact that information about these aspects are easily available in internal documents and can also be more easily changed and identified (9).

The second group “Soft S’s” includes style, shared values, staff, and skills. These elements depend on human resources and therefore are harder to identify, but they also form a key role for performance (9).

From the project management perspective the analysis enables us to adjust the project to be as aligned as possible with company’s goals (10).

## 1.7 PRINCE2®

PRINCE2 (PRojects IN Controlled Environment) is one of the most known project management methodologies. The methodology itself is based on experience from previous projects and has been continually improved over the years of its existence. Its strengths include the fact that, despite its origin in the IT industry, it is applicable to any project and company of different size and complexity based on the principles it applies. The structure of the PRINCE2 method is divided into four areas: principles, themes, processes and the project environment (6, pp. 33–34).

### 1.7.1 Principles

The method identifies seven principles which must be met for the project management to qualify as PRINCE2. Each principle defines the necessary minimum requirements that must be satisfied. However, it does not further define the way how these requirements should be achieved (6, p. 59).

**Continued business justification**

The first principle defines that the project must be justified before its authorization, preferably in a form of a viable business case, and throughout its lifetime at all major decision points (3, p. 12).

The minimal requirements are:

- The start of the project is justifiable.
- The justification is documented and approved.
- The validity of the justification is checked throughout the life of the project and is guaranteed to be up to date (6, p. 60).

**Learn from experience**

There are three phases defined where learning from experience should take place:

- At the start of the project, similar projects should be reviewed for different experiences that will help avoid specific mistakes during the project, and instead apply good working practices.
- As the project progresses, opportunities to improve the delivery of the project should be sought and noted.
- At the end of the project, the experience should be passed on as a record for possible future projects (6, p. 62).

**Defined roles and responsibilities**

Across the project, the roles of each participant and what they are responsible for and to whom are clearly defined and documented. Furthermore, to meet the method's requirements, the project must have at least three primary stakeholders (6, p. 63).

- A business sponsor whose aim is to ensure that the investment delivers value for the invested money.
- A user who will use the resulting product after the end of the project in order to achieve the expected benefits of the project.
- Supplier, external or internal participants on the project who bring everything needed to complete the project (6, p. 63).

**Manage by stages**

The PRINCE2 project is split into consecutive stages, where each stage is managed by a project manager. At the end of each stage the project board reviews the progress, project plan, business case and the next stage. The number of stages varies according to the complexity of the project and the form of its management, but it must have at least two stages (6, p. 64).

- A project initiation stage.
- At least one additional management stage (6, p. 65).

**Manage by exceptions**

This principle states that when delegating responsibilities, it is necessary to specify a certain level of tolerance within which the responsible person is able to make decisions without having to seek the approval from the higher level of management. Tolerances are set at six levels: cost, time, quality, scope, benefits, and risks. Only when a deviation from these boundaries occurs then the responsible person is obligated to contact the higher level of management for further action (6, p. 67).

**Focus on products**

The method demands the project to be primarily focused on the product being delivered to the customer. This means that great emphasis is placed on defining and understanding the customer's requirements and of what quality (6, p. 68).

**Tailor to suit the project**

One of the main advantages of PRINCE2 as a project management methodology is its usability for any project regardless of the context, size, or experience of the team. This implies the expected need of tailoring to fit the needs of the business and the specific project (6, p. 71).

### 1.7.2 Themes

PRINCE2 presents seven themes which are areas of project management that need to be addressed throughout the project. Each theme should help us answer questions such as why, what, who, how much, etc. Apart from that, individual themes provide minimal requirements for them to be seen as PRINCE2, where each requirement is closely linked to the principles of the method (6, pp. 92–93).

**Business case**

The business case is mainly based on the first principle (continued business justification) and as such should provide the base material for justification of the project. For the business case to be considered PRINCE2 the method requires it to be documented and reviewed at each stage of the project, alongside that, the business case should include reasons why the project should be undertaken and also check its desirability, viability and achievability (6, pp. 98–100).

The form of the business case is not strictly given, but the theme outlines several general points for the document to be applicable. These are mainly the reasons for the project, other options considered, benefits, potential negative benefits, costs, timeframe, investment appraisal, risks and evaluation (3, pp. 30–32).

**Organization**

The theme of organization is tightly connected with the "Defined roles and responsibilities" principle and minimally requires the project to have clearly defined structure, change authority, communication style and roles with their corresponding responsibilities in the project (6, p. 122).

The basic roles are:

- An executive, a person responsible for the project.
- A senior user representing those for whom the project is done.
- A senior supplier responsible for delivering the project.

These three roles together form the project board, which must be completely present in every project (6, p. 123). Among other roles are:

- Project Assurance, for the primary stakeholder's interests.
- Change Authority, for any possible changes in project.
- Project Manager, for the day-to-day project management.
- Project Support, possible help for the project manager.
- Team Manager, responsible for the delivery teams (11).

Output of this theme should be at least two documents, namely the PID (Project initiation document), where the organization is recorded and then a document describing the communication management within the project (6, p. 123).

**Quality**

To meet the quality theme, the project must have clearly defined:

- An approach to quality management that includes quality control, project assurance, communication, and roles responsible for quality management.
- Quality criteria for each product.
- A quality control register.

- Specification of customer expectations and acceptance criteria (6, pp. 162–163).

**Plans**

The theme of plans allows for the project to be managed effectively. It determines what, when, how and by whom it will be done and in what relation to other activities (6, p. 189). For this theme to comply with PRINCE2 it is necessary to:

- Plans must make the business case achievable.
- They have at least two management stages.
- There is a project plan and individual stage plans.
- The roles for planning are defined.
- The plan for exceptions exists.
- A product approach is used to create plans (6, p. 194).

**Risk**

The purpose of the risk theme is to define an approach to risk management (6, p. 237). The requirements for risk management are:

- A definition of how the risks are identified, approached, and communicated through the project.
- The identification of roles responsible for risk management.
- A risk register.
- Risk revision throughout the course of the project (6, p. 240).

**Change**

Identifies how the change is approached in the project (6, p. 276).

According to Bentley: "Change directly supports the principle of "focus on products" and "manage by exception" and indirectly the "continued business justification" principle." (3, p. 100).

The minimal requirements are:

- The approach to change management must be defined. Namely how issues are identified and addressed, the ability to determine whether the change will affect the business case.
- Defined roles responsible for change management.

- Existence of an issue register.
- Assurance that each issue/change was investigated and approved (6, pp. 281–282).

**Progress**

The theme of progress should provide a mechanism for monitoring and control of how the project objective is being achieved, thereby continuously verify the viability and possible deviations of the project (6, p. 297).

The minimum requirements of PRINCE2 are:

- Defined approach to progress control.
- Progress control is managed by stage basis.
- Tolerances are set and when an exception occurs the project justification is reviewed (6, p. 298).

### 1.7.3 Processes

The PRINCE2 framework is composed of seven processes, which present all the steps of project's lifecycle and help to ensure that work is completed in a controlled and manageable way. From the process definition it can be derived that each PRINCE2 process contains one or more activities requiring some inputs and resulting into defined outputs (6, p. 316). Every PRINCE2 project must address each process but it is up to the project's complexity to what extent, given the last principle: Tailor to suit the project environment (3, p. 20).

For a better understanding of the connections and link between processes see the figure below.

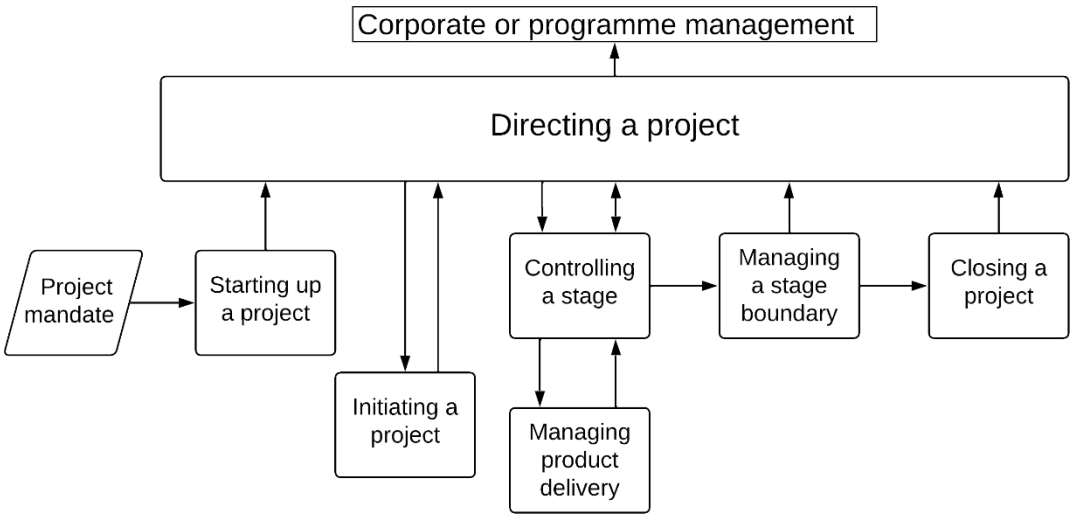


**Figure 3: PRINCE2 Processes**
(Source: Own simplified processing according to: 3, p. 20)

### Starting up a project

The first process begins with a project mandate, which is an initiative for the project given by the corporate management. This process serves to outline the basic attributes of the project a most importantly provide sufficient information for deciding whether the project is viable and worthwhile (6, p. 328). It should be noted that it is not desirable for this process to take too long, as the detailed analysis of the project occurs later in the initiating a project process.

Among the initial inputs are the project mandate and previous project lessons reports which are then used to create these respective outputs:

- Lessons log capturing usable previous lessons and a placeholder for any new lessons to be identified.
- Project brief which serves as a reference document for the information about the project including:
    - Outline business case as a first version of business case.
    - Project team and job descriptions.
    - Project definition like stakeholders, tolerances, budget, timeframe etc.
    - Project approach chosen from approaches mentioned in business case (3, pp. 264–266).

### Directing a project

The directing a project process is a recurring process, first initiated after starting up a project process, designed to allow the project board to make mainly important decisions. Among these are giving approvals, communication with stakeholders, reassessing project viability and progress or dealing with exceptions (3, p. 162). This means that the day-to-day decisions and activities of a project manager are omitted. The respective activities indicate the occurrence of the process in the project lifecycle (6, p. 352).

The activities are:

- Authorize initiation – appears straight after the starting up a project process.
- Authorize the project – decision point whether the project should start, having more detailed information from PID.
- Authorize a stage or exception plan – appears after each stage or in case an exception occurs.
- Give ad hoc direction – can occur if immediate guidance from project board is needed.
- Authorize project closure – project board must assess whether the objective was fulfilled and close it properly (6, pp. 354–367).

### Initiating a project

In this process the project already has an approval and more detailed preparations can be done. This should be the time when a more solid foundation is created for the project and the organization gets a more concrete information on what the project will require (6, p. 374).

To achieve this goal the process contains several activities for which the project manager and his/her respective project assistance are responsible (3, p. 142). The most important activities are:

- Preparing the quality management approach.
- Preparing the risk management approach.
- Preparing the change management approach.
- Preparing the communication management approach.

- Creating the project plan.
- Refining the business case.
- Setting up the project controls.
- Assembling the project initiation documentation (PID) (3, pp. 144–158).

**Controlling a stage**

The process begins the start of a new stage and manages the project until it is completed. The person responsible here is the project manager, whose main goal is to manage all day-to-day activities like assigning work and reviewing the work done. A very important aspect is the effort to keep the stage on track and within its given tolerances like costs, time, risks, issues, quality, and scope. All of the above mentioned is simultaneously reported to the project board (3, p. 174).

**Managing product delivery**

Compared to the previous phase, here responsibility is taken over by individual team managers who take over the individual tasks from the project manager and ensure that the team delivers them (6, p. 437). This can be described by the three activities present:

- Accept a work package – the details of the work to be done are agreed upon.
- Execute a work package – in this activity the work is done.
- Deliver a work package – the result is consulted and handed to the project manager (3, pp. 194–198).

**Managing a stage boundary**

Managing a stage boundary always appears between two stages, starting with confirming of what has or has not been achieved in the previous stage and logging any new lessons. This leads to the refinement of the project plan and the business case. In the end the new information is reevaluated by the project board to decide whether the project is still viable and to approve the next stage (6, p. 452).

**Closing a project**

The last process defines a clear end to the project indicated not only by achieving the objectives but by termination or achieving just a part of the objectives. All the reasons must be validated by the project board and the project manager assures that the mentioned

goals have been achieved and products handed over before the closure (6, pp. 474–476). The underlying activities are:

- Prepare planned or premature closure.
- Hand over products.
- Evaluate the project.
- Recommend project closure (3, p. 214).

### 1.7.4 Project Environment

The structure of the PRINCE2 method allows companies to create a range of customizations to suit their needs, thus creating a company-wide project management approach that complies with the requirements of the method. This common approach contributes to the project management effectiveness where new projects can better benefit from old ones and the project team can use the appropriate company chosen methods. Furthermore, the standardization of these approaches within the company contributes to more effective staff training and eases the possible changes in the project team composition (6, p. 86).

## 1.8 RIPRAN

Risk analysis method called RIPRAN (RIsk PRoject ANalysis), which was created by B. Lacko, is defined as a sequence of consecutive processes which are designed to analyze risks before the start of the project and to gradually modify the risk register during the project duration (12).

The method comprises of four main processes:

### 1.8.1 Project Threat Identification

The first step of the analysis is to identify threats that might endanger the project. The identification can be approached in a way where search for different scenarios for the threats or vice versa by looking up different possible threats for the scenarios. The output of the first phase is a table mapping threats and their scenarios (4, p. 90).

**Table 1: First step of the RIPRAN method**
(Source: Own processing according to: 4, p. 90)

| Risk id number | Threat | Scenario | Note |
|---|---|---|---|
| 1. | Description of the possible threat | Description of the consequences | Additional information |

## 1.8.2 Project Risk Quantification

The next step for the team is to expand the table with the probability that a certain scenario will occur, and the value of the impact it will have on the project. The respective values can be written down as specific numerical values or quantified verbally based on the verbal value tables (Table 2-5). The resulting risk value is computed as **Risk value = scenario probability * impact value** (4, p. 91).

**Table 2: Verbal probability values**
(Source: Own processing according to: 4, p. 91)

| | |
|---|---|
| **High probability – HP** | Over 33 % |
| **Medium probability – MP** | 10–33 % |
| **Low probability– LP** | Under 10 % |

**Table 3: Verbal values of negative impacts on the project**
(Source: Own processing according to: 4, p. 92)

| | |
|---|---|
| **High negative impact – HI** | Damage exceeding 20% of the project budget, compromising the project's objective or deadline. |
| **Medium negative impact – MI** | Damages between 0,51 – 19,5 % of the project budget, compromising a part of the project i.e., need of emergency intervention in the project plan. |
| **Low negative impact – LI** | Damages below 0,5 % of the project budget, impacts require some adjustments to the project plan. |

**Table 4: Verbal risk values**
(Source: Own processing according to: 4, p. 92)

| |
|---|
| High risk value – HRV |
| Medium risk value – MRV |
| Low risk value – LRV |

**Table 5: Verbal risk value assignment**
(Source: Own processing according to: 4, p. 92)

| | **HI** | **MI** | **LI** |
|---|---|---|---|
| **HP** | HRV | HRV | MRV |
| **MP** | HRV | MRV | LRV |
| **LP** | MRV | LRV | LRV |

**Table 6: Second step of the RIPRAN method**
(Source: Own processing according to: 4, p. 91)

| **Risk id** | **Threat** | **Scenario** | **Probability** | **Impact on the project** | **Risk value** |
|---|---|---|---|---|---|
| 1 | Threat description | Scenario description | Probability value | Impact value | Resulting risk value |

### 1.8.3 Project Risk Response

The third step involves assessment of the risk values and development of specific measures. The purpose of the measures is to mitigate the level of risk to an acceptable extent for the project (4, p. 93).

**Table 7: Third step of the RIPRAN method**
(Source: Own processing according to: 4, p. 93)

| **Risk id** | **Proposed measure** | **Cost, Deadline, Person responsible** | **New value of the reduced risk** |
|---|---|---|---|
| 1 | Description of the proposal | • How much will the measure cost<br>• When it will be realized<br>• Who is responsible for it | The resulting risk value |

### 1.8.4 Overall Project Risk Assessment

Almost the last step is to evaluate the overall risk of the project. In case the risk level is too high and cannot be reduced, it is necessary to consult the problem with senior management (4, p. 93).

It is almost the last step because the method assumes continuous monitoring and evaluation of risks in case the project launches. For this purpose, a risk register should be maintained, which was introduced in the latest version of the method (13).

## 1.9 Logical Framework

Logical framework is a document coming from the LFA (Logical Framework Approach) which was developed by L. J. Rosenberg in cooperation with USAID (United States Agency for International Development) (4, p. 67). The USAID defines the logical framework as:" The Logical Framework is as much a way of thinking about development projects as it is a one page tool for summarizing the key elements of a project design and establishing a basis for project monitoring and evaluation." (14).

The LF can be represented in a form of a table or matrix of 4x4 format in the table below.

**Table 8: Logical framework matrix**
(Source: Own processing according to: 4, p. 68)

| | | | |
|---|---|---|---|
| Purpose | Indicators | Means of verification | |
| Objective | Indicators | Means of verification | Assumptions |
| Outputs | Indicators | Means of verification | Assumptions |
| Activities | Resources | Timeframe of activities | Assumptions |

The specific meaning and their links are:

- **Purpose** represents to what cause the project contributes, why is it realized and what is expected from it after its completion.

- **Objective** expresses what specific change is achieved by the project and what is the desired state after its end.
- **Outputs** are the specifics that need to be delivered by the project in order to achieve the objective. They define what will be done in the project.
- **Activities** tell how each output is to be achieved; moreover, they represent inputs to the project as they are evaluated by their timeframe and resources needed.
- **Indicators** represent how the progress of either purpose, objective or outputs is measured in a quantitative or qualitative way.
- **Means of verification** linked to indicators represent how the indicators will be verified and where the data will be gathered from representing specific documents, metrics etc.
- **Assumptions** connect rows by the logic: if we successfully complete all activities what assumptions must be met in order to successfully achieve the outputs. This same logic applies for the combination of outputs-assumptions-objective and objective-assumptions-purpose.
- **Resources** are bound to their respective activities and can represent money, people, man-days or any other resource needed by the activity.
- **Timeframe of activities** on the other hand represent the time needed to complete the activity (4, pp. 68–71).

## 1.10 Work Breakdown Structure

Better project planning and management can be achieved by using the WBS which is a tool that helps to breakdown the project objective into smaller outputs. The detail acquired from WBS helps stakeholders to better understand the scope of the project and the overall work that needs to be planed and done to achieve it (15, p. 3).

The structure is based on the parent-child relationship between deliverables which are distributed in different levels of the WBS. The starting level zero has only one deliverable and that is the project objective which acts as an ultimate parent to level one deliverables. Depending on the detail needed, every deliverable can be broken down into more specific child deliverables that make it up (15, p. 4).

As shown in the figure below the WBS is usually presented in a tree-like structure.

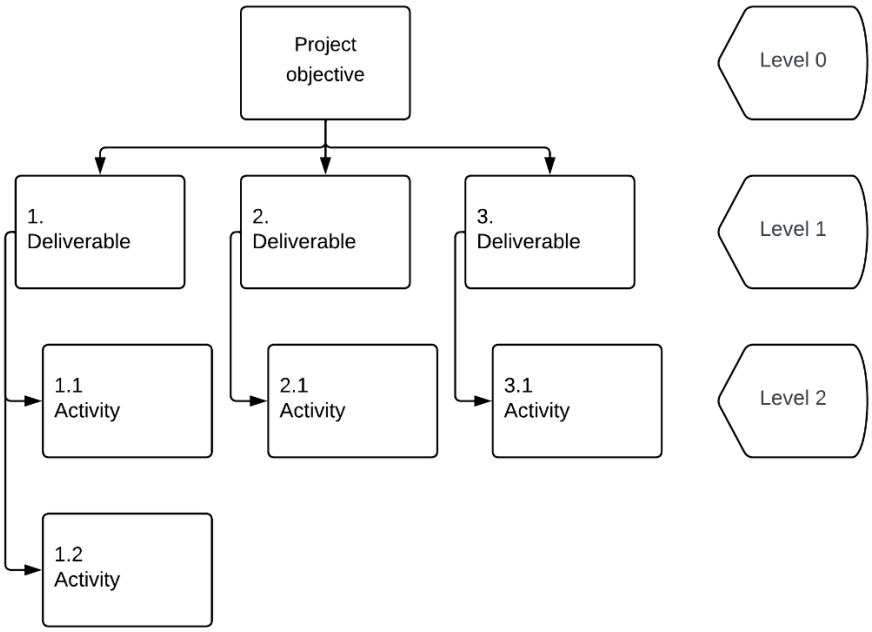


**Figure 4: WBS diagram**
(Source: Own processing according to: 15, p. 8)

## 1.11 Gantt Chart

Gantt chart is a widely used project planning technique that helps project managers to track the progression of the project as it displays individual activities, their duration and their order in a clear manner (2, p. 152).

The way a Gantt chart is visualized is by having activities on the left side and their respective duration shown as bars in a timeline of the project. Depending on the needs of the project manager and the possibilities of his tools the Gantt chart can be expanded by dependencies, critical path calculation or individual activity progression bar (16).

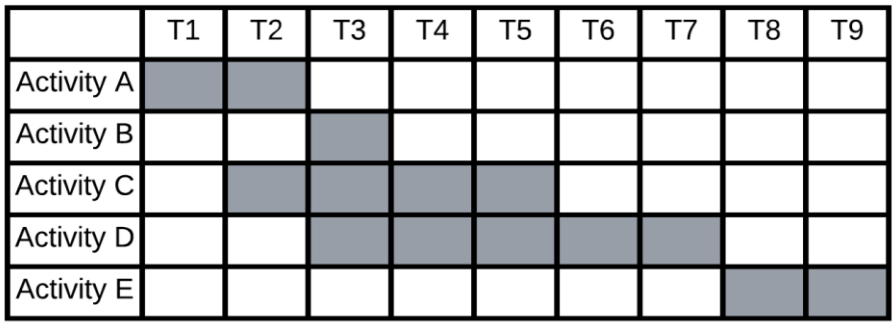


**Figure 5: Sample Gantt chart**
(Source: Own processing according to: 2, p. 153)

## 1.12 RACI Matrix

RACI matrix is a type of RAM (Responsibility Assignment Matrix) that is used in project management to clearly distinguish between stakeholders and their respective roles in different activities in the project (17). The specific roles are according to the acronym:

- **Responsible –** Role or a person responsible for delivering the activity. There should be only one responsible person, yet it is not excluded that the work will be divided between more people by the responsible role.
- **Accountable –** Role or a person ultimately accountable for the output. This role is not in the role of a doer but rather more of a decision maker and owner of the activity and its result. There must be only one accountable person.
- **Consulted –** Anyone whose input on the activity might prove useful and should be consulted for best practices, risks, opinion etc. Usually someone with deep knowledge in the specific area of expertise.
- **Informed –** Indicating someone as informed means they should receive any major information about given task like changes, issues, or progress updates. Being informed does not come with any further responsibilities over the task so it is usually unwanted to be kept in a loop about every detail (17).

## 1.13 Budget

The project budget is part of the project plan and helps project managers to estimate and measure the financial resources needed for the project. At the beginning of the project, budget estimates can be approximate and based on the general project objective and then more specified as the timelines for specific activities are developed. The cost part of the budget tells us how many resources the project needs and may include personnel, equipment, materials and other resources (4, p. 203).

The project budget should also include some reserve for risk management and room for the project manager to make decisions (1, p. 62).

# 2 ANALYSIS OF THE CONTEMPORARY SITUATION

This part of the thesis starts off by giving a basic description of the company where the project is taking place and explains the situation in which the company finds itself at the moment. Due to the nature and the recency of the project, it was required by the company to anonymize any given information in order to prevent any possible unwanted leak of secret information and harm to the business.

Followed by the 7S model which analyzes the current state of the company and the links between these elements were used as a guidance to ensure the alignment of the project management and the project within the company.

Furthermore, the chapter explores the initial information about the project given by the corporate and builds a certain background for the practical part of the thesis.

The chapter is concluded with a SWOT analysis of the project assignment. The analysis provides supportive information for several aspects of the project and can be taken as an additional input.

## 2.1 Company Introduction

The company XXX Inc. is a multinational software company that was recently established by a merger of two smaller companies in the same industry (18).

The merger has resulted in a significant increase in the company's size and reach, with operations spanning multiple continents and serving a diverse range of clients across various software areas. XXX Inc. has quickly established itself as a major player in the software industry, offering innovative solutions and cutting-edge technology to help its clients stay ahead of the curve (18).

With a talented and experienced team of professionals from both companies, XXX Inc. is well-positioned to drive growth and success in the years to come (19).

**The Product**

The main business activity of the company is the development and provision of software solutions, historically focused on the B2B market, now aimed to gain market share of the

B2C segment. This means that most of the products are being delivered to other companies in the form of a tailored contract, bought as a standalone product or a bundle of several services.

The development is mainly focused on desktop and marginally on smartphones and IoT devices. The fact that such a large portfolio requires knowledge in many technological areas means there are many specialized departments in the company that focus usually on a certain area i.e., front-end, backend and infrastructure, etc.

## 2.2 7S Model

The reason for the use of the 7S model is to better map the current internal state of the company and another equally important reason is the fact that the company is relatively new and not all the elements have been properly and formally documented. Having all the information in a formalized manner should help better understand the new environment the project will be done in and provide guidelines for its management.

All the information that the 7S model is based on comes either from anonymized company sources like internal websites, documents etc. or from interviews with managers and other employees.

**Structure**

The company's organizational structure is functional, which in this case means that there is a CEO (Chief Executive Officer) at the top of the company. The CEO has several other chief executives directly below him in the structure and together form the executive team accountable to shareholders and for the company. Generally, the structure can be viewed in a form of a tree-like structure as shown in the picture below where every manager (starting with chief executives) has several subordinates and present a single source of authority for them. These subordinates can be lower-level managers or other employees like developers etc. which respectively form teams (20).

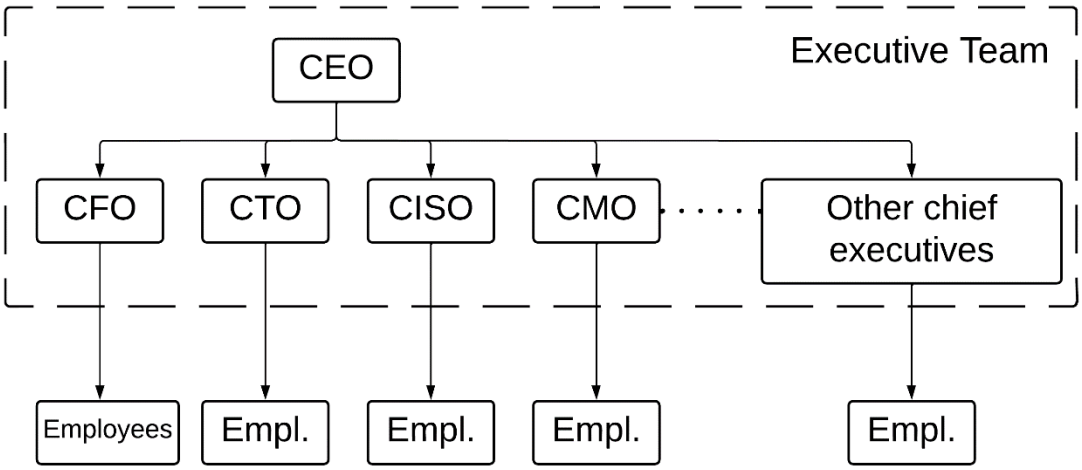


**Figure 6: Simplified organizational structure of the company**
(Source: Own processing)

In relation with the structure comes the top-down management style employed throughout the whole company. In reality this means that top-management comes up with vision and strategies and the middle management is then responsible for their respective subordinate units' contributions. Along with data-driven approach this gives middle and low management more freedom to manage their teams and way they work.

**Strategy**

After the merger the company's strategies are mostly aimed on reducing costs and improving efficiency in order to achieve stable growth. The two main strategies are defined as for the company to become more customer oriented and transfer its operations to cloud wherever possible (21).

The most outstanding strategy of all is the transformation of the company to be customer oriented. The idea behind this strategy is that historically the main source of business was the B2B software industry, and B2C was considered a marginal matter. However, management sees an opportunity to concentrate more on the B2C market, as they believe the number of people using devices connected to the internet will only increase in the future (21).

In addition to targeting B2C market, the company is also exploring the possibilities of cloud technology. By leveraging the opportunities of cloud computing, the company could enhance its existing products and create new ones that are more convenient for

different types of customers. Additionally, cloud technology might lead to a cost reduction as the solutions run in cloud are more scalable, secure, and cost-effective, while reducing the need for intensive maintenance of the on-premise solutions (21).

**Systems**

To run the company's operations smoothly and ease up the repetitive tasks the company employs several systems both external and internal.

The Microsoft 365 bundle is used for team cooperation and dealing with general day-to-day tasks. Additionally, the SAP solution is deployed in the terms of HR, financial management and CRM (22).

Apart from paid third-party services the company more than welcomes the initiative from its employees, who are mainly technically focused and capable of creating their own supportive software that is deployed throughout the company's systems.

For written communication purposes the Microsoft solution is used company-wide ideally Microsoft Teams for informal communication and Microsoft Outlook for formal e-mail communication like payroll and contact with customers and partners. The real situation is that most of the communication goes through e-mail because of ineffective integration of MS Teams and transition from Slack. In the terms of video conferencing the Zoom application is used on daily basis (22).

**Staff**

In the company there are more than two thousand five hundred employees worldwide. Most of them have the opportunity to work from offices situated in most capital cities or choose to work from home as well as to combine these two options.

The staff can be internally divided into three groups: managerial, administrative, and technical positions.

Technical staff, the most numerous group, is responsible mostly for delivering the products, which includes development, design, maintenance, and support. The positions are ranging from front-end, backend developers, QA engineers, tech support, UX/UI designers, and others. Apart from delivering products to customers there are also many internal technical supportive roles that maintain the technological aspects of the company such as IT support and network engineers.

The second, administrative group, consists of roles varying in responsibilities. These are namely the HR, PR, and legal departments; each department doing its best to keep the company functioning smoothly whether from internal or external perspective.

Lastly the managerial positions account for all roles with any kind of decision capacity starting with senior management and ending with team managers. Scrum masters in agile parts of the company also count as management positions even though their role represents more of a guide and not of a decision maker.

Apart from employing the experts of the industry the company is also keen on raising its own experts from junior positions by engaging in internships for students and cooperating with companies specialized on requalification.

**Skills**

Based on the industry in which the company operates come the requirements for workforce mainly focused on technical skills. However, regardless of the position, there is currently a balance between the people with a very narrow yet deep knowledge of a certain area and the people who possess a wider breadth of knowledge in more than one area but in such detail. The trend in the company is the preferability of employees with broader knowledge because of their ability to better adapt in a rapidly changing environment such as the IT sector.

There is also an emphasis on a mix of juniors and seniors so that juniors have enough mentors to learn from and at the same time bring fresh ideas for seniors. The education of employees is also supported internally by the possibility to attend various conferences, workshops, use learning portals and switch jobs internally.

The skills overall are being measured through quarterly skill evaluation conducted by respective managers and reported to HR for monitoring and possible evaluation and feedback.

**Shared Values**

The mission statement of the organization stands as: “Our mission is to develop secure and reliable software solutions that empower individuals to leverage the digital realm with confidence.” (19).

To better establish the culture of the new company four core values have been defined:

1. **People –** "Customer driven and community minded approach. The goal of every workday should be based on making the lives of our customers easier. The drive comes from the positive impact that we can have on all the communities in which we live and work."
2. **Innovation –** "Think big and be bold. We empower and inspire one another to think in new ways and to embrace change. We take calculated risks and learn fast to drive innovation across the business."
3. **Culture –** "Keep it real and make it happen. We are authentic, open, and treat one another with respect. We do what we say and say what we do with integrity."
4. **Operations –** "Play to win. We act with passion, purpose, and energy to win with customers and in the marketplace. We leverage the strength of our global team, knowing we are more powerful together (19)."

**Style**

The management style of the company is considered to be top-down where decision-making and control flow is from the senior management down to lower levels. In practice this is more benevolent in terms where senior management sets out goals to be reached and middle management has the space to come up with ideas how to achieve them along with lower tiers of the company.

Looking at the specific teams of the company there are two prevalent management styles. The first one is classical directive approach where employees are told what to do by their manager. On the other hand, recently there has been a trend in creation of new self-managing teams where the manager serves the role of a leader and link to the upper levels of management and other departments.

To share important information with the whole company the senior management uses a form of a quarterly all-hands meetings. As an example, the information shared can range from new vision of company or quarterly company performance reports to changes in employee benefits.

## 2.3 Project Introduction

The project introduction is based on the interview with the lead project manager and his knowledge of the project assignment, which was verbally communicated by the CTO.

The impulse for the project came from the merger, where two companies with very similar product portfolios became one, while the number of products remained the same. At that time, the CEO decided that among other goals for the near future, cutting costs will be the most important one in order to adjust and kick-start the new company.

The CTO of the company has decided that with the intention of achieving cost reductions as said by the CEO, a project will be undertaken to integrate the internal systems and systems of all products that provide the same or similar services while keeping the product portfolio size. As an example, a service provided previously by both companies under their own brand must be kept in order to retain its customers, but the systems behind these services must be integrated into one thus achieving reduced cost for decreasing the number of systems, easier maintenance, and overall lower demand for workforce.

Besides the main goal of the project the CTO also defined several other specifications that must be met in order for the project to be successful.

Firstly, the time boundaries are set for the project to be done in one year and to have all the teams responsible for these products at their full disposal for whole half a year. This means that after one hundred and eighty days the teams should again be capable of working on other tasks and the development of the products besides contributing to the project.

Moreover, even though the company has no given project management method that is used regularly by everyone the senior management requires the project to be managed in a PRINCE2 manner. The reason is that most of the current project managers are used to this framework, and it would be desirable to later set up some ground rules for project management and standardize certain processes.

## 2.4 SWOT Analysis

Given the information obtained through the 7S model about the company, the basic project information and further interviews conducted with experts on the project itself

like team leaders, senior software engineers and others, the SWOT analysis was done for the purpose of assessing the protentional strengths and weaknesses that come within the project and opportunities and threats that may occur. The results of the analysis should serve as supporting material for several parts of the project e.g., risk analysis, planning etc.

The specific factors identified for a project of integration of similar software products are:

**Strengths**

Both companies that the new company is made of have a rich history of mergers and acquisitions of other companies of different sizes. This fact and the fact that the company has historically gone through some integration projects before suggests the project itself can draw on the knowledge making it more likely to be successful.

Furthermore, this also means the company has a strong domain expertise with a stable core of workers and ability to leverage domain knowledge even in a newly merged company. Also, the uncertainty of retraining or recruiting new employees is mitigated, making it possible for the project to progress faster.

The integration itself implies that some parts of the system will be removed, and some must be modified. If planned properly the developers can leverage this fact to get rid of obsolete codebase and use only the best from both solutions making the final product not only cost effective but better.

All the products that will be part of the integration process have a strong customer base with a relatively stable behavior which eases the need to acquire new customers and rather focus on the project itself.

Lastly, the profitability and size of the company create a safety cushion for investments and potential mistakes. This is a very important factor as it helps to negotiate better conditions for the project and ensure its success.

**Weaknesses**

The biggest internal weakness of the project stems from the merger itself. Each company brough both different company and national cultures together and it must be expected that there may be issues in terms of different team management approaches see 7S model. The

formation of new teams consisting of different cultural backgrounds and work styles may take more time than in the case of team formation in a longer established company.

For most of the teams the project will mean a transition from a product-based development to a project-based development which will disrupt habits and ways of working.

While reducing obsolete codebase can be a strength, it's important to consider the potential technological debt that may arise due to the long existence of products. This debt can impede the integration process and, in the worst case, be transferred to the new solution. It's crucial to thoroughly analyse and address any technological debt before proceeding with integration to ensure a seamless transition and prevent any setbacks.

**Opportunities**

The integration of products and services will in cases of use cloud services also mean that only one provider will be used. The joined-customer base might provide the company with much better negotiating power over the service providers. Resulting in probably getting a better deal from the current provider or having the possibility to choose a different one.

According to GlobalStats statcounter mobile devices have exceeded the share in the market over the desktops from year 2016 to 2017 see chart 1 (23). Bearing in mind that the products of the company are mainly aimed at the desktop user market the savings achieved through the project could possibly lead to the extension of the products to a mobile device market. In addition, the amount of smartphone users has since 2016 nearly doubled indicating this device very desirable and available to more people (24).

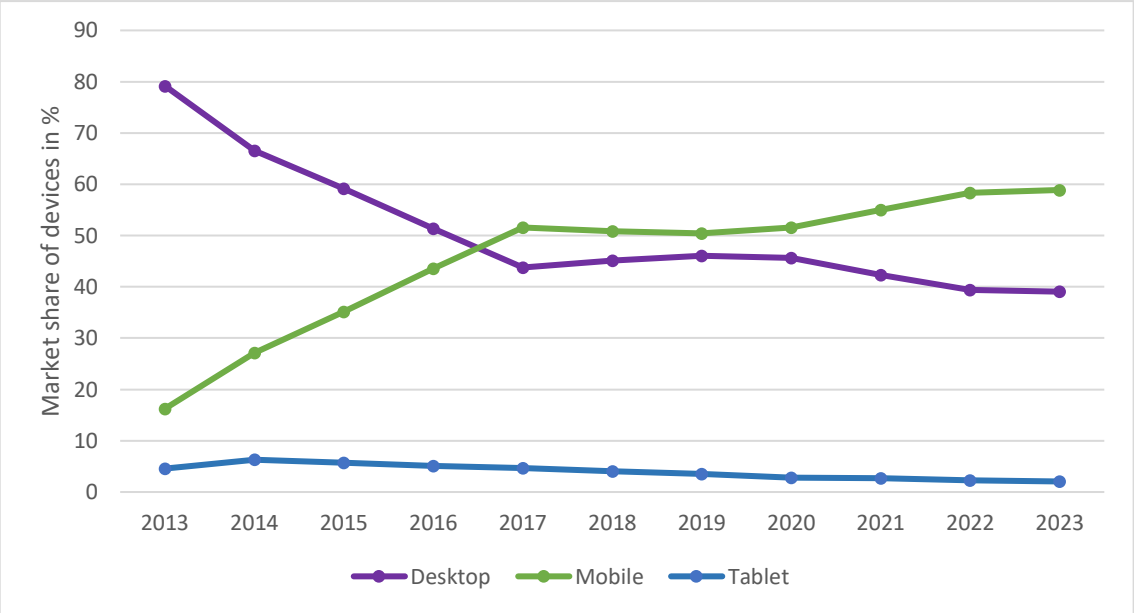


**Chart 1: Worldwide market share of desktop, mobile and tablet devices in % from 2013 to February 2023**
(Source: 23)

Last but not least, finishing the project might help the company to cut costs and then focus its interest and money on other IT markets. Moreover, with its size, capital, and skilled employees it could aspire to become a more serious competitor to larger companies like Microsoft and Apple. As a new alternative to known brands, the company could be seen as something new worth trying out.

**Threats**

A major threat from the outside is the global inflation, even though predicted to slowly return to its desired levels still poses a danger in combination with shortage on labor market (25).

First, the danger lies in the economic situation where inflation puts pressure on a wage increase and as the economic situation is affecting mostly everyone this may pose a great threat for the budget of the project.

The situation is worsened by the lack of skilled labor on the market and the high demand for IT aimed workers where an employee leaving the company during the project might be problematic more than ever due to great competition on the labor market between employers.

In direct connection with inflation also arises the threat of customers cancelling their subscriptions and the lower customer acquisition rate caused by the economic situation. The reason is that the software products sold by the company can be considered excessive services which are usually bought for convenience and are not vital for day-to-day life.

In addition, the company recorded an increased effort by large companies such as Microsoft and Apple to extend their reach to products similar to the ones the company provides and for lower prices. The power these companies have also comes from their well established brands and the respective brand power (26) which may work well against the new company aspiring to be an alternative.

# 3 PROPOSAL OF SOLUTION

The proposal of solution represents the final chapter where the author introduces the solution for the problem and finally evaluates its benefits. The chapter could be divided into three consecutive parts starting with starting up a project followed by initiating a project where the main goal was to follow the requirements for the project to be considered PRINCE2 compliant and ended with solution evaluation.

The starting up of a project begins with a basic project setting, which is written in the form of a project mandate and serves as a main input document. Among the key outputs are the business case, lesson log containing previous lessons and project brief where a logical framework with stakeholder analysis.

Subsequently the initiation of a project builds upon the previous part and results in several important outputs: the quality management strategy, risk management strategy in the form of RIPRAN, detailed project plan consisting of WBS, Gantt chart and budget, communication management strategy accompanied with RACI matrix, and change management strategy. All the mentioned with a refined business case would in the end be distributed altogether in the form of a PID.

## 3.1 Project Mandate

The current situation with project management in the company is more benevolent in terms of documentation which means there has not been created any kind of document that could be used as a project mandate that is formally needed to begin with. As the project mandate is a mandatory part of the PRINCE2 methodology, one was created from the information available from discussions with management and the CTO who requested the project to be done.

**Table 9: Project mandate**
(Source: Own processing)

| Project Mandate | |
|---|---|
| Project Title | The system integration of the new company. |
| Background | After the merger of two similar companies the main goal across the whole new company was to reduce costs thus being able to provide capital for further development. The departments under the CTO are mainly responsible for development, maintenance and providing software products for customers, and for integration and operation of third-party software supporting the business needs.<br>So far, the department has run into three situations that have arisen from the merger:<br>1. There are two or more systems serving the same or very similar purpose making one of them abundant e.g., billing systems.<br>2. The same system was used by both companies and is still used separately.<br>3. The system is still unique in the terms of use in the new company e.g., was used or provided only by one company from the merger. |
| Objective | The objective is to integrate all similar systems into one that is same company wide while retaining the functionality and quality of service. |
| Timescales | The project should be finished within one year from its initiation meaning it should be finished in 365 days.<br>The teams engaged in working on the project have 180 days to fully work on the project, afterwards these teams must also be possible to deliver and work on other tasks related to their specific products. |
| Project Management Team | The project management team will be made of the project board appointed by the CTO who will also be representing the role of a project executive accompanied by one or more senior users and suppliers, a senior project manager and a project management assistant Richard Tomek. |
| Approval | The project mandate was given by the CTO of the company. |

## 3.2 Starting Up a Project

Project mandate plays a key role as an input document on which the whole starting up a project process is built on. As the PRINCE2 framework defines the outputs and what each of them should meet it leaves a free hand in terms of choice of methods and style of processing, thus leaving room for tailoring to company's exact needs.

There are two mandatory outputs for this process. Starting with a project brief which is in the case of this project represented by SMART objective on which a logical framework was created together forming a business case. To complete the project brief, a stakeholder analysis was done, and the project management team was assembled according to the project mandates definition. As a second output a lessons log was created and filled with any potentially useful lessons for the project.

## 3.3 SMART Objective Definition

From the information available from project mandate an objective principal for the project was defined with the SMART method to be used further in the work.

The wording of the SMART objective is:

The integration of the similar systems and the company's product portfolio while keeping the functionality and respective brands starting on 01.05.2023 and ending on 01.05.2024.

The objective complies with the requirements of SMART method as it is:

**Specific –** The objective clearly states the project's goal to integrate similar systems into one.

**Measurable –** The progress and success of the project is measurable monitoring how many systems have been integrated and if the functionality and brand has been affected.

**Agreed –** Main stakeholders were introduced to the objective and approved it.

**Realistic –** The objective is considered to be realistic withing its timeframe by the stakeholders.

**Timed –** The start is scheduled on 01.05.2023 and end on 01.05.2024, one year later.

## 3.4 Stakeholder Analysis

The organisation principle predefines three mandatory roles that form together the project board and represent one of the most important stakeholders of the project. Apart from the project board there are several other primary stakeholders recorded in the table below which displays their description, expectations and their influence strength on the project ranging from one being the lowest to ten being the highest.

Nevertheless, from the nature of the project, it can be assumed that there are no secondary stakeholders present, as the project revolves around already established systems and its primary goal is their change.

One principal expectation is present for each stakeholder mentioned in the table below. and that is a clear communication. The communication is a prerequisite for the overall success of the project and project management as it plays a key role in many aspects like risk management, problem solving, team formation and negotiations. It should be mentioned that poor communication can cause delays, dissatisfaction and failure to meet budgetary requirements (27).

**Table 10: Stakeholder analysis**
(Source: Own processing)

| **Primary stakeholder description** | **Expectations** | **Influence Strength** |
|---|---|---|
| Company leadership and investors | 1. Profit.<br>2. Growth in business value.<br>3. Release of resources. | 10 |
| Project board | 1. Success of the project.<br>2. The expectations of all three board members are met. | 9 |
| Executive | 1. Achievement of the project's objective.<br>2. Project is profitable.<br>3. The boundaries are met. | 9 |
| Senior user | 1. The users are not negatively impacted.<br>2. The integration does not affect functionality. | 8 |
| Senior supplier | 1. The best practices are followed throughout the integration.<br>2. System complexity and maintenance are taken into account. | 7 |
| Project manager | 1. Stakeholder engagement.<br>2. Effective communication.<br>3. Reasonable budget and boundaries.<br>4. Clear objective. | 7 |
| PM assistant | 1. Close cooperation with PM.<br>2. Responsibility and learning opportunities. | 6 |
| Team managers | 1. The teams are well formed.<br>2. The teams have opportunity to grow and try new things.<br>3. The teams can work effectively. | 4 |
| Employees | 1. Work-life balance.<br>2. Opportunities to grow and express themselves. | 5 |

| | | |
|---|---|---|
| | 3. Adequate compensation. | |
| Other departments | 1. Clear and transparent communication.<br>2. As few requirements as possible. | 4 |
| Customers | 1. High quality services.<br>2. Customer support.<br>1. Fair treatment. | 4 |
| Third Party Suppliers | 2. Compliance with contracts.<br>3. Beneficial cooperation. | 3 |

**Company leadership and investors**

The stakeholder group comprising of the company leadership and investors holds the highest influence over the project. Their influence lies in the fact that the project is not a part of any programme and is expected to directly contribute to the goal set by the CEO to reduce costs.

With the cost reduction the stakeholder group anticipates growth in business value and higher profit as the project should not cause any decreases in performance. Additionally, the release of resources is expected to be also in the terms of workforce, being it for layoffs or internal transfers for other projects.

**Project board**

The second most influential stakeholders according to the analysis are the project board and its corresponding members. Their importance stems from their ultimate responsibility over the projects outcome and their approval needed for any irregularities that may arise.

**Executive**

In the case of this project the executive is the CTO of the company. As a member of the project board this makes him the person at the top of the project being accountable and therefore the one with most decision-making power in terms of the project, its objective, and its direction.

The executive expects from the project to reach its objective and end well, which means that the project is also profitable in contrast of not conducting the project at all. Having in mind that the executive indicates the boundaries within which others can work on the project he expects these boundaries to be respected.

**Senior user**

The senior user is to be represented by a quality assurance manager and if needed accompanied by one or more senior QA engineers representing the interests of end users. The role of senior user acts as the second strongest as its expectations are directly supported by the project's objective mentioning that the changes done cannot negatively affect its users or customers and reduce functionality.

**Senior supplier**

Last of the three members of the project board, the senior supplier, is to be represented by one or more senior software architects or developers as the best representation of a supplier responsible for project delivery.

The expectations regarding the supplier are that the way the project will be done will follow best practices wherever possible thus achieving the best results possible. Secondly, the senior supplier expects that when selecting the best systems, less easily priced factors will be considered, such as the complexity of the architecture, ease of further development and scalability.

**Project manager**

For the position of a project manager a senior project manager was chosen and will report directly to the project board.

In order to successfully manage the project, the project manager expects from the stakeholders to be engaged and eager to cooperate. The engagement poses to be critical as it can help to lead the project to the satisfaction of all.

Apart from engagement the project manager expects to receive reasonable boundaries in which he can manage the project, where having limits set too strictly would deprive him of many options to manage the project and put more burden on the project board itself.

The need for a clear objective underlines the fact that for the project management to be effective the project manager must exactly know what is to be achieved.

**Project management assistant**

The author of this work was chosen to represent the role of the PM assistant.

The PM assistant directly cooperates with the project manager and supports his role. As the assistant is expected to aspire to become a project manager one day his expectations are mostly to have the opportunity to learn something new in close collaboration with an actual project manager.

**Team managers**

Moving down to lower levels of stakeholder strength there are team managers who should be responsible for the delivery of their team. As there will whole new teams forming for the purposes of the project as well as new teams as a result of merger the team managers need to have enough time for their teams to form well as well as enough freedom to choose between their appropriate management being it agile or a more directive one.

**Employees**

The stakeholder group employees refer to anyone working on or contributing to the project. The employees naturally expect to continue to have a good work-life balance meaning there are demands for good planning and communication. Furthermore, everyone expects to be fairly compensated for the work done and recognized for special performance.

From a career perspective it is expected from the project to be an opportunity to grow for most and to leverage their strengths.

The good communication plays a critical role for the employee stakeholder as from previous lessons it was indicated that employees were not happy with the solution proposed and could have offered a better one.

**Other departments**

The group of other departments must be mentioned as all systems in the company are interconnected and it is expected that the project will affect them one way or another. As every department has its own projects and products that they need to take care of they hope for as few as possible changes needed to be done on their side and in those cases, they expect that these would be communicated in advance and clearly.

**Customers**

Even though customers play a very important role in the company's strategy, they have a very low power over the project itself. This stakeholder is mostly represented by the senior user, yet it can still affect the project through lower NPS score or larger amount of complaints on the services included in the project.

Generally, the customers expect to not be affected by the changes proposed by the project and to receive fair treatment, customer support and the value they paid for.

**Third Party Suppliers**

The stakeholder group consisting of third-party suppliers was identified as the group with the least influence on the project. This is due to the existence of existing contracts that need to be adhered to and the selection of a new contract is largely dependent on the expertise of the company's negotiators, who have considerable bargaining power due to the company's large customer base.

## 3.5 Logical Framework

For the purposes of the work the logical framework table has been split by its rows in order to reach better readability and representation. The main reason for choosing the logical framework was the fact that it greatly works for the purpose of a business case and the project brief.

As a business case it provides a way to access the viability of the project by analyzing the inputs needed measured in man-days, activities, outputs, objective, and the purpose of the project. In terms of a project brief it works as a starting point for further planning and managing the project as it can be seen later through the WBS and Gantt chart in initiating a project process.

Apart from that it provides a way of how the project will be measured which gives the project board and the project manager a tool to control the progress of the project. Finally, there are assumptions that must be met in order for the project to be successful which serve as great input for risk analysis.

**Table 11: Logical framework purpose row**
(Source: Own processing)

| | Project Summary | Indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| **Purpose** | 1. Lower operation costs | 1. Reducing overall costs of operation by 10%. | 1.1 Internal record of operating expenses<br>1.2 Legal contracts with suppliers | |
| | 2. Workforce requirements reduction | 2. Reaching 20% redundant positions. | 2.1 Payroll records<br>2.2 Organizational chart<br>2.3 Team performance report | |
| | 3. Increase in department profits | 3. Overall department profit increase by 5%. | 3.1 Financial statement of the department | |

**Table 12: Logical framework objective row**
(Source: Own processing)

| | Project Summary | Indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| **Objective** | The integration of the similar systems and the company's product portfolio while keeping the functionality and respective brands starting on 01.05.2023 and ending on 01.05.2024. | 1. There are no duplicates in system architecture. | 1.1 System architecture model<br>1.2 Documentation | The functionality and performance of the systems is not negatively affected.<br><br>The resulting systems require less maintenance.<br><br>The integrated systems are cheaper per user than duplicate systems. |
| | | 2. The NPS does not decrease. | 2. NPS report | |
| | | 3. The project is not delayed. | 3. Project plan | |
| | | 4. Statical code analysis results are same or better.<br>4.1 Code coverage<br>4.2 Technical debt | 4. Statical code analysis reports | |

| | | | | |
|---|---|---|---|---|
| | | 4.3 Number of issues<br>4.4 Severity of issues | | |

**Table 13: Logical framework outputs row**
(Source: Own processing)

| | Project Summary | Indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| **Outputs** | 1. Formation of teams | 1.1 Average team throughput reaches values of 20.<br>1.2 Average team velocity is stable. | 1.1-2 Jira team statistics<br>1.1-2 Team leader reports | Teams are capable of effective cooperation despite working in different time zones. |
| | 2. Solution design | 2.1 All duplicate systems have integration design.<br>2.2 For each duplicate system an optimized solution analysis exists. | 2.1 Systems documentation<br>2.1 Software architecture models<br>2.2 Analysis reports | Integration is documented.<br>All changes will be communicated across the company. |
| | 3. Legal contracts administration | 3.1 All contracts are approved by legal department.<br>3.2 New contracts have better value. | 3.1 Jira tickets<br>3.2 Legal contracts | Integrations will not be delayed.<br>Available resources. |
| | 4. Anti-tracking service integration | 4.1 100% of clients are using same APIs.<br>4.2 System performance improved by 10%. | 4.1 API analytics<br>4.2 Cloud metrics | Compatibility of systems. |

| | Project Summary | Indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| | | 4.3 Tracking protection improved by 10%.<br><br>4.4 System meets all legal requirements. | 4.3 User statistics<br><br>4.4 Legal department audit | |
| | 5. Support systems integration | 5.1 Only one solution is used per support system.<br><br>5.2 Code quality is same or better. | 5.1 Git repository<br><br>5.2 Statical code analysis report | |
| | 6. Password management service integration | 6.1 100% of clients are migrated to one solution.<br><br>6.2 Only one backend is present. | 6.1 Service metrics<br><br>6.2 Git repository | |

**Table 14: Logical framework activities row**
(Source: Own processing)

| | Project Summary | Resources | Timeframe of activities | Assumptions |
|---|---|---|---|---|
| **Activities** | 1.1 Forming | 1.1 100 MD | 1.1 10 days | Employees easily overcome cultural differences. |
| | 1.2 Storming | 1.2 50 MD | 1.2 15 days | |
| | 1.3 Norming | 1.3 0 MD | 1.3 20 days | |
| | 1.4 Metrics definition | 1.4 20 MD | 1.4 5 days | Employees are cooperative during team formation. |
| | 1.5 Backlog deployment | 1.5 20 MD | 1.5 10 days | |

| | Project Summary | Resources | Timeframe of activities | Assumptions |
|---|---|---|---|---|
| | 2.1 Analysis of duplicate systems | 2.1 120 MD | 2.1 10 days | Chosen solution is effective on multiple levels - costs, maintenance, architecture, and scaling. |
| | 2.2 Choice of the best solutions | 2.2 60 MD | 2.2 15 days | |
| | 2.3 Technical design of integrations | 2.3 200 MD | 2.3 20 days | |
| | 3.1 Current contracts evaluation | 3.1 50 MD | 3.1 10 days | System experts participate on the project. |
| | 3.2 New contracts negotiation | 3.2 125 MD | 3.2 25 days | |
| | 3.3 Legal department assessment | 3.3 0 MD | 3.3 25 days | Better contracts will be negotiated. |
| | 4.1 Legal compliance | 4.1 50 MD | 4.1 10 days | |
| | 4.2 Integration updates | 4.2 1750 MD | 4.2 70 days | All clients will update their applications. |
| | 4.3 System scaling, sizing, validation | 4.3 280 MD | 4.3 20 days | |
| | 4.4 Quality assurance | 4.4 210 MD | 4.4 15 days | Legal department will be involved. |
| | 4.5 New version deployment | 4.5 140 MD | 4.5 10 days | |
| | 5.1 Billing system integration | 5.1 1050 MD | 5.1 70 days | CISO team will be involved. |
| | 5.2 Logging system integration | 5.2 350 MD | 5.2 35 days | Vertical development approach is used. |
| | 5.3 Testing system integration | 5.3 320MD | 5.3 40 days | |
| | 5.4 UI system integration | 5.4 900 MD | 5.4 60 days | |

| | Project Summary | Resources | Timeframe of activities | Assumptions |
|---|---|---|---|---|
| | 6.1 Integration updates | 6.1 2000 MD | 6.1 80 days | |
| | 6.2 Backend, infrastructure scaling | 6.2 210 MD | 6.2 15 days | |
| | 6.3 System security analysis | 6.3 0 MD | 6.3 20 days | |
| | 6.4 System security findings implementation | 6.4 140 MD | 6.4 20 days | |
| | 6.5 Client migration | 6.5 280 MD | 6.5 20 days | |
| | 6.6 Secure disposal of old system and data | 6.6 315 MD | 6.6 15 days | |

## 3.6 Lessons Log

One of the PRINCE2 principles is to learn from experience and should be directly implemented in the starting up a project process in a form of a lessons log. The register or log should work as a place for gathering lessons learned from previous projects and to record any new lessons identified that may occur during the project. Besides, it is an important document necessary to close the project and create a lessons report.

The company lacks a centralized repository for global lessons learned and identified. Therefore, all lessons had to be retrieved from meetings with several company's project managers. That is where the strength of the project comes in play, as mentioned in the SWOT analysis the company has historically gone through several integration projects and the project managers have a lot of experience to share.

**Table 15: Lessons log**
(Source: Own processing)

| ID | Priority | Lesson | Logged by | Learned | Date |
|---|---|---|---|---|---|
| 1 | medium | Giving more autonomy and responsibility to teams resulted in motivation and better performance. | PM Assistant | yes | 5.4.2023 |
| 2 | high | It is crucial to involve technical experts in decision-making processes related to software and technology. Not having such a person resulted in decision based on incomplete information causing delays. | PM Assistant | yes | 5.4.2023 |
| 3 | high | Clearly define and communicate project objective and outputs to avoid confusion and inefficiencies. | PM Assistant | yes | 5.4.2023 |
| 4 | medium | When dealing with project affected by merger or acquisition prepare for teams to go through formation all over, meaning they will be naturally underperforming until they reach performing phase again. | PM Assistant | yes | 5.4.2023 |
| 5 | low | Creating a glossary of terms is highly recommended. Highly improves communication and prevents confusion after merger between departments and employees. | PM Assistant | yes | 5.4.2023 |
| 6 | medium | When going through merger, it is advised to use best practices and methods that are not based on corporate culture of any previous company as that leads to longer adaptation of newcomers. Additionally, this in the long-term leads to an emergence of new and better methods tailored for the new company. | PM Assistant | yes | 5.4.2023 |

| ID | Priority | Lesson | Logged by | Learned | Date |
|---|---|---|---|---|---|
| 7 | high | It is advised to delay irreversible decisions as long as possible due to the risk of high costs of possible corrections. It often turned out that by postponing the decision, more information was discovered to make a better choice, or a change occurred that no longer required such a decision. | PM Assistant | yes | 5.4.2023 |
| 8 | high | Doing estimates without deep understanding of already existing legal contracts may lead to serious errors. Therefore, it is advised to study legal contracts beforehand or incorporate legal department. | PM Assistant | yes | 5.4.2023 |
| 9 | high | After merger, it is important to thoroughly map communication channels and pay attention to that information is communicated repeatedly and consistently. | PM Assistant | yes | 5.4.2023 |
| 10 | medium | Projects that follow the merger should also take care of the human aspect such as the development of company culture, confidence, and feelings of people. Strict focus on processes and integration lead to a collapse of functional teams and therefore to delays and additional costs. | PM Assistant | yes | 5.4.2023 |
| 11 | | Placeholder for lesson identified in the project. | | no | |

Individual lessons have been tagged with priority ranging from low to high, identifying how important they might be for the project and a “yes” tag in learned column for differentiation between lessons learned and lessons identified in the current project therefore critical for lessons report.

It can be seen from the lessons log that most of the lessons applicable to the project come mostly from previous experience with projects related to mergers and acquisitions, pointing out things that might otherwise be easily overlooked.

## 3.7 Initiating a Project

After the project was approved at the end of a starting up a project process the project could proceed to the initiating a project process where an ultimate output is a project information documentation. The PID serves as a central document for gathering all important information for the project. The following outputs are mostly based on the project brief, logical framework specifically and together form the PID.

Starting off with risk management strategy and a concrete risk analysis done according to RIPRAN method followed by quality and change management strategy.

The communication management strategy defines concrete communication channels and with the help of RACI matrix defines roles and responsibilities for the project management team.

The most important point of PID, the project plan, uses the WBS and Gantt chart tools to create detailed plan to monitor the projects progress.

Concluded by budget requirements analysis as a last step. As mentioned in theory the initiation process should set up project controls and refine business case. It has to be mentioned that project controls are covered by the logical framework and business case refinement by updates of logical framework throughout creation of individual parts of the PID.

## 3.8 Risk Management Strategy and Analysis

For the purposes of risk management strategy as well as for the initial risk analysis the RIPRAN method was used. The reason for using external method is based on the lesson with id six and on the fact that both companies had their own different risk management strategies.

In the two tables below the first three steps of the RIPRAN were conducted. The first table contains the threat identification and simultaneously risk quantification evaluating probability, impact, and risk value according to table 3-5. The second table then contains the measures to be taken to reduce the risks in question and the new value of the risk.

The last step of the risk management strategy would be creating a risk register, monitoring and assessment of risks which will last until the end of the project. If there were any new threat detected it would go through the same cycle as mentioned in the risk analysis.

**Table 16: Risk analysis identification and quantification**
(Source: Own processing)

| Id | Threat | Scenario | Prob. | Impact | Risk |
|---|---|---|---|---|---|
| 1 | Cooperation through different time zones | The new teams will be formed of more employees working in different time zones. The difference in work time may cause communication problems and delays in work. | MP | LI | LRV |
| 2 | Cultural differences | The storming phase might take longer time to finish due to different company cultures before merger. | LP | LI | LRV |
| 3 | Uncooperative employees | Forming new teams is not always pleasant for everyone. There may be some employees who might not be very cooperative thus demotivating others and complicating work. | LP | LI | LRV |
| 4 | Loss of experts | Due to several reasons experts critical for the project may decide to leave or change department leading to the loss of present expertise needed for success of the project. | MP | HI | HRV |
| 5 | Silo development | The integrations and development will be done in the silo style which may result in cross-functionality problems, inefficiencies and errors in the final product requiring unnecessary work. | HP | MI | HRV |
| 6 | Inferior contracts | New contracts on third-party services needed for integrated systems will be worse than previous contracts. | LP | HI | MRV |
| 7 | Delay by legal department | The legal department may be busy and unable to handle project requests right away. | MP | LI | LRV |
| 8 | Delay by CISO team | The CISO team may be busy and unable to handle project requests right away. | MP | LI | LRV |

| Id | Threat | Scenario | Prob. | Impact | Risk |
|---|---|---|---|---|---|
| 9 | System loss in performance or functionality | Poor system architecture design and development will cause the integrated system to be worse in terms of performance and functionality. | MP | HI | HRV |
| 10 | Systems require more maintenance | Integrated systems will require more maintenance than before. | LP | MI | LRV |
| 11 | High operational costs | The operational costs for integrated systems will be higher than before. | LP | HI | MRV |
| 12 | Lack of resources | Resources will run out in progress of the project or will be withdrawn by sponsors. | LP | MI | LRV |
| 13 | Cross-departmental dependencies | Systems in other departments will have remaining dependencies on old duplicate systems making them impossible to remove. | HP | MI | HRV |
| 14 | Summer/Winter vacations | The company supports longer vacations during summer months and Christmas. This may cause delays due to absence of higher number of employees. | HP | LI | MRV |
| 15 | Project delay | Due to unforeseeable reason the project will be delayed. | MP | LI | LRV |
| 16 | Ineffective solution | The systems are poorly integrated or poor solution was chosen. | MP | MI | MRV |

**Table 17: Risk analysis proposed measures**
(Source: Own processing)

| Risk id number | Proposed measure | Cost, Deadline, Person responsible | New risk values |
|---|---|---|---|
| 1 | Clearly define communication channels, responsibilities and use asynchronous type of collaboration. | • Beginning of the project<br>• Project manager and team managers | LRV |
| 2 | Contact HR to provide cultural training materials if needed. | • During team formation<br>• Team managers | LRV |
| 3 | Encourage teams to undergo teambuilding to boost motivation and team spirit. | • Each team has its own teambuilding budget unrelated to projects budget.<br>• Team managers | LRV |

| Risk id number | Proposed measure | Cost, Deadline, Person responsible | New risk values |
|---|---|---|---|
| 4 | Identification of experts critical for project. Finding out their attitude toward the merger and project. Possible financial compensation. | • Extra budget for possible compensations approx. 20 000 $ (10 experts * 2000 $ bonus)<br>• During formation of teams<br>• Team managers | MRV |
| 5 | Organize synchronization meetings across development teams and implement vertical development approach | • The whole duration of the project<br>• Project manager | LRV |
| 6 | Current contracts must be thoroughly analyzed, negotiation boundaries set, and the negotiation team must be formed from legal, development and management experts. | • During new contracts negotiation phase<br>• Project manager | LRV |
| 7 | Alert the legal department as to approximately when their cooperation will be needed. | • When the project begins, or plans change.<br>• Project manager | LRV |
| 8 | Alert the CISO team as to approximately when their cooperation will be needed. | • When the project begins, or plans change.<br>• Project manager | LRV |
| 9 | Correct setting of limits and metrics that are monitored. Presence of system experts during new architecture design. | • System integrations<br>• Project manager | LRV |
| 10 | Let the solutions be evaluated by their actual implementers who will be maintaining them. | • Choice of the best solution<br>• Project manager | LRV |
| 11 | Ensuring a good architecture of integrations and quality contracts with service providers. | • Before work on integrations begin<br>• Project manager | LRV |
| 12 | Continuous communication with the project board and continuous business justification in terms of business case revisions. | • The whole duration of the project<br>• Project manager | LRV |
| 13 | Establish communication channels across | • After the architecture design is done | MRV |

| Risk id number | Proposed measure | Cost, Deadline, Person responsible | New risk values |
|---|---|---|---|
| | departments and organize meetings for change announcements. Make sure that other departments learn about the changes and implement them. | • Project manager | |
| 14 | Plan the project with vacations in mind. | • Initiating a project<br>• Project management assistant | LRV |
| 15 | Thorough control of project progress on a daily basis and communication with teams. | • The whole duration of the project<br>• Project manager | LRV |
| 16 | The choice of the best solution must be validated by technology expert. | • Choice of the best solution<br>• Project manager | LRV |

For all threats found a measure has been proposed reducing the risk values mostly to low or medium value having zero threats with high-risk value in the end. The mentioned measures except for one require no further budget adjustments and their fulfillment is mostly about better communication and not neglecting certain aspects of the project like detailed planning.

The only measure requiring an extra budget is to lower the risk value of the threat of losing experts. This threat is one of the most dangerous to the project, while the expertise of technological experts can be replaced, losing their comprehensive understanding of how everything works can cause significant setbacks to the project's success. To tackle this issue an extra budget of twenty thousand dollars is to be ready for possible compensation packages to avoid or delay staff departures by the end of the project.

## 3.9 Quality Management Strategy

The quality management of the project already began with project mandate as the first input for objective definition and basic acceptance criteria. Both have been noted in the logical framework as an objective and its respective indicators with means of verification working as metrics for measuring quality or fulfillment of the objective. The same applies for the outputs.

The quality management strategy for the project could be summed up in five steps:

1. **Customer requirements –** Firstly specified in project mandate and further extended in the process of creating the logical framework.
2. **Assignment formulation –** Definition of SMART objective and respective outputs in logical framework from customer requirements.
3. **Quality planning –** The creation of indicators and acceptance criteria in logical framework according to given customer requirements and further communication with customer and suppliers.
4. **Quality assurance –** This part starts with employees who will be working on specific tasks being responsible for the quality of their work and ending with the person responsible for the output monitoring if the quality is meeting the customers' requirements.
5. **Quality control –** The last step of quality management where the senior user checks the results, and the customer takes them over. The quality control process is connected to the first step since successful handover and any objections are directly dependent on the customer's requirements.

The proposal for quality management strategy is based on the quality management process by Svozilová A. (2, pp. 332–333).

## 3.10 Change Management Strategy

Even with the best project planning and project objective definition some changes will occur during the project and those must be managed in order to make the project successful (2, p. 291).

The change management strategy for the project includes:

1. **Change identification –** Finding and describing needed change is expected to happen when the person dealing with the project encounters an issue that they are unable to solve within their defined responsibilities and boundaries. In that case they must define the change and pass it on to the person responsible in that area.
2. **Processing of the change –** When the change request is reported the responsible person must evaluate it and submit it for approval to the project manager who is ultimately responsible for change management in the project. The project manager

then must access the proposal in context of project plan and consult with project board if needed. The proposal is then either approved, returned with conditions for changes or rejected.

3. **Response to change proposal –** Depending on the decision the change is incorporated into the project and the project documents like project brief and PID are adjusted accordingly. The proposal is returned to its reporter with the possibility to modify the request to be processed again. The proposal is denied.

As with everything in the project the changes and the request shall be recorded in a document to track their status and history.

## 3.11 Project Plan

An integral part of a successful project is a thoroughly crafted project plan allowing for monitoring the progress, what is to be done and when. To begin with major milestones were set to express the most important deadlines to be monitored during the project.

### 3.11.1 Milestones

**Table 18: Project milestones**
(Source: Own processing)

| Date | Milestones |
|---|---|
| 01.05.2023 | Start of the project |
| 30.06.2023 | Teams are in performing stage |
| 18.08.2023 | Contracts approved and signed |
| 28.10.2023 | Employees must start working on other features |
| 24.11.2023 | Support systems integrations complete |
| 15.12.2023 | Anti-tracking service integration complete |
| 23.02.2024 | Password management service integration complete |
| 01.05.2024 | End of the project |

### 3.11.2 WBS

On the picture below a WBS is displayed starting with SMART objective defined previously and decomposed into six level one core outputs. Then each output is also divided into several specific activities forming level two of WBS. The WBS was prepared on the basis of logical framework from the previous stage of the project.

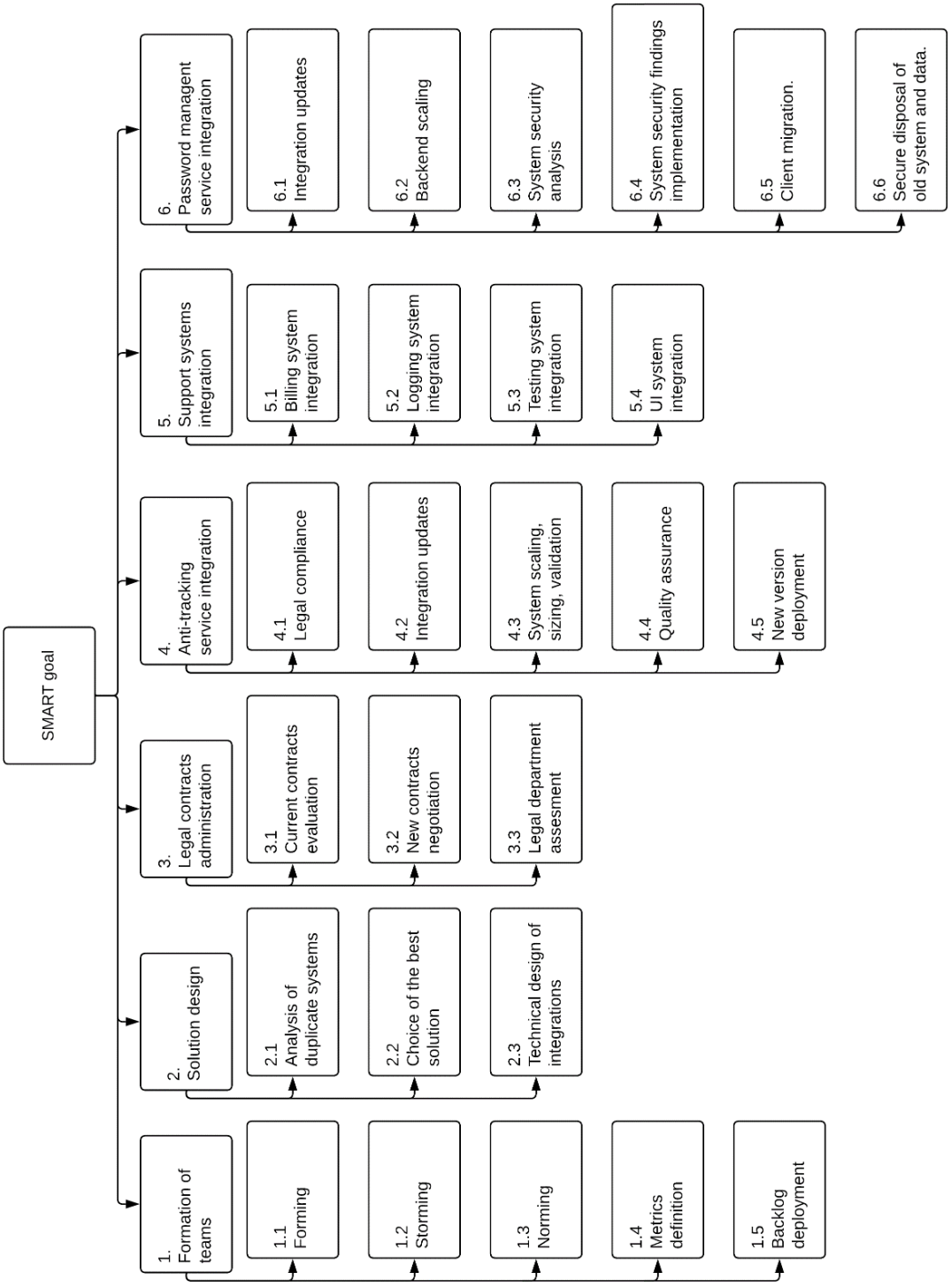


**Figure 7: Work Breakdown Structure**
(Source: Own processing)

### 3.11.3 Time Analysis

Following the WBS and information provided for each activity in logical framework a time analysis table was created to show the detailed duration of all activities and the total duration of the individual outputs that will be considered as individual managing stages. The other information included are the estimated start and end dates and the dependencies of activities on each other.

**Table 19: Time analysis**
(Source: Own processing)

| ID | Name | Dur. (days) | Start Date | End Date | Dependency |
|---|---|---|---|---|---|
| 1 | Formation of teams | 45 | 01.05.2023 | 30.06.2023 | |
| 2 | Forming | 10 | 01.05.2023 | 12.05.2023 | |
| 3 | Storming | 15 | 15.05.2023 | 02.06.2023 | 2 |
| 4 | Norming | 20 | 05.06.2023 | 30.06.2023 | 3 |
| 5 | Metrics definition | 5 | 15.05.2023 | 19.05.2023 | 2 |
| 6 | Backlog deployment | 10 | 15.05.2023 | 26.05.2023 | 2 |
| 7 | Solution design | 45 | 29.05.2023 | 28.07.2023 | |
| 8 | Analysis of duplicate systems | 10 | 29.05.2023 | 09.06.2023 | 6 |
| 9 | Choice of the best solution | 15 | 12.06.2023 | 30.06.2023 | 8 |
| 10 | Technical design of integrations | 20 | 03.07.2023 | 28.07.2023 | 9 |
| 11 | Legal contracts administration | 60 | 29.05.2023 | 18.08.2023 | |
| 12 | Current contracts evaluation | 10 | 29.05.2023 | 09.06.2023 | 6 |
| 13 | New contracts negotiation | 25 | 12.06.2023 | 14.07.2023 | 12 |
| 14 | Legal department assessment | 25 | 17.07.2023 | 18.08.2023 | 13 |
| 15 | Anti-tracking service integration | 120 | 03.07.2023 | 15.12.2023 | |
| 16 | Legal compliance | 10 | 03.07.2023 | 14.07.2023 | 9 |
| 17 | Integration updates | 70 | 31.07.2023 | 03.11.2023 | 16, 10 |

| ID | Name | Dur. (days) | Start Date | End Date | Dependency |
|---|---|---|---|---|---|
| 18 | System scaling, sizing, validation | 20 | 06.11.2023 | 01.12.2023 | 17 |
| 19 | Quality assurance | 15 | 06.11.2023 | 24.11.2023 | 17 |
| 20 | New version deployment | 10 | 04.12.2023 | 15.12.2023 | 18, 19 |
| 21 | Support systems integration | 70 | 21.08.2023 | 24.11.2023 | |
| 22 | Billing system integration | 70 | 21.08.2023 | 24.11.2023 | 10, 14 |
| 23 | Logging system integration | 35 | 21.08.2023 | 06.10.2023 | 10, 14 |
| 24 | Testing system integration | 40 | 21.08.2023 | 13.10.2023 | 10, 14 |
| 25 | UI system integration | 60 | 21.08.2023 | 10.11.2023 | 10, 14 |
| 26 | Password management service integration | 150 | 31.07.2023 | 23.02.2024 | |
| 27 | Integration updates | 80 | 31.07.2023 | 17.11.2023 | 10 |
| 28 | Backend, infrastructure scaling | 15 | 20.11.2023 | 08.12.2023 | 27 |
| 29 | System security analysis | 15 | 20.11.2023 | 08.12.2023 | 27 |
| 30 | System security findings implementation | 20 | 11.12.2023 | 05.01.2024 | 29 |
| 31 | Client migration | 20 | 08.01.2024 | 02.02.2024 | 30, 28 |
| 32 | Secure disposal of old system and data | 15 | 05.02.2024 | 23.02.2024 | 31 |

The end date of the last activity mentioned in the project is roughly three months ahead from the end date specified in the project objective. The reason behind this is a time reserve that project manager can use to effectively manage the project as there are several factors that need to be considered.

Firstly, the project will run through summer and Christmas holidays where all employees are encouraged by the company to take longer vacations to recharge and enjoy their families and in case of Christmas company-wide time off.

Secondly, the CTO requires from the employees to be capable of working also on other features beside the project after one hundred and eighty days. Making it possible that not everyone will be able to devote one hundred percent of their work to the project in its latter half.

It is nearly impossible to plan beforehand as nor the vacations, the time off or product features have been planned yet and therefore the three-month reserve serves as a tool for the project manager to deal with these events.

### 3.11.4 Gantt Chart

For more detailed and graphical processing of the project plan a Gantt chart was used based on the time analysis table with the use of Online Gantt tool. The Gantt chart shows the sequence of activities depending on the duration of the activity and its dependencies.

The critical path is depicted by red/pink color and shows as defined by the PMBoK Guide "The sequence of activities that represents the longest path through a project, which determines the shortest possible duration." (1, p. 238). The project manager should pay attention to the critical path as its delay will cause overall delay to the project. The specific activities the critical path goes through are 2, 6, 8, 9, 10, 27, 29, 30, 31, 32 starting on the first of May and ending on twenty-third of February.

Other activities are blue colored, and the gray color shows management stages of outputs.

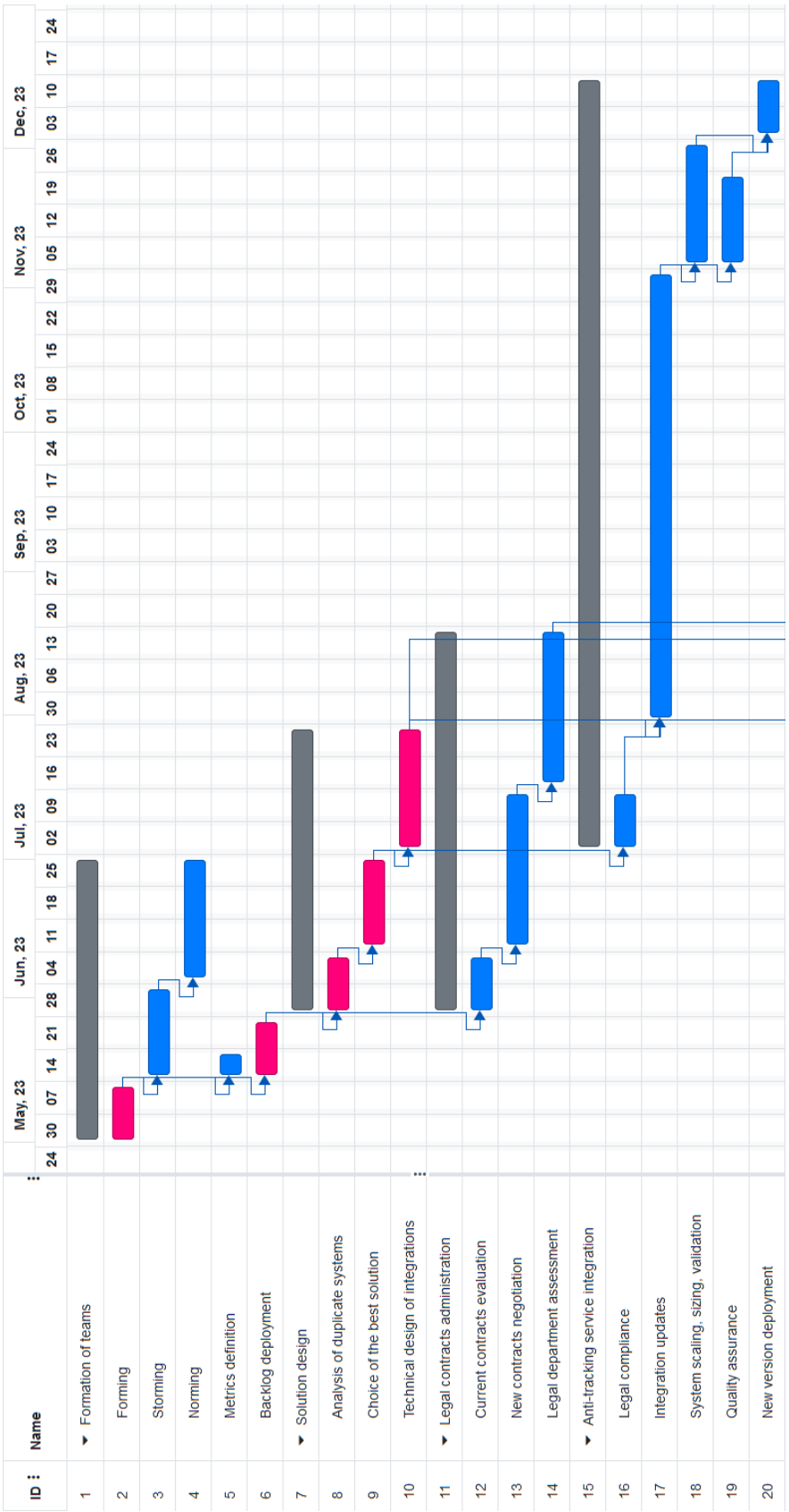


**Figure 8: Gantt chart part 1**
(Source: Own processing)

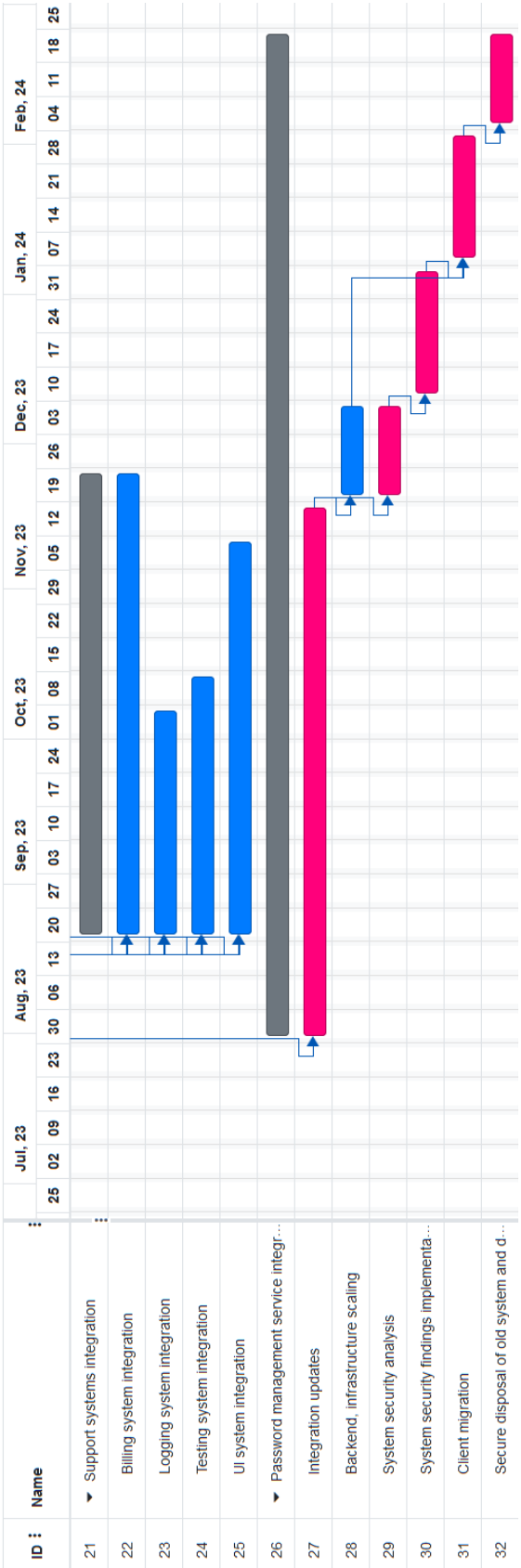


**Figure 9: Gantt chart part 2**
(Source: Own processing)

### 3.11.5 Budget

The last part of the project plan is the budget which reflects the needs for resources of the project measured in US dollars. As for the purposes of this work, it is not possible to include the price of new contracts because of two reasons. First, the project assumes that the new contracts and systems will be more profitable so that the price of the old ones will cover them with savings. Second, the operation costs and value of old systems and contracts were not allowed to be shared.

The budget was built on man-day information from logical framework, where one man-day is to be valued by five hundred US dollars. The value of one man-day is only an approximation taken from the Indeed job search engine (28) as a template for the price of a software developer's work for one day. This is due to the anonymization of the company's data where its exact employee costs fall.

Additionally social and health insurance, and other taxes are not included in the budget due to the diversity of employees working from different countries and subject to different tax laws. All the information about exact costs per man-day per specific employee and related taxes shall be supplied by the company, yet for the purposes of the thesis this information is classified.

Namely the activities legal department assessment and system security analysis have zero man-days indicated. This is due to the work being done in other departments, specifically legal and CISO, not directly participating in the project.

In addition, the amount of twenty thousand dollars is added as a cost of the measure for the threat of losing experts.

The total budget needed for the project is made up of these two items plus a reserve of 10% of their sum for any unexpected expenditure.

**Table 20: Budget**
(Source: Own processing)

| Item | Calculation | Total cost ($) |
|---|---|---|
| Man-days needed for the project | 8740 (MD) * 500 ($) | 4370000 |
| Risk of losing experts extra budget | 10 (experts) * 2000 ($) | 20000 |
| **Subtotal** | | 4390000 |
| 10% reserves for unexpected expenditures | | 439000 |
| **Total** | | 4829000 |

The total expected budgetary needs for the project are four million, eight hundred and twenty-nine thousand dollars which include costs for man-days, risk measure costs and ten percent reserves. For use in the company, the budget shall be extended with more detailed calculations based on actual costs per different countries and specific costs of contracts.

## 3.12 Communication Management Strategy

As can be seen from the risk analysis and the lessons log communication plays a critical role for the success of the project. The preferred form of communication is MS Teams for written messages offering group chats, messaging history and filtering. For video calls the Zoom application is to be used with recordings of the meeting captured as it is critical to allow for asynchronous communication.

In MS Teams, several communication channels/groups will be created to ensure that everyone is informed:

1. **Team chats –** A private channel established for each team for daily communication needs.
2. **Project team chat** – Chat for communication between the project board, project manager, project management assistant and team managers.
3. **Tasks chats –** A public channel created for every output specified in logical framework. The purpose of the channel is to connect people working on the same output or activity from different teams and share information regarding it. The

channel being public is for it to be accessible for stakeholders like members of project board or other departments which need to be consulted.

4. **General chat –** Chat designed for sharing general information about the whole project, progress, documentation, and announcements from the project management team.
5. **Other chats –** Ad-hoc created channels like issue solving, different department communication channels etc.

To ensure better clarity on who is responsible for what a RACI matrix was used to display activities from WBS and individual members of the project team and their relation to each other. That is achieved by assigning a first letter to a certain activity and person whether the person is:

- **Responsible** for doing the activity or delegating it.
- **Accountable** for the result of the activity.
- **Consulted** about the activity.
- **Informed** about anything regarding the activity.

### 3.12.1 RACI Matrix

**Table 21: RACI matrix**
(Source: Own processing)

| | Project board | Executive | Senior user | Senior supplier | Project manager | PM assistant | Team managers |
|---|---|---|---|---|---|---|---|
| Forming | I | | | | A | | R |
| Storming | | | | | A | | R |
| Norming | | | | | A | | R |
| Metrics definition | | | | | A,C | R | |
| Backlog deployment | | | | | A,C | R | |
| Analysis of duplicate systems | I | | | C | A,R | | |
| Choice of the best solutions | | | C | R | A | | |
| Technical design of integrations | | | | R | A | | |
| Current contracts evaluation | I | | | C | A,R | | |
| New contracts negotiation | | C | | | A,R | | |

| | Project board | Executive | Senior user | Senior supplier | Project manager | PM assistant | Team managers |
|---|---|---|---|---|---|---|---|
| Legal department assessment | | | | | A | R | |
| Legal compliance | I | | | C | A,R | | |
| Integration updates | | | C | R | A | | |
| System scaling, sizing, validation | | | | R | A | | |
| Quality assurance | | | C | C | A | R | |
| New version deployment | | | C | R | A | | |
| Billing system integration | I | | C | R | A | | |
| Logging system integration | | | | R | A | | |
| Testing system integration | | | | R | A | | |
| UI system integration | | | C | R | A | | |
| Integration updates | I | | C | R | A | | |
| Backend, infrastructure scaling | | | | R | A | | |
| System security analysis | | | | C | A,R | | |
| System security findings implementation | | | | R | A | | |
| Client migration | | | | R | A | | |
| Secure disposal of old system and data | | | | R | A | | |

Even though the project board is ultimately accountable for the project's success the accountability for individual activities from WBS is distributed among other members of the project management team. The project board does not need to be informed about every activity and just the overall progress of the output or any issues should suffice.

Each member of the project board is then consulted in certain activities and specifically the senior supplier takes responsibility for several activities regarding technology as can be deduced from the lessons log and risk analysis is desirable.

The project manager is ultimately accountable for each activity as his role implies day-to-day management of the project, including planning, executing, monitoring, and controlling the project. Among accountability he is also responsible for several tasks, yet the responsibility over some tasks has been handed over to project management assistant to reduce the workload on project manager.

Lastly the team managers take responsibility for their teams and their formation process.

## 3.13 Benefits of the Proposed Solution

The foremost benefit of the proposal for the company is that it is in a state where it just needs to be approved by the project manager and the project board and can proceed to start the actual project works.

Overall, the solution follows the principles, themes, and processes of PRINCE2 and as such can either be used to start and complete the project in the same manner. Furthermore, the solution can serve well as a template for a company-wide implementation of the framework, or at least to assess the current state of project management in the company and incorporate new procedures and methods to improve it.

The solution starts off with clearly defining the project mandate which is usually not documented in the company. Having the project mandate as a formal document can greatly help the responsible project manager during the starting up the project process as it provides concise information about the project objective, the project board and other inputs.

The company does not have any document where lessons learned from all projects would be recorded. By not having any lessons log, project managers must rely on their own knowledge and that of their colleagues. This requires more time to gather the lessons for the project and at the same time poses a high risk of losing the knowledge with every departure of any project manager. The implementation of the proposed lessons log would help quickly retrieve lessons with minimum time spent on meetings and result in minimization of the risk of losing knowledge about important lessons.

The logical framework was used and complemented by stakeholder analysis to cover both the project brief and business case. The possibility of using a logical framework for both stems from the fact that as a business case it provides enough information for the project board to decide whether the project is desirable and should proceed to initiation. As a project brief it provides a framework for the project team to develop a detailed project plan based on it and helps align the project to stakeholder expectations.

In terms of risk management strategy, the RIPRAN method was used to access known risks and mitigate them. Even though the risk management strategy used in the company

is very similar to RIPRAN, the merger resulted in no central approach to risk management and the fact RIPRAN is well documented could serve as a good starting point.

It is critical for the success of the project to have clearly defined what is to be done, when and by whom. For that purpose, a detailed project plan was created with the use of milestones marking progress of the project. A WBS was used to breakdown project objective into specific outputs and activities that must be done in order to achieve it. Then the activities have been scheduled in the form of Gantt chart to provide detailed progression tracking. Based on the project plan a budget has been proposed, yet for it to be usable by the company it must be supplemented by detailed information unavailable for this thesis.

Lastly the communication channels have been designed to cover the needs of the project and its stakeholders and RACI matrix was created to identify different roles among the project team. This matrix can help various problems in communication and responsibility over different tasks.

The methods used and the PRINCE2 framework can all be integrated in the company or even used to tailor the company's specific project management approach. In cases where the company has its own approach the proposed solution can at least serve as a benchmark to access their performance.

# CONCLUSION

The goal of the bachelor's thesis was to use the tools and theoretical knowledge of project management on a project of a company operating in the information technology sector. The objective of the project was to integrate duplicate systems emerging from the merger of two companies while implementing the PRINCE2 framework.

In the theoretical part of the thesis the project management was introduced in general along with project management standards and terms. A larger part was devoted to a complete description of the PRINCE2 framework and its principles, themes, and processes to set the basis according to which the project was conducted. The rest of the chapter was devoted to various methods used in the analytical and practical part of the thesis. The whole chapter provides the reader with enough information to understand the topic of the thesis.

The analytical part provided background information about the project and the company. For the purposes of the thesis all the information regarding either the project or the company had to be anonymized to avoid leaking classified information. The 7S model was used to assess the current evolving situation inside the company and SWOT analysis was done to evaluate the project and provide input for practical part of the thesis.

The final and most important part was concerned with the actual proposal of the project and the evaluation of its benefits. Due to the project being planned to take one year to finish only the starting up and initiating a project processes and together present a project proposal ready to be approved. The proposal presents the company with a clear project design following the PRINCE2 framework while incorporating several known project management methods for its individual outputs.

The outputs and methods used are lessons log, project brief depicted with logical framework and stakeholder analysis, SMART objective, risk management strategy incorporating RIPRAN, quality and change management strategy, project plan consisting of milestones, WBS, time analysis and Gantt chart concluded by budget and finally communication management strategy using RACI matrix.

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