Resource Management Automation Requirements in Project-Oriented Organizations: A Resource Manager's Perspective

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Abstract

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The objective of the thesis research is to understand critical functionalities required for the resource management tool specific for the case IT project-oriented organization and give recommendation for the tool selection. The thesis is concentrated on the requirements coming from resource managers. This work supports further automation of the Resource Management and capacity planning process by providing as-is process with the requirements to the tool. Secondary target is to see if there is an approach used by any other internal team that can be re-used by other line managers as the temporary solution until full automation.

A case study was used as research approach in this work and the primary data were collected through semi-structured interviews, with secondary company data as supporting material. The case team is part of IT organization where 17 team members are constantly allocated to different projects. The line manager captures team’s capacity and resource allocation in own excel and acknowledged that the current tool cannot fully support proper visibility on the team’s capacity.

Literature aided in understanding project-oriented organizations, resource management, and capacity planning. It guided the researcher in selecting the appropriate interview scope, considering varying team expertise and understanding of project-driven work environments. Best practices from the market, combined with interviews with line managers, formed the foundation for the requirement proposal.

The result of this work contains as-is state of the organization, critical requirements for RM tool raised by the line managers and recommendation on the further automation.

Keywords

Project-oriented organization, Resource Management, Capacity planning

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1. Introduction

In today's fast-paced and constantly evolving business environment, organizations are under increasing pressure to remain competitive, innovative, and adaptable. One of the key factors that contribute to achieving these goals is the right resourcing. Proper organization resourcing is essential to ensure that organizations have access to the necessary talent, skills, financial resources, and technologies to achieve their objectives effectively.

The COVID-19 pandemic has significantly impacted the way organizations operate, forcing them to adopt new technologies and adapt to new way of working. As the result the pandemic has increased the demand for IT projects in many companies as they seek to adapt to the new technologies and stay competitive in the increasingly digital world. Digital transformation of the organizations and adoption of the new technologies put the companies under pressure to deliver the results quickly, efficiently, and effectively and it becomes especially important to deliver the projects on time, within budget, and with high quality.

IT and project management experts become the major and the most critical asset of any company and utilizing their capacity right does not only support a project needs but also help to keep workers motivated, interested in the work and staying in the company. Efficient and effective project resource management is critical for achieving these goals. The right software can support organizations in allocating resources effectively, identifying potential bottlenecks, and optimizing resource utilization.

The research company is a leading global telecommunications provider with a workforce of over 100,000 employees worldwide. Its primary goal is to support the digital transformation of society by providing advanced technologies. As a result, the company is under pressure to serve as a model for digital transformation, particularly its IT department. This requires the organization to ensure that all operational processes run efficiently and support the daily activities of its main business units. Additionally, the company must continuously renew its internal technology and automate processes to remain competitive and cost-effective. IT plays a crucial role in achieving the goals for digitalization and automation.

The case organization is part of IT department that supports developments for finance and logistics processes in Enterprise Resource Planning (ERP) system. There is a constant requirement for automation and improvement of the finance systems ongoing, that leads to increased number of projects. The teams in the organization must be able to support effectively all the projects by providing the required expertise and skills and ensure successful project deployment. Prioritization of the projects, resource capacity planning and right resourcing of the projects is critical for successful execution and deployment of the projects.

Despite the importance of effective resource allocation, the organization faces challenges due to the lack of proper technology to support the resourcing of the projects. The organization still relies on manual processes and outdated tools to manage its resources. The team that raised the need for this project is no exception, where the actual allocation still happens in excel. The absence of a robust technology solution makes it difficult for the team and its line manager to identify the required resources, to have a full picture of employees' availability, and allocate them to the projects. As a result, the organization may end up over-committing its resources or under-utilizing them, leading to project delays and increased costs.

1.1 Objectives and scope

The objective of the thesis research is to understand the critical functionalities required for a resource management tool specific to an IT project-oriented organization from the perspective of resource managers, and to provide recommendations for future tool selection and automation by identifying and outlining the necessary requirements.

The IT organization has initiated a project for resource management tool selection. The project requires to understand as-is process in the teams and the requirements coming from all stakeholders. This work will fulfill the requirements collection coming from line managers as they are critical participants of resource management process.

Initially the thesis topic was raised by a line manager from the case organization, that manages 17 solution architects that are in constant request by different projects. Additionally, the team supports live solutions and might get unplanned requests or tickets. The team is fully virtual and located in the various locations (Portugal, India, Brazil, and India) with the different time zones. The team relies on the excel to follow up resource allocation and availability. The manager acknowledged that there is a difficulty to follow up the team's capacity with the current tools. Secondary target of this work is to see if there is an approach used by any other internal team that can be re-used by other line managers as the temporary solution until full automation.

The thesis aims to answer following research questions:

What are the best practices and main required components of the Resource management tool critical for line managers of the organization?

What are the existing tools used in the organization that potentially could be selected for the team to replace excel as the temporary solution until full automation?

The questions were answered through the interviews with the line managers, and revision of their process and best practices.

The thesis describes the current state of used software tools for the resource management and allocation already used in the case organization. The scope of the thesis is limited to IT organization and the teams where members require frequent allocations to different projects. The focus of the research is to identify potential alternatives to Excel that can improve resource allocation and visibility among project-oriented teams. The tool should be possible to adopt immediately, and it should not require extra license fees.

The requirement for the research came from a line manager of an IT team who is in charge to manage people and their allocation and requires visibility of own personnel availability at any given time. This limits the research to the requirements coming from the resource managers or line managers. The requirements of project managers, for instance, were not taken into consideration.

The author of this thesis was a member of this IT team for a period of nine years at the time when this project began. This experience has given the author an understanding of the workload, challenges and time constraints associated with managing the IT projects. Additionally, the author understands the allocation recording process from the perspective of team members. This understanding has provided practical insight into the needs for more effective resource allocation.

1.2 Thesis content

The thesis report consists of six chapters, covering an overview of theory, methodology, interview results, and proposals for future tool functionalities. The report concludes with a summary of findings and recommendations.

Initially, the author lacked sufficient knowledge about resource management process and its complexity. To address this knowledge gap, a review of basic theory was undertaken to understand the challenges faced by project-oriented organizations and the importance of proper resource management in such teams. Based on relevant literature, the author selected appropriate teams for interviews, with a focus on those whose projects were the primary service offering. This approach facilitated the discussion around the topic.

To gain a comprehensive understanding of the subject, the author analyzed the current process and system landscape using the theory of successful resource management and capacity planning. Best practices for using resource management tools and their key functionalities were employed to support discussions with line managers, leading to the proposal of requirements for future tool development.

The methodology section explains the research approach and the method used to collect data. It also justifies the selection of a case study approach and elaborates on the process used to choose the data collection method.

The chapter four presents the data obtained from conducting interviews with resource management experts and line managers. It offers insights into the current resource management process and landscape through the as-is analysis. Additionally, the chapter provides an overview of the tools used by other teams and offers a basic analysis of their usage.

The chapter draws on the interviews and best practices collected during the theory review to identify the advantages and limitations of the current process and tools. By incorporating the input of experts and line managers, the interview results offer an analysis of the resource management process in the case organization.

The list of requirements for the future tool was compiled through a combination of interviews and research on best practices in the market. In a separate working session with line managers, the requirements were further discussed and refined to ensure they were relevant to their specific needs. The final list of requirements is described in the chapter 5. The report ends with the conclusion on done work and recommendations for the further development.

The thesis has started in January 2022, but was delayed due to personal reasons, the updated plan is presented in the Appendix 1.

2. Literature Overview and Best Practices

Chapter 3 presents an in-depth discussion of resource management and allocation processes for project-oriented organizations. The case team is a part of such an organization, with project and program delivery at the core of their services. First part of literature review reveals specifics of this type of organization and explains what makes them special with the reference to the case organization based on my experience.

The book ‘The Resource Management and Capacity Planning Handbook: A Guide to Maximizing the Value of Your Limited People Resources’ by J. Manas provides practical recommendations and best practices for managing and allocating resources in project-oriented organizations. It focuses on how to maximize the value of limited people resources and provides an overview of the process from an organizational point of view, which is unique compared to most literature that concentrates on how to manage projects successfully. The book also references PLANVIEW.com, a company that has its own platform for work and resource management, as well as practical data from their own research and blogs from their specialists.

2.1 Project-oriented organization and its impact on resource management

Organizations in the 21st century have shifted from a bureaucratic way of managing to more flexible and responsive forms with projects as their main characteristics. This trend is referred to "projectification," as organizations increasingly rely on project-based work to achieve their objectives. Project-oriented organizations have programs and projects as their main business and operate mostly in project mode. Such organizations are temporary, unique, and flexible, requiring special processes in human resource management due to their specific nature. (Turner, Huemann & Keegan 2008, chapter 2.)

Resource allocation becomes critical when the same resources are assigned to multiple projects and non-project activities. Dynamic work environments and uncertain requirements can bring stress and longer working days, especially since peak employee workload is dependent on project load. Understanding employee allocation to more than one project and the project timeline is critical. (Momeni & Martinsuo 2018.)

Dynamic work environments and uncertain requirements can make it difficult to predict the future resource needs and workload. Organizations often hire temporary workers from external vendors to fulfill the requirements of temporary employees. The dynamic work environment may bring stress and longer working days as the peak of employees' workload depends on the project load. This workload can also vary depending on the specific project phases and can be especially challenging for those team members that are part of multiple projects simultaneously, as busy phases can overlap. The project needs may take priority over employee well-being, creating high pressure on employees' self-esteem and well-being. (Turner, Huemann & Keegan 2008, chapter 2.)

Momeni and Martinsuo have highlighted the resource allocation challenges faced by service units that undertake both project and service support activities. In a constantly changing environment, the availability of resources is critical for the success of all activities, and effective resource allocation is crucial for organizing and managing both projects and services. The study suggests that many large organizations rely on a top-down approach for resource allocation, where resource managers play a central role in the allocation process. This approach may be suitable for organizations that have good control over uncertainties. However, may be not the best fit for the organizations with uncertain project environment. In such situations, a hybrid or bottom-up method of allocation may be more effective. This approach allows team members to have a greater say in work prioritization, which can lead to increased engagement and ownership of project outcomes. (Momeni & Martinsuo 2018.)

Project-oriented organizations face the challenge of dealing with highly uncertain project requirements. Due to the dynamic nature of these requirements, finding the right individuals with the necessary skills and experience to complete projects successfully can be a daunting task. This is where a skill database can make a significant impact. It is an essential part of human resource management that allows organizations to manage and track the skills and competencies of their employees. It can help define requirements during the hiring process and set career development plans. Additionally, a skill inventory can be helpful in quickly assessing which employees have the necessary skills to work on a specific project. By using a skill database, organizations can assign employees to projects based on their skill sets, rather than relying solely on job descriptions that may not provide an accurate reflection of an employee's skills. (Turner, Huemann & Keegan 2008, chapter 2 & chapter 5.)

Understanding specifics of project-oriented organization is critical for the resource management due to its complexity and instability. Multiple projects with varying scopes, timelines, and requirements may be happening simultaneously, and resources need to be allocated efficiently to meet the project objectives. Project-oriented organizations must consider the availability and utilization of the employees as limited resources may need to be shared across multiple projects. The projects at the same time can follow different schedule, be on different phase and require work outside of working hours. Bringing right people with the right skill set into a project increases the productivity of the project-team, supports achievement of the milestones, and improves satisfaction from the done work of project stakeholders and team members.

2.2 Resource Management and Capacity Planning

Proper resource management and capacity planning should support project-oriented organizations by allocating right resources to the right projects, ensuring that people are not overloaded, and their skills are fully utilized.

Resources can refer to any asset that company has, it can be licenses and software, buildings and machines. Resource in this study refers to people. According to Jerry Manas human resources is the most valuable resource of any organization and at the same time the most frequently misapplied asset. (Manas 2014, chapter 1.)

Manas (2014, chapter 1) starts definition of capacity planning from understanding demand and supply in an organization. By demand he understands a ‘collection of pending or active initiatives that require resources.’ These initiatives can have different sources, they can come from companies’ strategy, for example digitalization and automation, from different projects or other change requests. This pending or active work forms a company’s demand and available resources represent supply. Another term ‘investment planning’ refers on prioritizing and choosing the demands that company is ready to invest in based on priorities, risks, and available resources. Organizations very often underestimate capacity of the resources, they assume that all resources are available during whole time of a project, and then work is delayed as in reality appears there is a lack of resources, or people spread in too many projects. (Manas 2014, chapter 1.)

Both Manas (2014, chapter 1) and Planview (2019) discuss capacity planning as a crucial process that enables organizations to make right decisions about investing in demands from their portfolio based on the available resources. Capacity planning helps to prioritize resources to critical demands and to avoid promising resources to too many projects, to spot resource gaps by understanding current capacity and overall upcoming demands. Assessing of the available resource capacity happens during this process and it helps to re-adjust stuff if require prior to time when actual allocation and work starts. (PLANVIEW 2019; Manas 2014, chapter 1.)

Resource management supports selection and allocation resources and maintaining resource data. It covers usually internal and external resources. Resource data includes as example cost centers, skills and roles, departments, and hourly rate. Resource management is the continues process of assigning right personnel to the activities planned and unplanned. (Manas 2014, chapter 1.)

” Resource management is the ongoing, tactical assignment of personnel to planned and unplanned activities, as well as the selection and identification of those resources by skill, type, cost center, and other categories” (Manas 2014, chapter 1).

Resource assignment happens on lower and more detailed level than in capacity planning. Project managers request resources by sending the requirements to the appropriate managers, this request happens far in advance and by role and skill, sometimes even preferences for individuals can be requested. Resource capacity supports assessing of available resources without taking roles into account, when in resource management the exact roles are officially requested. (Manas 2014, chapter 1.)

The next step is that appropriate department manager will fill the requirement by named resources and this is considered as ‘soft booking or reservation’ only. Meaning that if the project doesn’t start in time the resources can be re-allocated to fulfill other requests. Finally closer to the actual work usually five to six weeks prior project manager will ‘hard book or allocate’ the reserved resources to the tasks and fulfil the reservation. (Manas 2014, chapter 1.)

As the summary Manas (2014, chapter 1) listed following key definitions and takeaways. Demand represents a *pipeline,* or collection of pending or active ongoing work. One of the most valuable and most misapplied assets are *human resources*. They represent demand (work) and supply (resources). *Demand planning* is a pre-requisite for *Investment planning*, it is a process when business decides on the changes required for various improvements. *Investment planning* is a process when prioritization and selection of the demands happens and when they can be performed taking into consideration available resources or Capacity planning. *Capacity planning* comes during *Investment planning,* it is a process when available human resources capacity is evaluated. (Manas 2014, chapter 1.)

The result of good resource management is that the required and right people are available during the right time and for the right work. It helps to utilize the best combination of the resources to meet demand requirements and also to be aware that these same resources may be in demand by other projects. The right resource management approach should be able to support demand planning on earlier stages, as it gives better visibility on personnel availability. Having visibility on pipeline, timelines, people allocation and their workloads supports resource managers in smarter decisions on accepting or rejecting projects, staffing the team or hire 3rd party vendor. (Parsons 2022.)

Townsend in his article in Planview listed critical points why Resource management is important (Townsend 2022):

- The Resource management supports visibility on the resource availability and when people available.
- Helps to assess available skills of each employee and suggests whether additional people or skill would be required.
- Supports understanding on resource utilization and where people already allocated or planned for allocation and helps to re-valuate the allocations and capacity.
- Resource management supports resource prioritization and allocation for critical demands
- Should support on-demand real-time visibility on the people for resource managers.

The aim of good resource management process is to support dynamic nature of project-oriented organizations, by providing good visibility on people workload, capacity, and skills, by equipping resource managers with the tool that helps to maximize resources and reduce unnecessary costs, what is especially critical in IT organizations. (Manas 2014, chapter 1.)

Additionally, right people allocation and utilizing the right skills in the project supports employee's satisfaction from the work. The common problem in project organizations is too limited internal resources availability and unhappy overloaded workers. Right allocation with taking into consideration skills might improve people's satisfaction from done work. (Manas 2014, chapter 1.)

2.3 Best Practices in Resource management

Appleseed RMCP benchmark study sponsored by Planview concluded in 2013 was brought in the book of Manas. (Manas 2014, chapter 2.) The study was conducted based on survey of around 500 leaders and resource planning professionals. These interviews and surveys were designed to gather information about organizations' resource management and capacity planning practices and to identify best practices and common challenges. (http://www.Planview.com/RMCPReport.)

The study showed that some organizations have been able to progress to a much higher level of planning and decision-making, enabling them to optimize their resources to a much greater degree. Maureen Carlson the chief researchers for the study emphasized main characteristics of these successful and mature organizations. (http://www.Planview.com/RMCPReport)

These organizations have understanding about "what people are working on, quickly identify bottlenecks, and have the capability to run on-demand what-if scenarios to adapt to change" (Carlson, 6 August 2013). The mature organizations able to see what their employees work on, what are the ongoing projects, who is allocated to those, and what skills they have. People who are temporarily idle and have capacity for allocation or who are assigned to more projects than they can handle. As based on the research many organizations emphasized lack of visibility on their resources as a top frustration. Many companies had none or limited visibility on the work from the resource perspective, many had an understanding what people are working on but limited understanding on when they become available again. (Carlson 2013.)

The company requires an established process and technology where everyone records the required information regularly and consistently. This covers a technology that allows to project and resource managers to capture information of planned and actual time spent, a progress of the project against planned milestones. (Manas 2014, chapter 1.)

Successful managing of constant change is another important area where mature companies were found more advanced than less successful organization. These companies have not only the visibility on the resources but also able to allocate people on-demand needs in case the priorities have been changed. (Manas 2014, chapter 1.)

The next characteristic that was found in the research is 'meld top-down with bottom-up approaches to capacity planning and resource management'. (Carlson 6 August 2013.) Manas J in his book emphasized this concept as very powerful. Many companies are use top-down capacity planning or bottom-up resource planning, but the most successful combine and marry these approaches. (Manas 2014, chapter 1.)

Top-down capacity planning is the part of prioritization and investment planning, when assessing of the capacity of the availability of resources for the time they are required happens at the role level. Bottom-up refers to the detailed process when resource planning and assignment happens at the name level while the projects were planned and executed. (Manas 2014, chapter 1.)

The research found that successful companies integrate both methods and realign them periodically, that means that they do not separate capacity planning and resource management as independent tasks. Reconciling both methods periodically allow to the companies to be more informed about the current status of the resource assignment and usage what makes capacity planning more accurate. (Carlson 2013.)

Technology plays important role for improving visibility into the resources, simplify the processes for allocation and time tracking, support companies to make informed decisions by providing insights and analytics. The right software should help to track available resources, their allocation, assign them to the different projects and programs. (Carlson 2013.)

Below are functionalities that are found important to support above characteristics in resource management process in project-oriented organization. The list was collected from several websites oriented on the resource management analysis and consulting such as PLANVIEW.com, PROJECTMANAGER.com and THEDPM.com.

Resource availability and workload planning is an important feature to manage organization's

resources effectively. (Aston 2022; Parson 2023.) This feature helps to resource manager to make decisions about how to allocate resources to the coming projects, to manage employees' work-loads, and understand the resource usage. It gives a visibility on who is available or when a person can be available. (Parson 2023.)

As Manas described in his book (2014, chapter 2), if the goal is to determine resource availability, then resources must first be allocated to future work to determine how much time is available for new work. Resource allocation provides a forward-looking view of resource availability, while time capture can inform past spending and future estimates. Additionally, if time entry includes estimates of time remaining, then time tracking can play a direct role in predicting resource availability. (Manas 2014 chapter 2.)

The next feature is skills management. This functionality allows to ensure that right people are assigned to the right projects. It should give real-time visibility on the skills that are especially in-demand and their availability and possible gaps. Allows to understand what skills are available or when can be. (Parsons 2023.) Manas also emphasized importance of skills and proficiency follow up in his book. He mentions that most of RM tools already have functionality to track skills, but this feature is very often ignored by organizations. (Manas 2014, chapter 7.) He also raised that skill management plays a crucial role in supporting better capacity planning. This means that understanding the strengths and expertise of resources can help organizations make better decisions regarding resource allocation and improve overall efficiency. (Manas 2014, chapter 8.)

Automation. Parsons from PLANVIEW and Hennesy from PROJECTMANAGER.com mentioned automation of the resource requests and workflows. (Parsons 2023 & Hennesy 25 August 2022.) Ben Aston a digital project manager and founder of thedpm.com raises possibility to automate resource allocation and time tracking. (Aston 2022). Integration can allow to automate certain processes and extend the functionality of RM tool by connecting it, for example, to a Project management or Human resource platform. (Aston 2022.)

Timesheet management capability. Timesheet management is important aspect of resource management, as it provides project managers with the necessary information to allocate resources effectively and monitor the progress of projects or tasks. The use of a resource management tool for timesheet management can bring significant benefits to organizations. It can also provide real-time visibility into the time spent on different tasks and projects, which can help project managers make informed decisions about resource allocation. (Parsons 2023.) The RM tool can help to automate many aspects of timesheet management, making the process faster and more accurate and avoid demotivation of employees to fill their hours. (Aston 2022.)

Single resource of truth. Resource management tool must be the single point of truth for the resource data. The data should be available real-time and centralized in one cloud-based location. By having a single point of truth for resource data, organizations can avoid the pitfalls of having multiple sources of information that can lead to inconsistencies and errors. This can save time, reduce costs, and improve decision-making by providing accurate and timely information to managers and stakeholders. (Parsons 2023.)

Analytics, dashboards, and reporting. The functionality is promoted by all RM tool makers including Planview. Analytics allows for the analysis of resource usage data, identifying patterns, and trends that can help companies optimize their resource allocation strategies. Through analytics, companies can gain a deeper understanding of their resource utilization, identify areas for improvement, and make data-driven decisions to improve resource management. (Parsons 2023.)

Dashboards provide a visual representation of key resource management metrics, allowing resource managers to view and analyze resource data quickly and easily. They provide real-time information about resource usage, availability, and allocation, allowing users to quickly identify potential issues and take corrective action. The dashboard can give visibility on the resources by projects, departments and allows to understand why resources are not available for certain projects. (Hennesy 25 August 2022)

Reporting functionality allows companies to generate customized reports that provide detailed information about resource usage, allocation, and availability. Reports can be used to track project progress, identify potential bottlenecks, and provide insights into resource utilization. They can also be used to help managers make informed decisions about resource allocation and utilization. (Hennesy 25 August 2022)

Capacity forecasting and modeling. Capacity forecasting allows resource managers to identify potential resource constraints in advance and take appropriate actions to mitigate them. Resource management should have this functionality by capturing current capacity, upcoming demand and potential gaps. (Parsons 2023.)

Angie Parsons in her blog for Planview.com calls capacity planning one of the primary capabilities for resource management. Capacity planning is critical in resource management tool because it helps organizations optimize the use of their resources and ensure that they have the necessary resources in place to meet their goals and objectives. This includes anticipating and planning for changes in demand, allocating resources effectively, avoiding over-provisioning or under-provisioning, and ensuring that resources are used efficiently. By accurately forecasting resource needs, organizations can make informed decisions about resource allocation and utilization, improve their resource utilization rates, and ultimately achieve better business outcomes. (Parsons 2022.)

2.4 Conclusion

In conclusion, proper resource management and capacity planning are crucial for project-oriented organizations to allocate the right resources to the right projects, ensure people are not overloaded, and their skills are fully utilized. Resource management involves the continuous process of assigning the right personnel to planned and unplanned activities, as well as maintaining resource data. On the other hand, capacity planning helps organizations to make the right decisions based on available resources about what demands from the portfolio can be invested in and when it can happen.

Momeni and Martinsuo have highlighted the resource allocation challenges faced by service units that undertake both project and service support activities, suggesting that a hybrid or bottom-up method of allocation may be more effective in uncertain project environments. This requires involving team members in making decisions about their allocation. This aspect should be taken into consideration for resource management automation as it means that team members should have access to their allocation in the resource management tool and be able to understand their current and future availability.

The Appleseed RMCP benchmark study conducted in 2013 (http://www.Planview.com/RMCPReport) and featured in Manas' book (2014 chapter 2) identified key characteristics that successful and mature organizations possess in terms of resource management and capacity planning. Mature organizations have high visibility into their resources and have an established process and technology to capture information about planned and actual time spent on projects. The companies have clear visibility on who is doing what and when will available. They can also manage constant change and allocate people on-demand needs in case of changes in priorities.

Manas (2014, chapter 1) with the reference to the study recommended to use both top-down capacity planning and bottom-up resource planning approaches to optimize resource management process. Integrating both methods and reconciling them periodically can lead to a more accurate availability and capacity view. Technology should be able to support these requirements by providing the right features. This means that resource management software should provide a consolidated view of capacity and demand and the aim of good resource management tool is to have capacity planning capabilities as part of one software.

Technology plays a critical role in improving resource management process in project-oriented organizations. It helps in tracking available resources, their allocation, and assigning them successfully to different projects and programs. This chapter listed several functionalities that are essential for resource management program, including resource availability and workload planning, skills management, automation, timesheet management capability, single resource of truth, analytics, dashboards, reporting, and capacity forecasting and modeling. By implementing a comprehensive resource management tool that integrates these functionalities, organizations can optimize their resource utilization, improve project outcomes, and achieve better business results.

3. Methodology

This chapter provides an overview of the research strategy and methods utilized in this study. The research strategy describes the overall approach to the study, while the research methods describe the specific techniques and procedures used to collect and analyze data.

3.1 Research Approach

Different research approaches can be chosen depending on the situation and the phase of development. The action research was considered in the beginning of the research; however, a parallel project was initiated independently from this research where similar goals were considered. As the result it was agreed that there is a need to understand the current environment and the requirements coming from the specific group of users and the case research was considered as the main approach of this project.

According to Kananen (2013, 37-39) the aim of a case study is to gain a deep and comprehensive understanding of a specific phenomenon or problem. The case study approach can provide rich and detailed data that can be used to develop practical solutions to real-world problems. (Kananen 2013, 37-39.) The case study is suggested when the goal is to produce suggestions for a development for a company, organization, process, or, for example, a product by to exploring the current. Different data gathering methods are used as the goal is to obtain in-depth and full picture. (Ojasalo, Moilanen & Ritalahti 2021.)

The main justification to choose the case research as the approach is the missing understanding of the needs of the line managers in IT organization for improved resource management solution. Understanding of the specific of the organization, current process and detailing the requirements will be basis for the further automation.

These are the stages that are defined by Ojasalo, Moilanen and Ritalahti

Preliminary development task or problem	Getting familiar with the phenomenon in practice and theory Defining the development task more precisely	Collecting empirical data and analysing with different methods: interviews, surveys, observations etc.	Development suggestions or models

Figure 1. Case study phases (Ojasalo, Moilanen & Ritalahti 2021).

These are the phases of data collection conducted in the research:

Phase 0 Data: Discussion of the problem and possible target outputs with the job supervisor. During this phase main questions to answer are defined, and the research plan is agreed. This is the preliminary phase that shapes and directs the research.

Phase 1 Data: Literature overview and finding the best practices for Resource management software selection. This is continuous phase that lasts through whole period of the project. It starts with learning of the theory and main definitions that supports further discussions on the Resource management process. It continues with studies on Software selection process and particularly on Resource management tools selection. Different web sources are studied for understanding the current situation on the Resource management tools market, and for evaluation of the critical features of the tools recommended by different companies. This study will help to evaluate own tools used in the company and will shape the proposal.

It covers:

- particularities of project-oriented organizations
- concept and definition for resource management
- best practices in Resource management market

The source for this phase is books for the theory and conceptual framework. Websites and blogs for collecting RM market and offers.

Phase 2: Learning of the current landscape and overall process in the IT organization. This was achieved through secondary data materials and meetings with architects and tools owners.

Phase 3: Learning and analysis of current process for resource management in IT organization and pre-liminary requirements. This is approached via several interviews and meetings with IT resource managers. The aim of this phase is:

- to define and analyze as-is process
- to identify whether the same approach is used withing IT organization and search for the best practices within the organization if applicable
- listing the tools used in the organization and their analysis

Phase 4: Defining the requirements for Resource management Software in IT organization. Applying the best practices collected through theory study and the results of the interview. The goal of this phase is:

- to identify the critical requirements for SW in Resource management tool
- to identify critical features that line managers expect from the tool

Phase 5: Gathering the requirements for the RM tool and conduct the proposal. A working session was organized with the line managers where best practices collected from different teams are presented. Critical requirements are documented and agreed with the participants

3.2 Data collection and analyzing

Different methods of data collection can be applied in the case study, both quantitative and qualitative and their combination. Qualitative is the most popular approach to collect data in the case study, it can be conducted through natural environments such as observations and interviews or analysis of the written data, documents, reports and other materials. (Kananen 2013, 109-115.)

The research in this thesis aimed to support RM tool selection for resource management process in IT team. It was required to understand the current as-is situation and qualitative methods of data collection were chosen for this need.

Qualitative approach is preferred when research questions cannot be answered through statistics and numerical data and require deeper understanding of the context. According to Ojasalo, Moilanen & Ritalahti (2021, chapter 4.1) qualitative research aims to gather much information about a specific subject, which allows for a deeper understanding of the phenomenon, often from a more comprehensive perspective. Qualitative research is useful when the researcher wants to understand the experiences, perspectives, and behaviors of individuals or groups. (Ojasalo, Moilanen & Ritalahti 2021, chapter 4.1.)

Data can be considered as primary and secondary datasets. Primary data are collected by the researcher from the source by using different collection methods such as questionary, interviews, surveys, observations etc. Secondary data are collected from already existing sources and used as the supported material to understand background, initial insight of the problem. The source of secondary data can be company’s documentation, reports. At the same time the secondary data can be internal, acquired within the organization or external, obtained from outside of the researched organization for example official Internet data, periodicals and others. (Chandra & Harindran 2017, chapter 3.1.)

Secondary data, mainly internal documents of the company of the case organization, were used in this research. The aim of using them was to understand the background of the process in general, to get better understanding on what current landscape of Resource management tools available in the company. The documentation also helped to focus on certain tools during further evaluation. There were some materials that I could acquire only after discussing the topic with the expert. Table 1 represents the documentations that were reviewed for RM tools and landscape understanding.

Table 1. Secondary data source

Name	Content	Description and purpose
ERP Finance Time-Sheet And Assignment	IT CTI and IT BPA allocation file	The allocation file of the case team. The excel contains the list of ongoing projects, actual and planned allocation
Case company _Kimai_Training_LineManager_Basics_2022	Kimai Kit user guide/ Timesheet tool used in IT	This document along with interview id 8 (Table 2) allowed to explain why the tool cannot be used as main RM tool
Case company Resource Management Strategy	Company's RM strategy and future landscape	This document was acquired after the interviews with RM tools experts id 2 (Table 2) and it gives an overview of the future landscape of the company. Some tools that were checked in this research was planned to ramp down in the future what limited the case organizations selection
- Resource Mgt - 02 - Training - Ed02.pptx	The document that was acquired after interview with Head of BPS Finance	The document describes how MS Sharepoint is used in business team to handle time allocation

Interview is the most common way of data collection in qualitative research. It can be group or individual. In theme interviews, the researcher typically identifies a set of themes or topics that are relevant to the research question or problem, and then asks participants about their experiences, opinions, or perspectives related to these themes. The researcher may use prompts or follow-up questions to encourage participants to elaborate on their responses and provide additional insights. (Kananen 2013, 109-115.)

Kananen describes two types of questions in the book (2013,117-119). Closed or structured questions are those questions that are designed to elicit specific, narrow responses from the participants. They often have a limited set of possible responses, for example, “yes” or ”no” and are typically used to collect quantitative data. Closed questions can be useful for collecting data that is easy to analyze and compare across participants, but they may not allow for in-depth exploration of participants' experiences and perspectives. (Kananen 2013, 117.)

Open questions, on the other hand, are questions that allow participants to provide more detailed and open-ended responses and encourage participants to share their thoughts, feelings, and experiences in their own words. Open questions can be particularly useful for exploring complex or sensitive topics, as they allow participants to express themselves in a more nuanced and comprehensive manner. (Kananen 2013, 117-119.)

There are also structured, semi-structured and unstructured ways of interviewing emphasized for different data approach. Ojasalo, Moilanen & Ritalahti (2021, chapter 4.2) suggest using structured interview when factual information is collected from the large group of people by asking the same questions. One of the way to use this type of interview when it supplements qualitative data collection already done before. (Ojasalo, Moilanen & Ritalahti 2021, chapter 4.2.)

Unstructured interviews are those that come without pre-defined questions. Bell & Waters (2014, 181) call it ‘conversation with purpose’, and the aim is to obtain information that ‘will enable you to gather data to address your research question or topic’ (Bell & Waters 2014, 181). The interviews are used as preliminary stage to identify importance of different areas and topics for the research. (Bell & Waters 2014, 181.)

Semi-structured interviews are considered as the best suited to the case-study. The interviewer prepares a set of questions to be followed in the interview. However, in contrast to structured interviews, the questions can be flexibly worded and allows follow-up questions, to get deeper understanding of the interested topic. As the result these types of interviews can potentially allow appearing of a topic that was not predicted by the researcher. Semi-structured interviews should support open and free discussion where interviewee has a possibility to express the view on the subject from own perspective and experience. (Hancock, Algozzine & Lim 2021, 53.)

The primary source of primary data for this research was obtained through interviews, which were conducted using both unstructured and semi-structured methods. Several interviews and meetings were held to gather data on the current resource management and allocation process in the commissioning organization.

In addition to interviews, other sources of data were also utilized, such as email exchanges for clarification, existing documentation, and training materials on the tools used in the company. The combination of these sources provided a comprehensive understanding of the current process and the tools used in the organization.

The relevant literature provided insights into the challenges faced by project-oriented organizations and the theories related to resource management and capacity planning. It also helped the researcher identify the appropriate teams to interview, as not all teams in the organization were project-oriented or possessed the necessary experience and understanding of project-driven work environments.

By gathering best practices observed in the market and conducting interviews with line managers, the foundation for the requirement proposal was developed. The literature review and interview findings enabled the researcher to make informed recommendations for future resource management tools that should effectively address the organization's needs.

At the beginning of the research, unstructured interviews were conducted to gain a better understanding of the resource management process and the company's plans for its RM software landscape. The list of the interviews can be seen in the Table 2. The purpose of these interviews was to obtain an overview of the current resource management process and the tools being used in the company, without a prepared set of questions. The interviews with experts and the documentation they shared provided an understanding of the landscape and characteristics of the existing RM tools.

Meetings were also held to gain insight into possible future landscapes for RM tools, but it was revealed that there was no clear strategy for automation in the IT organization at the time of the research. Meetings with automation and digitalization experts and the RM architect provided an overview of ongoing initiatives, evaluations of past tools, and possible future landscapes for the company. The results of these discussions are summarized in the chapter 4.2.

These meetings revealed a lack of clarity about the future of resource management in the IT organization, as there were no RM tools being used in other departments that IT would like to implement. Furthermore, during a meeting with the portfolio manager, it was discovered that an ongoing initiative for RM automation in IT processes had been underway for at least a year, but many line managers and even the RM architect and operational team manager were unaware of it. This lack of communication highlights siloed work in the case organization. As a result of this meeting, it was agreed that the research would support the ongoing project with critical requirements from a resource management perspective. Alignment with the project only occurred five months after the research was initiated due to the lack of awareness of the initiative.

Table 2. Meetings with RM experts

id	Interviewee/Role	Topic	Date	Meeting type
1	Automation and Digitalization expert	RM tool usage in business department	04.10.2022	MS Team/ Recording
2	Head or RM Operational Support	RM tools usage in the company, landscape	14.10.2022	MS Team/ Recording
3	RM Architect	RM tools usage in the company, planned future landscape for the company and IT organization	26.10.2022	MS Team/ Recording
4	Portfolio Manager	Automation project discussion and alignment	01.03.2023	MS Team/ Recording

The primary data source for this research was line managers who engage in resource management and allocation activities. Internal support teams, such as the IT organization, business support organization, and project managers team, were selected due to their shared work practices and similarities in activities such as project and demand support, with the potential for service support. These teams were all project-oriented organizations, where each team member was usually involved in at least one project and supporting several smaller demands. The theory about project-oriented organizations allowed to focus on the right teams.

An overview of the interviews conducted during the research is presented in Table 3. The objective of the interviews with line managers was to obtain a comprehensive understanding of the usage of resource management and allocation processes, tools utilization, and the primary features used and absent in the current tools. Chapter 4 presents the findings of these interviews.

Table 3. List of conducted interviews with line managers

id	Type	Interviewee/Role	Topic	Length	Date	Documented
1	MS Teams	Job Supervisor/Resource manager of Finance CTI	Initial discussion/ Process overview	23 min	09.09.2022	Recording
2	MS Teams	IT Manager of Finance CTI	RM process in the team; tools, important features	23 min	03.01.2023	Recording
3	MS Teams	IT Manager of Finance BPA	RM process in the team; tools, important features	37 min	05.01.2023	Recording
4	MS Teams	IT Manager of Finance CTI	Kimai Kit clarification	24 min	05.01.2023	Recording
5	MS Teams	IT Manager ERP Backend Development	RM process in the team; tools, important features	44 min	09.01.2023	Recording
6	MS Teams	IT Manager Order Execution	RM process in the team; tools, important features	25 min	11.01.2023	Recording
7	MS Teams	IT Manager of PM team	RM process in the team; tools, important features	25 min	25.01.2023	Recording
8	MS Teams	Head of BPS Finance	RM process in the team; tools, important features	40 min	25.01.2023	Recording

All interviews and meetings were in online format using MS Teams, the official tool for the remote meetings in the company. The recording with transcripts was taken with the acceptance of all participants. The background for the reason of the meeting and approximate general were sent to all participants via email beforehand. There were additional emails exchange to clarify some details.

The interview with the resource managers followed this structure:

1. Introduction by the researcher about the research work and clarification on the team's involvement in the projects: how many projects the team handled in 2022, well-being of employees and their allocation level
2. Presentation of the process and the tool used by the managers. One example when a request for the resource comes from the project or other demand. Checking on any possible automation that is used.
3. Discussion about possibilities on time tracking, resource availability check, capacity planning and forecast and statistics in the current process, and their importance for the line manager.
4. Discussion on other requirements that manager would like to see in the future tool.

The theory with the best practices was used as a basis for discussion about possibilities and requirements for the tool. Idea was to understand whether the same are important for the line managers of support organization and whether other critical functionalities they expect that was not part of the best practices found on the market.

The interviews provided answers to the research questions. It was possible to gather the tools used by different organizations and record the best practices of those teams where resource management found more advanced. Additionally, the requirement for the future RM tool were collected through the observation of the current process and discussion of critical features that the managers see important for their work.

All data were recorded with the transcripts. This was big help in data analysis. All recordings were listened through, reconciled with the transcripts, and key points noted down in MS OneNote. Appendix 3 provides brief notes about the meetings with line managers. Some recordings contained much more information than others as some managers are more experienced about the resource management and familiar with the possibilities that tool can provide. These managers are relatively new in the company and have fresh experience about how resource management handled in other companies.

They are IT Manager ERP Backend Development and the requestor of this research IT Manager of Finance CTI. Their interviews required the most attention and were listened through at least 2 times. All the rest managers from IT organization have very long experience with the case-company and do not have any recent experience from other places.

Additional meeting was set up with the requestor of this project where interview results were presented. During this meeting information about the tools acquired during the interviews was shared. And advantages and drawbacks of each solution discussed. Summary of it is described in the chapter 4.2 Resource Management Process and the Tools (Meeting with Job Supervisor/IT Manager of Finance CTI 08 February 2023).

Then a working session (22.03.2023) with four managers was conducted to verify the final list of the requirements they have for the future RM tool. Each requirement was discussed, and the list was updated. These requirements then shared with the project team working on RM tool selection for IT organization. During the meeting with the Job Supervisor/IT Manager of Finance CTI shared that they started to set up Azure DevOps tool for their needs and already promoted it in the team. The result of this workshop is described in the chapter 5.

Table 4. Result discussion meetings

id	Type	Interviewee/Role	Topic	Length	Date	Documented
1	MS Teams	Meeting with Job Supervisor/IT Manager of Finance CTI	Sharing the approaches finding	45 mins	08.02.2023	Notes
2	MS Teams	Workshop with IT Manager of Finance CTI, IT Manager of Finance BPA, IT Manager Order Execution and IT Manager ERP Backend Development	SW Requirement review and way forward	45 mins	22.03.2023	Recording

3.3 Reliability and validity of the research

In the book "The Quality of Qualitative Research" by Clive Seale, external reliability is discussed as one of the key components of research quality in qualitative research. Seale argues that external reliability refers to the extent to which the research findings can be replicated or confirmed by other researchers in different contexts or with different samples. (Seale 1999.)

Seale emphasizes that external reliability is important for establishing the credibility of qualitative research findings, as it demonstrates that the findings are not specific to a particular sample or context, but rather are generalizable to other settings. He suggests that researchers can enhance external reliability by carefully documenting their research procedures and making their data and analysis methods transparent to others. (Seale 1999.)

These are the ways to improve external reliability described in the book (Seale 1999) and followed in this research: identifying the researcher's position in the field, providing details about the data source and social situations in which it was collected, giving a full account of the theories and ideas used, providing a detailed account of the methods used, and creating an audit trail to provide a critique of the procedures used. (Seale 1999.)

Internal reliability refers to the extent to which other researchers can match the given constructs to data in a manner similar to the original researchers. The goal of internal reliability is to enhance the confidence in the logical consistency of the data analysis process. (Seale 1999.)

There are also features that can improve the internal reliability and applied in this research explained in the book. Seal suggested to use low-inference descriptors, which involves recording observations in concrete terms as much as possible, rather than relying on researchers' reconstructions or personal perspectives. (Seale 1999.)

To avoid personal interpretation of data in this research, full recordings of interviews and observations were made and transcribed. Constant reconciliation of data was also carried out to ensure accuracy. This approach allowed the researcher to present the interview results and secondary data material in a reflective manner.

4. Results of interviews

One of the aims of this research is to understand the current process of the resource management and the tools used for it in the case organization. The request for this project came from the team that uses excel mainly to follow up the allocation. The line manager of the team looks for the improvements and possible tool to replace the excel until permanent solution will be implemented. The data were collected through several working sessions with Resource management service team and solution architect. These meetings gave information about available tools in the company, including IT organization and their landscape. During the discussion with the RM architect became clear that IT doesn’t have interest to re-use already existing tools used in the customer-oriented departments.

It was decided with the supervisor and requestor of this research to concentrate on as-is process in the case organization, understand approaches and SW used there for Resource management in other teams and to come up with the suggestions for possible temporary solution if any exist. It was found that managers of the case organization are mainly use excel with very basic analysis, one team used OneNote. It was decided to expand the scope to a Backend Development team from other organization but also from IT and Business support team, that has common way of working in the projects as the team that requested this research.

At the same time IT initiated a project for the RM tool selection and it was agreed that this research will support with the as-is process of the case department and requirements for the RM tool collected from the line managers.

This chapter concentrates on the as-is process, the tools used in the interviewed teams and their best practices covered during the interviews. The next chapter will discuss about the requirements that managers expect to be fulfilled with the future tool.

4.1 Resource management as-is process

Below process is described based on initial interview conducted with the Manager of Finance CTI (09.09.2022) and several company documents review.

The process starts when business identifies the new needs or demand, after the *Demand planning* has completed. There are several types of demands that are coming to the pipeline of the team:

- Strategic demands, part of the company’s strategy on digitalization. These are mainly big projects. Strategic demands can be also purely IT driven as for example, planned system upgrade

- Legal requirements due to local changes. These must do items and takes priority. Most of them are critical and urgent must be delivered within short period, many of them known during planning, but some unplanned might come and ad-hoc team should be applied. The changes are usually minor and cannot take too long time.
- Other new business needs. Not all business needs will require IT involvement and a system change, not all these requirements come to IT pipeline.

IT projects pipeline is the list of Demands coming from business requirements, they are categorized as described above where legal requirements are the highest priority projects, following by strategic demands and all the rest are with the least priority in IT pipeline.

Prioritized projects are getting delivery leads from IT organization and Project managers from IT and Business can be assigned at the same time. This process is followed weekly with IT, business and PMO stakeholders. The special templates Program investment Proposal and Business case are prepared to justify the project need for the business case, the template already includes the project scope, business benefits and very high level of the required resource types, it also includes high level of costs estimation for external and internal resources. This information goes through IT Governance, such as Portfolio interlock where representatives of each business group of the company get information about the project, its benefits, costs and approximate timeline, and the first approval happens on the company level. The second round of approval of the business steering group approves the budget of the pre-approved project. The final review is done by IT management. This describes in brief Demand and Investment planning process of the targeted by this research IT organization. Different types of the resources required for each project is expected to be known already during the investment planning as it is prepared in the Program Investment template. All these activities are capture in excel. The process is captured in the Figure 2, the picture was presented during the meeting with the Manager of Finance CTI (09.09.2022)

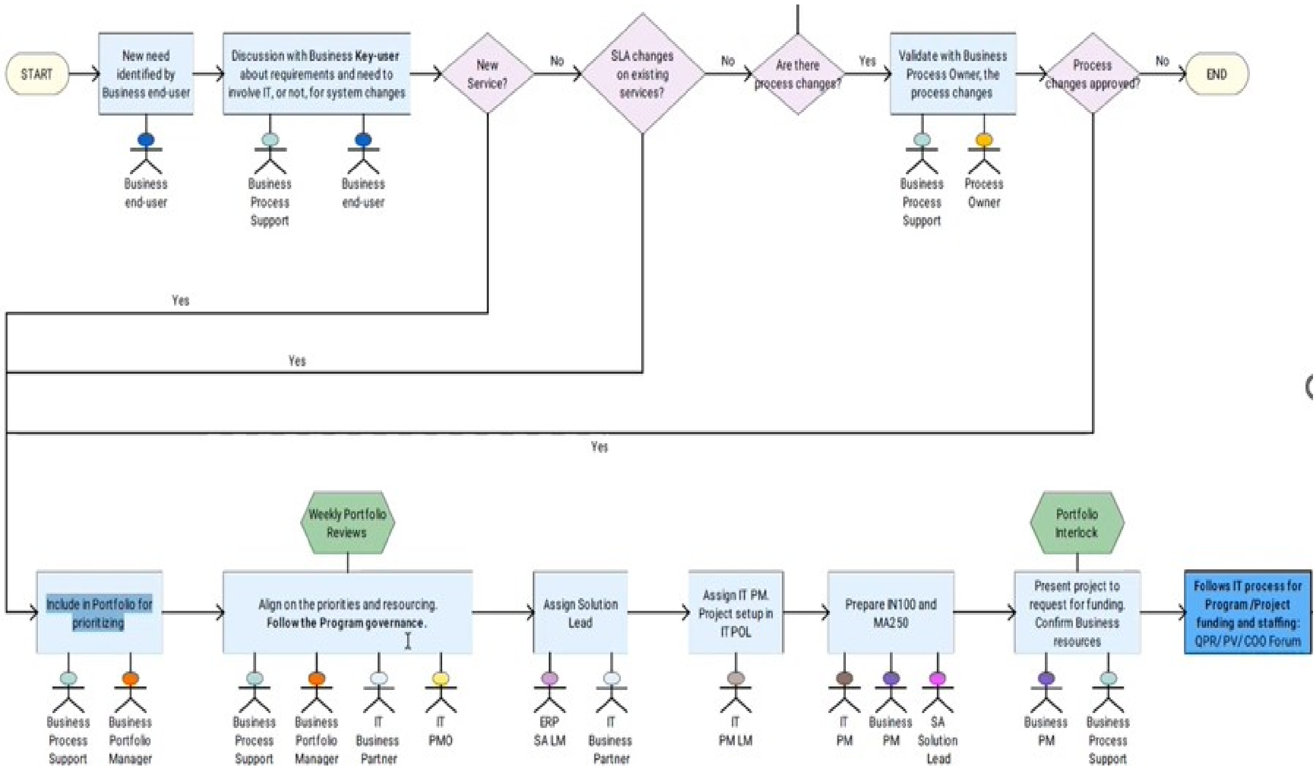

Figure 2.. Demand planning and prioritization process (Manager of Finance CTI 09 September 2022)

Next phase is when a project gets approvals for funding. It means the project is scheduled to the time as discussed during prioritization and the resources are expected be available by that time. Line managers promise allocations for the project based on current situation understanding. The manager should know approximate schedule of the coming projects that impacts the team and required resource types. Each manager checks availability of their team from the timesheet excel or other source and allocate exact resource to each demand.

An excel file is used to record planned and actual allocation of each member of the team. The organization targets that each employee should spend 150 hours per month to the projects as maximum. Full allocation to several projects might be risky in case of any delays or deviations in the timetable, that is why the manager tries to keep planned allocation below 150 hours per month. The planned hours come from a project manager of each demand and resource manager allocate a team member to each demand by recording the planned hours to the excel.

Expectation that each team member will get planned duration of the project from PM and his/her allocation required for this project. The planned hours for each project for the whole duration is filled by each team member in the excel. These planned hours give visibility on the available resources to the resource manager.

It can happen that there are no resources available at the time when project should start. There are 2 scenarios happen in this case:

1. The project cannot be delayed, and the resource is required by its start. In this case the resource manager comes back to business stakeholders and ask about re-prioritization and what ongoing or planned demand can be dropped, and the resource re-allocated to the higher priority project
2. Some of the projects or smaller demands can be delayed

As it could be seen from above steps demand and capacity planning is isolated from the resource management process. The reason is that there is no unified view on the resource availability. All work happens in the different excels, each manager checks availability based on own excel and understanding of capacity of own team. The blending of top-down and bottom-up approaches indicated as critical characteristics of mature organizations by Manas (2014, chapter 2) cannot properly work due to lack of clear visibility on the available resources. Additionally, as it was found in the interview with the Manager ERP Backend Development (09 January 2023) not all key participants are even involved in the capacity planning. It was raised by the manager that his team must react on the request when demand already got funding based on expectation that all resources will be available. This can lead to the budget increase as external resources would be required.

There is acknowledgement in the IT that Resource management process requires improvements. Here are some pain points emphasized in the IT department (RM Architect and 26 October 2022):

- Resource management today is working in reactive mode to short-term resource requests & without comprehensive visibility of how available resources are planned to be used in short/long term
- Limited view of resource requirements and freed up capacity during Project lifecycle
- Missing link of competence needed to deliver the service portfolio
- Demand-based capability development is required
- No formalised method to validate dimensioning of hiring requests
- Working in silos, different initiatives are running in the same area without proper harmonization and end to end process for all of them

4.2 Resource Management Landscape

Presentation about Resource Management Strategy was obtained during the meeting with RM Architect (26 October 2022). A basic analysis of the company landscape was presented. These are main activities that were emphasized and captured as part of Resource management process:

- Demand Planning, that should cover
  - setting up / importing entity structure
  - setting up demands for resources based on projects, tasks, sub tasks
- Resource Allocation Management includes
  - mapping of resources to demands
  - rejecting / approving demands
  - leveraging resources
- Time Tracking:
  - entering time records by resources
  - mass uploading of time records by PM rejecting /approving time entries
- Invoicing cost booking

Below Figure 3 gives an overview of As-is and possible future landscape around Resource management tool in IT organization. The idea that all interfaces would be automated in the future or some tools to be integrated. The landscape for the whole company is much more complex as there is at least 3 big RM products already used in customer service teams. Figure 4 gives then more detailed landscape with the type of current connection and the roles around Resource management tool.

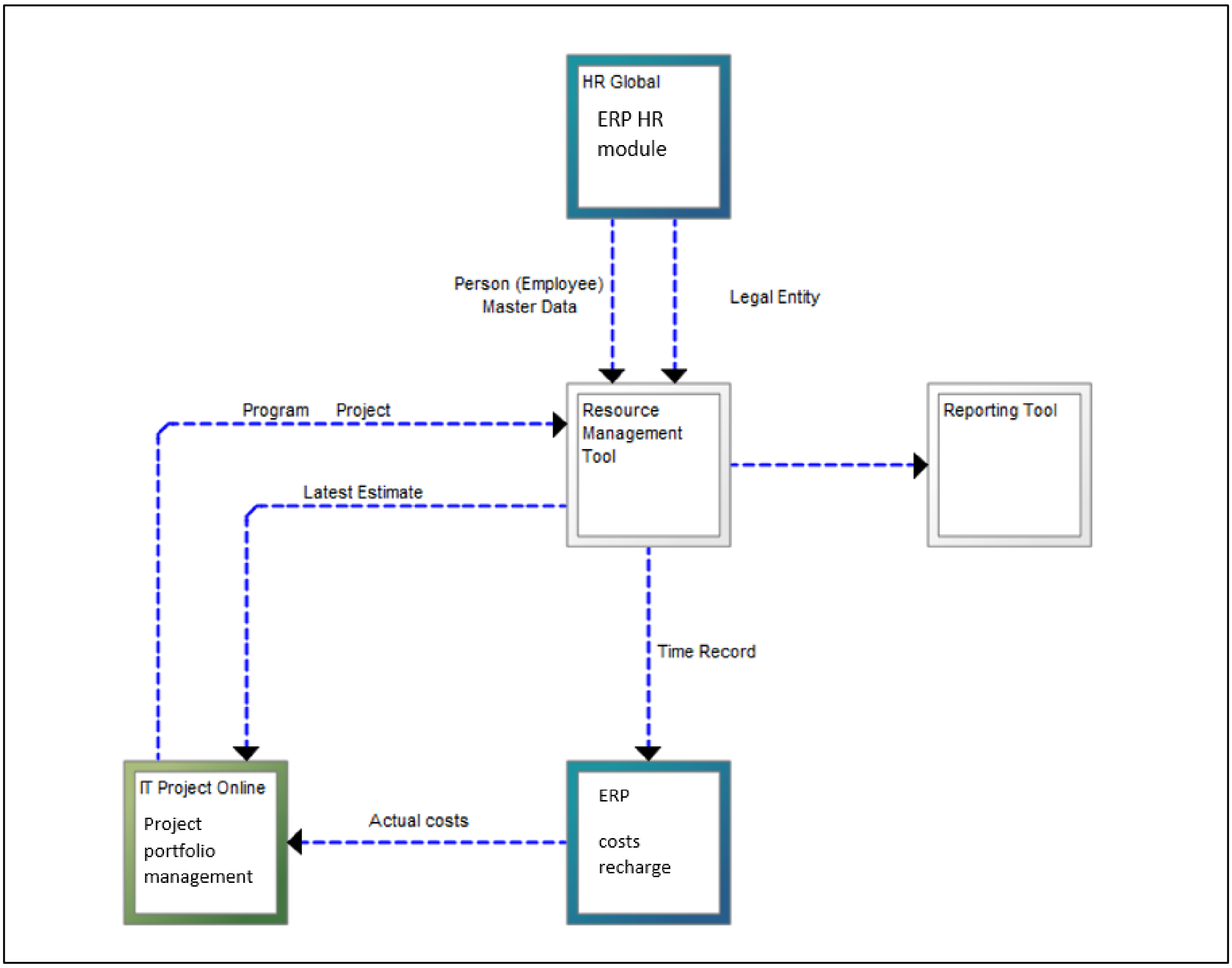

Figure 3. RM current landscape

Kimai (Free Time-Tracking App (open-source) https://www.kimai.org/) was chosen as a temporary RM tool. More details about this SW and why it Is not used by the managers can be found in the chapter 4.3.1. The current landscape with the roles can be found in the Figure 4. The basis of the architecture was taken from the internal document for the KIMAI training, and it was enriched with the information about line managers' and team members' role.

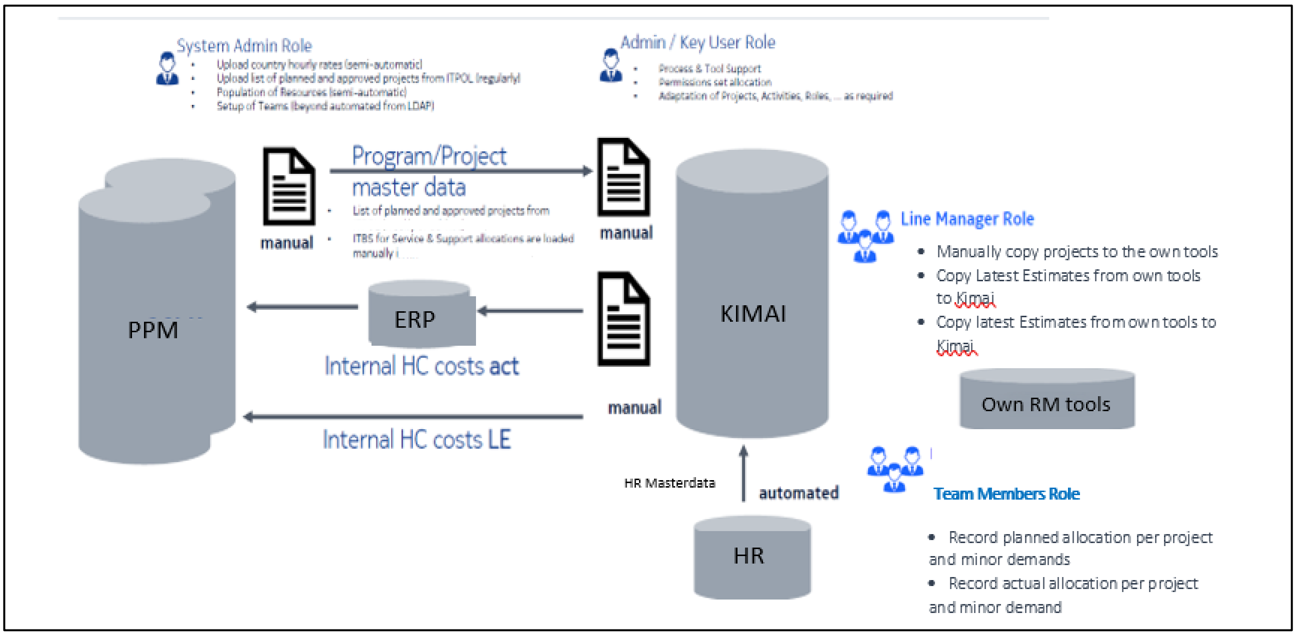

Figure 2. Current Architecture with Roles assigned

All teams that were interviewed from IT organization do not use Kimai for resource management. The reasons are described later in the section dedicated to the tool. The teams use own tools to follow up resource availability and to collect actuals. The tools found in the interviewed teams are described in the chapter 4.3. Line managers then copy the latest estimates and actuals from own programs manually to the timesheet tool KIMAI. There is also a template exists that allows to import data quicker, but the template should be correctly filled in another excel.

Most of the current interfaces are manual and require human's interaction to import and export data. The resource management tool requires data about upcoming demands that are exported from PPM tool, very basic data available from HR tool such as name of employees. The costs base don latest estimates then imported to ERP for the costs recharge and invoicing of the projects.

All actuals also exported to IT Project and Portfolio management (PPM) tool. The IT PPM consists of these elements:

- MS Project Web Application that supports program and project management functionality
- MS Share Point Online that allows to use common storage structure for program and project documents
- Power BI provides reporting

As it can be seen information about resource availability is distributed between Resource management tool or Kimai, own tools used by the line managers and Project Portfolio Management tool. As the result none of these programs have real-time and full end to end picture with all demands and available resources and cannot support proper capacity planning and availability check.

4.3 Resource allocation tools as-is

This chapter gives overview of the tools used in the case organization to manage resource allocation, time-tracking and if possible capacity planning. Three main tools are described: Kimai, Excel and Azure Devops. Kimai is the tool used by all teams as it is mandatory for the case organization costs follow up. One interview was exceptionally done with a business support team, as it was found during this research that the team came out with own solution with MS SharePoint and Power BI, that could potentially help also to the case organization. Similar information was shared with the requestor of this research IT Manager of Finance CTI (08.02.2023). The team has started Azure DevOps with Power BI adoption.

4.3.1 Kimai as a temporary timesheet tool

Kimai tool was chosen by IT organization as a temporary solution to record actual costs and latest estimates of the ongoing projects. This is an open-source time-tracking solution that can be freely downloaded from https://www.kimai.org/. The tool is free of charge and that was one strong reason to consider it for IT organization as the temporary solution.

The tool allows to the resource manager to insert allocation hours of each team member per project. Each project receives a WBS code created in an external SAP ERP system. WBS or work breakdown structure is an object in SAP that allows to break a project into tasks and follow up its progress, Main function of WBS in the organization is to collect and settle costs.

The resource manager must update the latest estimates for each employee. The allocation is recorded in hours. It is expected that each team member works for 150 hours per month for one or many projects. Every month the allocation hours should be adjusted as based on actuals recorded by each team member in the separate excel.

The tool receives the latest list of the projects from a PPM tool. The manager can do allocation only to the projects created in the tool. In case a person doesn’t have a project allocated or project is not yet approved and created then his/her time will be assigned to a dummy project – ‘*Planning Project*’.

The tool and the process obligate the managers to allocate their team members with the full capacity for the whole year. It is planned that each worker has 150 working hours per month and all hours should be utilized. All work done in the phase before project approved should be allocated to the '*Planning Project*'. This includes a free capacity a worker might have. This ended up to the situation that the managers do not see actual team's capacity and not clearly see who has availability in the future and who doesn't. The tool is not flexible with the categories as it requires project number created always.

The tool is used for the costs tracking and recording only. Each IT manager that was interviewed uses own way to follow up resource allocation in the own program. Kimai is used for teams timesheet recording that is then used for the further recharge and invoicing. As the result all managers do unnecessary work and collect information in the own tool with the level of information, they require for proper resource allocation follow up, and then copy this information to Kimai with the level required for this application. Another drawback managers indicated is limited access to the tool. Kimai access is granted to the line managers only, and not to the team members. The reason for that was clarified via email with solution architect. The tool doesn't have proper access right control developed and cannot segregate different roles. Giving access means to give to all. That is why the access right was limited to only certain list of users.

Granting access to the team members would simplify the process and some managers would switch to Kimai, for example IT Manager of PM team (25 January 2023) and IT Manager Order Execution (11 January 2023). These managers use very simple excels to mange their resources, and Kimai would be equal switch for them. But the fact that there is an extra file where their team already record their spent time and they any way should manually copy those entries to Kimai reduced their usage of the tool, as using excel became a habit.

Summary for KIMAI

Advantages
- Established process for collecting project portfolio data and for billing re-charge
- Supports time tracking
- Has own dashboard and reporting capabilities (very limited)
- One unified process for collecting actuals common for all teams

Disadvantages
- Out of the box open-source time-writing solution without most of Resource Management capabilities, supports time-tracking mainly
- Manual integration with other tools (ERP, PPM) and manual data maintenance

- Cumbersome user interface (IT Manager ERP Backend Development 09 January 2023 & IT Resource Manager of Finance CTI 05 January 2023)
- Limited reporting capabilities without segregation of roles or skills (IT Resource Manager of Finance CTI 05 January 2023)
- Limited access control, doesn’t allow team members to update their hours directly

4.3.2 Using excel for resource allocation

Excel is used by four teams that were interviewed. The tool is used additionally to Kimai. Managers collect the project codes to the owns files. The excel is the typical way of managing resource allocation for the line managers in the organization. The excels usually have a list of the projects and minor requirements and the people allocated to them. Resource managers record the project to the excel when the demand comes and allocate resources to them. The manager also records planned end date and the requested hours. Some teams record allocation in percentage and some in hours. Each team member updates own actual work hours to the excel. Two out of four managers (IT Manager Order Execution 11 January 2023 & IT Manager of PM team 25 January 2023) have very simple file with a list of projects and people allocated to those. The managers basically know their team well, and whenever allocation to a project required, they check the files, and then talk to people who they think might have capacity and knowledge.

Two interviewed teams (IT Manager of Finance CTI & IT Manager of Finance BPA) have common excel what allows them to see bigger picture of people allocation. The excel is complex and requires constant maintenance. These teams have the best visibility among those who use excel for the resource management. The teams capture not only projects and minor requirements, but also a preparation phase, time spent on discussions before the project is created, and have a section for general, that covers all the rest meetings and activities. Different technics to analyze availability and visualize them are possible in this file, but almost not used, as it becomes heavier to maintain. The file is stored in the common share point of the team and allows to have it updated real time, what doesn’t require any additional notifications form the team members via email. However, the file becomes bigger and heavier what sometime slow down its display and update.

Summary for Excel

Advantages

- Easy to use, everybody knows how to use excel
- Supports basic resource availability and tracking
- Has possibility to visualize data, however, requires constant maintenance
- Can be shared with the whole team and updated real time

Disadvantages

- No integration with other tools (ERP, PPM; kimai) and no established process for frequent data update. It is responsibility of each line manager to update data
- Very limited capacity planning view without proper maintenance
- Poor visibility on people availability if proper manual maintenance not done

4.3.3 Using Azure DevOps for resource management

Azure DevOps is used by one team among those that were interviewed (IT Manager ERP Backend Development 09 January 2023). The team uses Azure DevOps to follow up allocation and progress of the team by tasks.

Azure DevOps is a cloud-based software development platform offered by Microsoft. It provides a set of tools and services for managing the entire project lifecycle, from planning and coding to testing, deploying, and monitoring. It is powerful collaborative platform for a project team, it has capabilities to follow project phases, monitor tasks via task board such as Kanban, and provides analytics. (Azure DevOps)

This team has the best visibility on the current and partially future workload of the team members. The biggest limitation that was raised during the interview is missed updated backlog of coming demands, what limits visibility on the future workload. The reason why backlog is not updated is because the team is not part of initial discussions with business on the demand planning, and the tool does not get refreshed demand list from IT project pipeline. Most of the projects recorded to Azure Devops at the time when request for allocation comes to the manager.

The process starts with a work item created in Azure Devops with all the main details such as project details, main contacts (project manager, business partner), start date and planned end date. The work item is created with the status New. The statuses that are used follow project phases: New (the item just logged), Design, Build, Functional Unit Testing, User Acceptance Testing, Sign off and Go live. The tool also supports smaller projects where different phases are followed.

The tool provides a dashboard with the high-level overview of different characteristics. Few examples were showed during interview. The team has visibility of current workload of the team and the tool can help to understand future workload. However, future view is limited due to lack of coming demands understanding.

The team collects useful statistics that can help them to plan resource allocation based on phases of the project. For example, the team has understanding on average Project Lead time. At the day of interview this indicator was 69 days. It means that in average it takes 69 days between the day when the item logged to the tool by the manager and go live. Another indicator that is used by the team is Project Cycle time that shows how long does it take between the day when a team's member got allocated to the project until go live. The example in the interview was 59 days. It means that it takes 10 days in average from the beginning of the project and time when the team's member requires allocation. This lead time can also help to predict when different projects can be finished, and people can be planned for the next demand. The Figure 5 shows the dashboard overview:

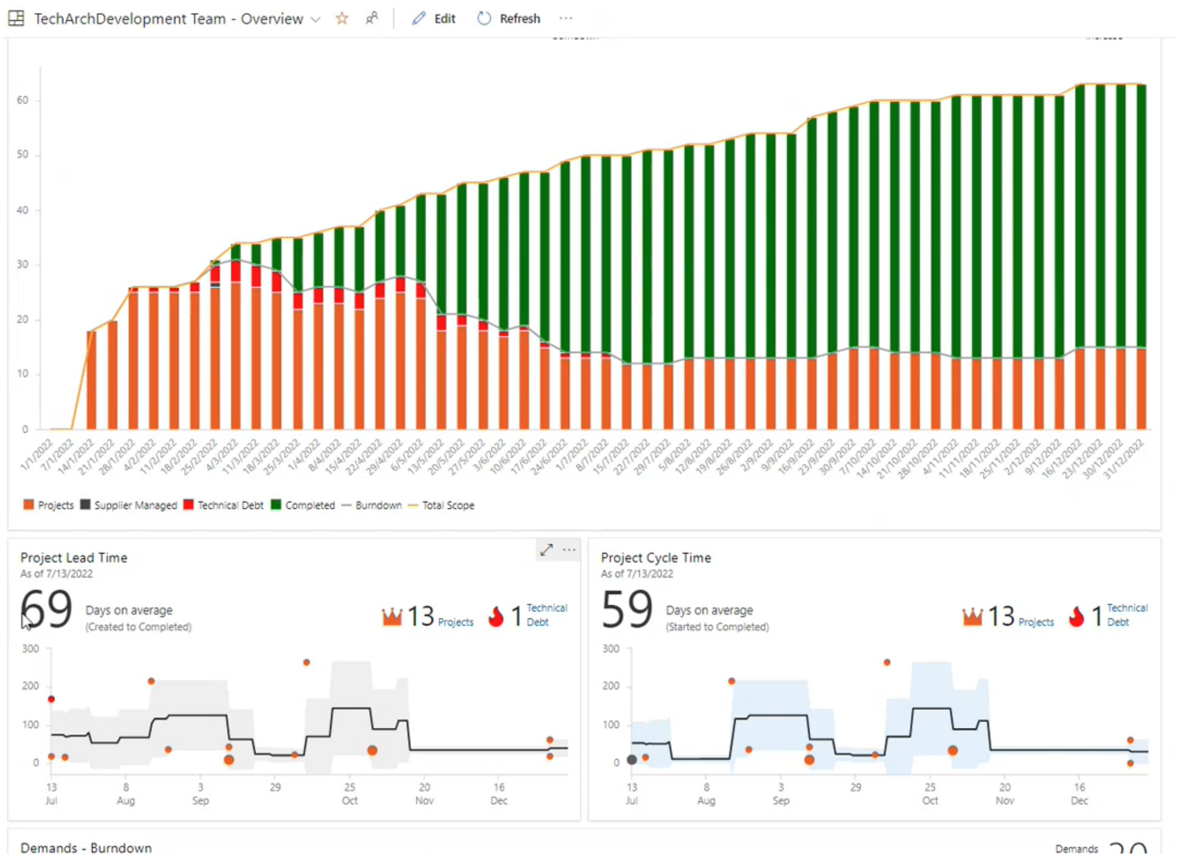

Figure 5. Azure Devops Dashboard of the interviewed team.

The team follows different metrics for the big projects and small demands, that allows them to have more precise picture and statistics for the allocation planning.

Each team member is responsible to record the task they do for each project or demand and that created as linked to the project user story or bug/ defect or any other task. These items have own statuses and other details like categories. This allows to see actual work each person does at the moment. There is also statistics and metrics for the tasks that line manager can follow up. This gives visibility on actual burn out of the team and how the workload is spread. It gives good overview on the tasks the team performs for the project, demand, gives justification for the time allocation and might signal if special attention is required. This part is important to be detailed by each team member.

Figure 6. Active tasks statistics Azure DevOps

The tool collects historical data and statistics for the team that helps to analyze done work, gives understanding on the time that requires to fix different problems, allows to spot discrepancies, has possibility to support future projects planning.

Summary for Azure DevOps

Advantages

- Project collaboration tool that designed to support projects
- Supports resource availability and tracking
- Supports different phases and project life cycle follow up
- Tasksboards as an effective way to visualize and follow up assigned tasks
- Supports to record data with different phases
- Allows to connect working items to the projects, that gives more detailed visibility
- Has possibility to visualize data with different dashboards and reports, that are easy to handle when data available
- Can be shared with the whole team and updated real time

Disadvantages

- No integration with other tools (ERP, PPM; kimai) and no established process for frequent data update. It is responsibility of the line manager to update data
- The tool and the process is isolated to one team

Azure DevOps found as the most successful approach to manage resource allocation with different levels of visibility. The tool allows to differentiate tasks, to link different actions and tasks to the main project, follow up phases or statuses. The tool provides a visibility on the assigned tasks to each team member and allows to follow up their statuses via the tasksboards, give visibility to resource allocation on any required level and support it with analytics and dashboard functionality. However, the tool is not used in IT on organization level and was found to be used by one team at least among those that were interviewed. It means that currently the tool has limited view to one team. There is also no integration to other tools like Project portfolio manager, HR or ERP and it is manager's responsibility to follow up the pipeline and update coming demands to the tool manually. Very many demands are recorded at the time when project manager raises request what sometimes can be late as proper capacity planning for this team is happening during demand planning. As it was already stated the team Is not always involved in the demand planning process even though this team is responsible to develop required solution.

4.3.4 MS SharePoint with Power BI

One interview (Head of BPS Finance 25 January 2023) was conducted with the manager of a business team that does not belong to IT. The team supports many projects and additionally must support ongoing processes. This is the team that is closest business partner for the IT ERP team and considered as the organization with very similar way of working and project-oriented approach.

The interview with the Head of BPS Finance brought another approach to the resource allocation through the usage of common space in the company's SharePoint collaboration platform supported by Microsoft 365 app. The SharePoint is the commonly approved way for collaboration and documents sharing in the company. The team created a space where they collect all projects and demands and assign people to them. The team has made transition from the excel to SharePoint Online Solution & Power BI Dashboards environment to manage Resources Allocation.

Power BI is a business analytics service provided by Microsoft that enables users to visualize and analyze data from a wide range of sources. The tool can be integrated with many sources including excel and Azure DevOps. (Power BI.)

The process and the use of SharePoint Online Solution have been approved for the entire department to which the interviewed team belongs. The common practice of using data, creating allocations, and updating activities provides a broader view of the department's capacity and resource allocation what is seen as a huge advantage. The tool has comprehensive view of all tasks where the team members of the department allocated to. The categories are preset, but much more flexible than in Kimai. The tool is integrated with MS Outlook, and updates contact data.

Power BI usage is powerful way to visualize data that gives the statistics and analytics on all levels where data exists in the SharePoint. The managers can see real time statistics and analytics for all details they fill in the SharePoint. quick analysis of resource availability, which is essential for effective resource management. With this feature, managers can easily identify employees who have free capacity and can be assigned to new projects or tasks. Conversely, they can also identify employees who are overloaded and need to be allocated additional resources or support.

Capacity and allocation comparison visualization allows managers to compare the planned and actual resource allocation and make necessary adjustments in real time. By monitoring resource allocation in this way, managers can identify potential issues and address them before they become major problems.

However, there is not integration with any demand tool, and all demand information should be inserted manually, and comes to the tool at the time when project manager requests resources. The tool is not that flexible as, for example Azure DevOps, as it doesn’t allow easily to link different tasks and browse them, doesn’t give task board and other project management features. The tool is also restricted to line managers usage, and it means that team members communicate about their hours via email.

Summary for Office 365 Collaboration Platform (SharePoint Online Solution) with Power BI

Advantages

- Easy to use, accessible online
- Supports resource availability and tracking
- Harmonized process for all teams in the department
- Powerful visualization supported by Power Bi
- Integration with MS Outlook

Disadvantages

- No integration with other tools (ERP, PPM; kimai) and no established process for frequent data update. It is responsibility of each line manager to update data

- All data are inserted manually, including project and demands
- Access limited to managers, no segregation of access rights

4.4 Conclusion

This chapter presents an analysis of the current process and tools being used. The demand and capacity planning process described above in the chapter highlights the fact that resource management is not integrated into the process. This means that there is no single view of resource availability, and each manager has to rely on their own understanding and individual excel sheets or other tool to check the availability of their team members. This lack of a unified view of resources raises a significant challenge to the blending of top-down and bottom-up approaches, which is seen as a critical characteristic of mature organizations, according to Appleseed Partners and OpenSky Research by Planview.

The current set of tools available to IT resource managers fails in providing sufficient visibility on resource capacity and allocation. Resource managers lack a clear understanding of the potential impact on projects if a team member decides to leave the company. Typically, resource planning is planned as a percentage of total monthly working hours, which only represents an average time to be spent on a project. However, this approach does not consider differences in project milestones, where allocation may vary significantly. Moving to a phase-level allocation approach would require not only a better tool but also a change in the process of booking resources on a more granular level.

The organization has a certain degree of high-level visibility regarding the allocation of resources and incoming demands. To support their resource management processes, the IT department, including the case organization, adopted Kimai as a temporary tool. However, Kimai is primarily designed to facilitate time tracking and has limited functionality in other areas of Resource management. Additionally, there is no access to the tool by the team members. Thus, it is not utilized by the managers responsible for allocating teams to different projects. As the result, teams have been forced to invent own methods of managing resource allocation, resulting in a variety of data structures, levels of detail, and tools being used. This lack of consistency can bring a challenge to the organization's resource management efforts, particularly with respect to maintaining clear and transparent overview of resource allocation across the organization. While selecting good software for resource management is important, it is not the only challenge found in the IT organization right now. A unified process for resource management would be required. With a harmonized process in place, the organization would be better able to handle changing demands and adjust resource allocation accordingly on all levels.

Azure DevOps is a powerful tool that provides project management and software development services for organizations. The team that adopted Azure DevOps for resource allocation and planning is able to get real-time insights into the ongoing projects and demands. This tool allows them to manage tasks, track progress, and collaborate with team members efficiently. However, the tool requires constant manual maintenance as it doesn’t have integration with Demand planning process.

The interview with the Head of BPS Finance revealed that the use of SharePoint Online Solution and Power BI Dashboards for resource allocation has been a successful transition from Excel spreadsheets. The integration of these tools has provided a comprehensive view of all tasks and has allowed for quick analysis of resource availability, which is essential for effective resource management. Additionally, the tool's powerful visualization supported by Power BI has provided real-time statistics and analytics for all details entered into the SharePoint platform. While the tool has its limitations, including the lack of integration with other tools and the need for manual data input, the benefits of using SharePoint and Power BI for resource allocation outweigh the disadvantages. Overall, the use of these tools has created a harmonized process for all teams in the department and has improved the management of resources.

5. The requirements to the resource management tool

There were 2 aims achieved during this project. First is to find a temporary workaround for the resource allocation through the observation of the currently used tools and gathering best practices. The results of the research were shared with the Requestor IT Manager of Finance CTI during the meeting (08.02.2023). Azure DevOps approach used in one of the team found as the most suitable to follow allocation and the team has decided to use Power BI that was built on top of Azure tool to give even better visibility and insights. As it was described IT Manager of Finance CTI and IT Manager of Finance BPA used a common excel file and common approach to follow resource allocation. The same approach to use Azure DevOps was already promoted to IT Manager of Finance BPA and the team considers its adaptation as well.

The second aim was to understand what tasks and functionalities are important for the line managers that manage teams that constantly allocated to the different projects and do not have any routine work. This chapter contains the results of the final working session (22.03.2023) with the managers where all requirements were finalized. Initial list of requirements was created based on previous process discussions and the best practices gathered from literature. Power Point presentation was used to follow up the outcome of the meeting, which was then shared with the project team working on RM tool selection for IT department. The requirements are described below in this chapter.

5.1 Resource Allocation and activity levels

Effective resource allocation is crucial for any organization to ensure that all projects and demands are completed on time and within budget. However, it is not enough to have a simple list of projects and demands to allocate resources effectively. The allocation tool must be both simple and detailed at the same time.

Differentiation of allocation types is important to ensure that the tool can accommodate the specific needs of different projects and demands. Allocation types can include project-specific allocation, smaller demands, and general work. Moreover, it should allow the resources to be without allocation for proper capacity view. For example, team members can work on the preparation and planning for a not-yet-approved project, service tickets, and production support.

Teams must have the option to reserve time for possible meetings, trainings, reading emails, and other non-project work. It is important to note that it is not necessary to plan 100% of people's allocation until the end of the year as currently in Kimai process, as this can hinder visibility on the capacity. The tool should provide proper visibility on capacity, and it should not be necessary to plan everything in advance.

The tool must allow to differentiate allocation types by project, smaller demands, general work. The resources can be without allocation for proper capacity view, can work on the preparation and planning for a not yet approved project, service tickets and production support. The teams must have time reservation for possible meetings, trainings, reading email. There should not be requirement to plan all 100% of people’s allocation until end of year, as it happens in Kimai right now, there should be proper visibility on the capacity. Projects and smaller demands require own category as workload and duration are very different for them and that will allow to gather better statistics that can be then used in analytics and forecasting.

Another requirement raised by some managers is to have possibility to plan and report different project phases or life cyceles. This was especially important for IT Manager of Finance CTI and IT Manager ERP Backend Development. For instance, during the development phase, there may be a significant allocation of resources required for the programmers, while there may be less allocation required for the functional owners of the solution. On the other hand, during the integration testing phase, the solution owner may require the maximum allocation of resources for the project. Taking these phases into consideration during the planning process can lead to more optimal resource allocation and efficient project management. By breaking down a project into phases, managers can plan and allocate resources in a way that best suits the needs of each phase, while also enabling them to track and report progress throughout each phase. This approach can help to ensure that the necessary resources are available when they are especially needed and can also help to prevent resource shortages or over-allocations that can hinder progress or lead to delays. (IT Manager of Finance CTI 03 January 2023 and IT Manager ERP Backend Development 09 January 2023.)

The phases are already followed by the Backend Development team in the Azure Devops and the same approach can be considered for the common tool. The team also separated projects and minor demands and followed the common statuses that are used in the company for those. The same approach can be shared for all teams and considered during new resource management tool implementation. Below is the proposal.

Project phases:

- New

- Design
- Build
- Functional Unit
- Testing
- User Acceptance Testing
- Sign off
- Go live

Minor demand phases:

- Collection,
- Qualify,
- Business Analysis,
- Technical Analysis,
- Approval,
- Implementation,
- Evaluation and closure

Azure DevOps is found as one of the best tools among investigated to support different types of allocation and to follow up different project life cycles. However, the tool is used by one team among those interviewed, and the approach utilized in that team does not necessarily work for others. It is important that a common approach should be defined for the teams how to organize the activity types and different phases that organization can then follow up and analyze on all levels. It is also important to automate data flow to the resource management tool as most of the entries can come from other tools such as Project portfolio, project management and demand tool, or ticket management if applied. This automation is not fully supported in any tool right now and must be defined and pre-filled manually.

5.2 Timesheet management capability

One of the main key capabilities of a resource management tool is the ability to manage timesheets. Timesheets are a critical component for the line managers to understand allocation of the team members. According to Manas (2014, chapter 3), time tracking helps to understand past, shows where time was spent, improves forecast future and costs usage.

The current method of managing timesheets in the case organization involves team members manually entering their time spent on different projects and minor demands into a spreadsheet. The basic level is to record time on a project or minor demand level. The team that uses Azure DevOps went further and split bigger projects into smaller tasks. Time tracking can be time-consuming and prone to errors, as team members may forget to enter their time or may not accurately report the time spent on each task. Additionally, line manager should then collect actuals and planned time and input the same to a separate tool. This is the key functionality for the line managers and most of interviews were around it. Below are the requirements raised by the managers and possible best practices or recommendations found during the interview and theory review.

Manas described challenges and debates surrounding the implementation of time tracking and resource management in companies. Time capture is a critical tool for businesses to manage their resources and track progress. Organizations might encounter debates regarding whether to monitor individuals' time and what level of detail is necessary for allocating resources. Some organizations may be more accepting of time tracking than others and keeping it simple and easy is critical. Additionally, Agile project management presents a unique perspective on resource planning, where resource assignments are done at a phase or iteration level. It's important to consider the negative impacts of time tracking on employees' morale, and it should not be used as a replacement for good management and communication. By considering these factors, organizations should develop an effective approach to resource management and time capture that meets their needs while keeping their employees engaged and productive. (Manas 2014, chapter 2.)

The managers raised a possibility to simplify the process of time allocation in the new tool. This was raised during all interviews with IT managers. One can be achieved by giving access to all team members and allow them to book actuals directly there without collecting the hours in a separate excel. This will save time for the managers that will not require to copy paste the numbers from one tool to another how it happens now.

There is no common process implemented in the case organization for the frequency and level of time tracking. The managers see this task differently. For example, IT Manager Order Execution mentioned that he ’is not a fan of is to ask my team to report each half of an hour work of whatever topic’ (IT Manager Order Execution 11 January 2023.) It was raised that too detailed time tracking is not what expected, and expectation is to give consistent percentage allocation per agreed projects and minor demands. (IT Manager Order Execution 11 January 2023.)

The interviews with IT Manager ERP Backend Development (09 January 2023) and with IT Manager of Finance CTI (05 January 2023) showed a different requirement for the time tracking. It is expected that the tool will support drill down to the tasks, that will capture spent on more detailed level. This task would require changing the process for time tracking as daily activity instead of monthly as it happens now in most of the teams except the Backend Development team working with Azure DevOps.

Manas recommended to fill spent hours daily especially for the project-oriented organizations that perform several projects and different activities in parallel. Daily time tracking has been proven by several organizations to be an easier and more accurate method compared to weekly entry. Daily time entry doesn't require much thought and is much easier to remember what one did that particular day. Manas also emphasized that daily time tracking does not require employees to submit their time daily but merely to track or enter it daily. This process allows for greater accuracy in time reporting when it is submitted on a weekly basis. Over time, daily time tracking can become a habit that takes only seconds per day, especially if time-sheet reporting is made easy. (Manas 2014, chapter 2.)

All managers would like to see an automation in this process, so that the teams would not require to spend too much time on the time recording task. For example, the tool can use planned hours and pre-fill those for the worker to review and amend. Another way that was proposed during the working session is to automatically calculate the total hours worked by each team member on different tasks and take those into consideration for pre-filling the actuals. (Working session with IT Resource Manager of Finance CTI, IT Resource Manager of Finance BPA, IT Resource Manager Order Execution and IT Resource Manager ERP Backend Development 22 of March 2023)

Overall, timesheet management capability is a critical component of resource management tools. By automating many aspects of the process, the tool can save time, reduce errors, and provide real-time visibility into project timelines and resource utilization. With the right integration and automation, timesheet management can become a seamless and efficient part of resource management. In addition to automating the process of timesheet management, resource management tools can also provide real-time visibility into the time spent not only on projects but also on different tasks related to the project. This can help project managers identify potential issues early on and make informed decisions about resource allocation.

5.3 Tasksboard

Task drill-down capability was raised by two managers (IT Manager of Finance CTI 03 January 2023 and IT Manager ERP Backend Development 09 January 2023.) This functionality is considered as part of project management, however, found important for some line managers to give a possibility to track spent time on tasks of the projects and identify the tasks that might require special review.

Possibility to have a task board that employee can follow up. This helps to visualize open tasks for each employee and helps to track their work. The tasks can be linked to a project, demand or use phase support. This would require access to the tool for all team members as task should be updated by the associated resources themselves.

Only one team among those that were interviewed already used this functionality in their current process. (IT Manager ERP Backend Development 09 January 2023.) However, as it was already mentioned IT Manager of Finance CTI has started Azure Devops adoption for the own team, and finds the task board very powerful feature, that also wanted in the resource management tool.

The Tasksboard is a feature of Azure DevOps, a set of tools that provide a collaborative environment for teams to plan, build, and deploy software. One of the types of Tasksboard available in Azure DevOps is Kanban. The Kanban Tasksboard allows teams to visualize their work and track its progress through various stages. When a task is created, it is placed in the first phase of the Kanban board. This could be the "New" column, for example. As work progresses on the task, it is moved to the next column on the board. For instance, if a developer starts working on a task, the card can be moved to the "Active" column. When the work is complete, the task can be moved to the "Closed" column. This process of moving tasks through different phases of the Kanban board provides a clear visual representation of the progress of each task. It also helps team members to collaborate effectively by sharing information about the status of tasks, identifying bottlenecks, and resolving issues quickly. (Azure DevOps)

Figure 7 below is an example of a Tasksboard that was showed during interview (09 January 2023). It represents a board with tasks that are assigned to one team member. The tasks have own phases, and they can be also part of different activity types.

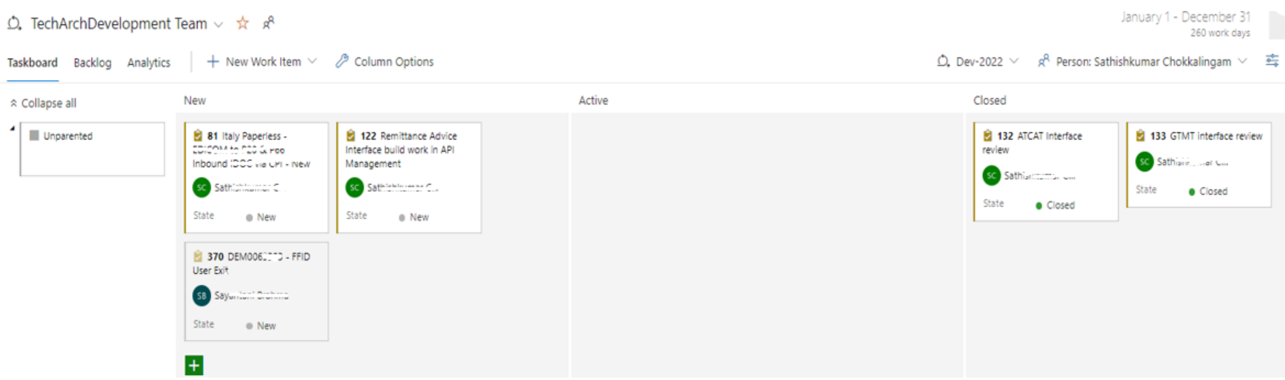

Figure 7. Example of a Task Board Azure DevOps (IT Manager ERP Backend Development 09 January 2023)

Some ideas brought during the working session by IT Manager of Finance CTI for work simplifying with the tasksboards:

- Prepare templates and pre-filled details. Keep it simple, so that people wouldn't be annoyed.
- Level for team management is higher than project management
- Color coding usage for the level of efforts, makes it immediately visible for the managers

5.4 Skill Management

The requirement was raised by IT Manager of Finance CTI, IT Manager of Finance BPA and IT Manager of Finance Order Execution. To ensure that an organization has the right people with the right skills to meet its current and future demands, it is essential to plan capacity not only by role but also by skill. By doing so, an organization can identify any gaps in its skill set and allocate resources more efficiently. This can involve analyzing the skills of existing team members, identifying areas of weakness, and planning training or hiring to fill those gaps.

There is a need to have a skill inventory or database for each employee that could be used in the RM tool. Essential source for this information would be HR tool. Unfortunately, HR has very high level of role description without capturing any other details or even career change within the company. There is no source for the skills and proficiency captured anywhere in IT. Managers usually know what area each team member able to support and have understanding about approximate knowledge of the workers.

This work should be planned from the scratch during the tool implementation and organization should decide what level of expertise would be required for successful resource management. All interviewed team support ERP system, and one of the proposals was to take area of expertise based on the system modules: Finance, Order management, Reporting and so on. Some specific and unique knowledge that people could obtain during different projects can be valuable addition to main skill set.

Some recommendation could be found on how to start introducing skill management process in the organization. An article written by Johann Strasser in his blog gathered much positive feedbacks from the readers. The article discusses the importance of skills management in resource management for companies. Skills management involves refining resource planning and responding to project demands in a targeted manner. The article outlines the benefits of skills management, including a more flexible management of resources. (Strasser 2022)

The article raises the challenges that can be met in the organization while introducing skill management process. First, it is crucial to document the employees' abilities comprehensively, which may require approval from the employee organization in larger companies. Another challenge Strasser raised is gathering employee data and make data transparent, as staff members may fear disadvantages compared to their colleagues in promotions or layoffs. To mitigate these fears, both staff and the company should get real benefits from skills management. (Strasser 03 2022)

The article suggests some tips for skill management introduction. One approach is recording skills by teams rather than individuals. Manager lists the skills of the team in general. This approach can help reduce staff fears but may also reduce individual’s motivation. Another benefit is forcing project managers to select skills for the projects, rather than request familiar names. Furthermore, when requesting specific skills instead of individuals, project managers are compelled to articulate the requirements with greater precision. This allows the team leader to distribute the workload more equitably among all suitable team members. (Strasser 03 2022)

Another approach is planning individual skills for each person and documenting the level of skills can create a better system for skills management. The recording of skills should be integrated into a consistent personnel development plan to enable staff members to see the benefit for themselves. When individual skills are recorded, it enables team leaders and managers to have a more detailed understanding of the skills and expertise of each team member. This can help in identifying gaps in skills and areas where training and development may be necessary. It also allows for more targeted and personalized career development plans for employees, which can increase motivation and engagement. (Strasser 2022)

5.5 Integration, automation and access

Figure 2 Demand planning and prioritization process and Figure 4 Current Architecture with Roles assigned confirm a clear need for the future resource management tool to be integrated or connected with other software. The manual interface by importing and exporting data should be avoided. Integration with the project management software, enterprise resource planning (ERP), and Human resource can centralize data and provide a unified and up-to-date details required for resource management process. This will lead to improved efficiency, reduced duplication of effort, and significant time savings.

Connecting the RM tool with other software tools can support automation of certain tasks, such as updating project details, project schedules, workers' details, and more. This will significantly reduce the risk of errors and save time for team members, allowing them to focus on other critical tasks. The RM tool should also interface with ERP systems for automatic cost recharges, which can help manage costs and ensure accurate billing for projects without extra efforts.

Another need identified was an up-to-date backlog of demand, which can be achieved through integration with the project portfolio management program. This will give the tool a real-time view of all upcoming demands, from larger projects to minor demands, allowing for better resource allocation and utilization.

Connecting the RM tool with HR will allow it to have updated workers' details. This will ensure that the tool has accurate information on team members, making resource allocation and scheduling more efficient. Additionally, integrating holiday management into the RM tool can help ensure accurate resource allocation and prevent scheduling conflicts.

During interviews with the managers, a significant concern that arose was the double work they had to do. The current limitation of access that the Kimai has does not allow team members to fill their hours directly in the tool, leading to the use of own tools for time tracking and availability check, which is easier for managers and teams. Limited access for team members might be one of the biggest reasons why managers work with excels more than with Kimai. This highlights the need for wider access to the future tool and allow its usage for all relevant team members. The tool must be able to handle different authorization checks as some data should be limited for display and most data to be limited for the change. Better access rights that can cover all team members will allow them to follow own allocation and be able to participate in the work prioritization as it is suggested in the study by Momeni and Martinsuo (2018).

The future RM tools must serve as the single source of truth, with reliable and accurate data that is available in real-time. It's important to avoid each team creating its own tool for resource management again, as this can lead back to the current situation with a fragmented approach and inconsistencies between teams. Instead, it's critical to have one central tool that provides a comprehensive overview of resource allocation across the organization. This ensures that all stakeholders are working with the same information and enables better decision-making.

5.6 Analytics, dashboards and reporting

Analytics, dashboards, and reporting are essential tools for resource management as they provide real-time insights into resource usage and performance. These insights can help line managers make better decisions during capacity planning, resource allocation, or planning recruitment. By utilizing these features, managers can identify trends and patterns in resource usage. For instance, the team using Azure DevOps (09 January 2023) could specify the average duration of projects or demands, identify the busiest phases, and determine the time it takes to fix bugs. This information supports managers in making decisions on whether to accept or reject demands and make promises on delivery timelines.

Moreover, these features provide a quick visualization of team capacity, highlighting overloaded team members. For instance, managers can create dashboards that display the number of tasks assigned to each team member, the time they have spent on each task, and their current progress. This allows managers to track the workload of each team member and identify those who may be overloaded or underutilized.

The interview with Head of BPS Finance (25 January 2023) brought their perspective on how Power BI can support resource management process having it connected to right data. Power BI is a powerful tool that enables data visualization and analytics on all levels of data existing in SharePoint. By utilizing Power BI, the team can obtain real-time statistics and analytics on the data they have input into SharePoint, enabling quick analysis of resource availability, a crucial component of effective resource management. With this feature, managers can easily identify employees who have available capacity and can be assigned to new projects or tasks. They can also identify employees who are overburdened and require additional resources or support. (Head of BPS Finance 25 January 2023.)

Only few managers use analytics and reporting for their resource management activities. Power BI can be a temporary solution to provide analytics and dashboards, in case excel is continued to be used. The advantage of Power BI is that it can be integrated with excel, allowing team members to work in the same tool while benefiting from analytics and data visualization.

5.7 Summary

This chapter covers the list of the requirements that line managers find important to manage resource allocation and capacity planning in project-oriented teams. Project view is important not only for project managers but also for resource or line managers, and there is a requirement to see the project progress in the tool. The reason is that gives to managers better visibility on resource utilization during different project life cycles and phases and helps them better plan resources for upcoming projects.

Some of line managers would like to have very detailed overview of their team's availability. This detailed information can be crucial for better planning and forecasting, leading to increased efficiency and productivity. To achieve this level of detail, it is important to have accurate and up-to-date information recorded in the tool. This information should be easily accessible and transparent, allowing line managers to quickly identify any potential scheduling conflicts or gaps in the team's availability. However, it is equally important to find the right balance in data recording, so not to overwhelm the team with too much information.

Automation is important for the line managers, as currently they should perform too much unnecessary manual work. Many processes automation can be achieved my integrating the RM tool with other critical SW such as Demand planning and prioritization tool, project management tool, ticketing tool if required. Automation of certain tasks and real-time data access can further reduce the risk of errors and ensure accurate resource allocation

The tool should have possibility to differentiate access rights, so that all team members would have possibility to review their allocation and record own time spent on different project. Wider access to the tool for all relevant team members can further reduce the risk of errors and make resource allocation and scheduling more efficient. Limited access possibility in Kimai found as one of the reasons why managers didn't work with the tool, giving access to the team members would reduce the need to have extra tool for allocation recording especially for those managers that use very simple solutions.

The need to plan capacity not only by role but also by skill is important for the line managers to meet current and future demands. Unfortunately, there is no defined practice for skill management in the organization, and none of interviewed teams established this process. Introducing individual skill management processes can be challenging as it requires documenting employees' abilities comprehensively and making data transparent. The teams might consider introducing team-based skill recording as a starting point.

6. Conclusion

In this thesis, the findings are summarized in Chapter 6.1, which explains how the research questions were answered and how the thesis objective was achieved. The chapter provides a clear overview of the research process and the conclusions drawn from the study.

Chapter 6.2 of the thesis provides recommendations for future development steps that should be considered based on the research findings. These recommendations are aimed at improving the resource management process. The chapter provides specific suggestions on how to leverage emerging technologies to optimize resource management.

Furthermore, Chapter 6.3 of the thesis discusses the role of large language models and AI in the resource management. This section provides findings of the potential benefits of using these technologies in resource management. The chapter highlights the importance of staying up-to-date with emerging technologies and trends to remain competitive in resource management.

6.1 Evaluating the research outcomes

The case organization faces challenges in effectively allocating its resources due to the absence of proper technology to support the resourcing of the projects. Outdated tools and manual processes are still being used to manage the organization's resources. There was an ongoing project for the resource management selection running in the IT department and they sick for the requirements for the tool.

The main objective of this work was to identify and collect the essential features necessary for a resource management tool that is tailored to the needs of the line managers of the case organization. The as-is process and the collected requirements will become one of the bases for automation and future tool selection.

The team that initiated the need for this project is still relying on Excel to allocate resources. Without a proper technology support, it becomes difficult for the team and especially the line manager to identify the necessary resources, obtain a complete picture of employees' availability, and execute capacity planning properly. The team look for a possible replacement of the excel to improve the visibility of the team’s allocation.

The thesis aimed two main goals:
- To collect the requirements and recommendations for the future automated solution
- To explore whether there are any existing approaches utilized by other internal teams that can be adapted by the line managers as a temporary solution until full automation is achieved

The main service of the case organization is delivering different projects for the company. Understanding theory of project-oriented organizations and their specific needs supported definition of the scope of this research by selecting project-oriented teams for the interview. Understanding the theory around resource management helped to the researcher to be better prepared for the interviews and analyze the outcomes. The best practices found on the market of resource management tools were basis for the requirements for the tool along with the managers' interviews and working session.

The main research question was: *What are the best practices and main required components of the Resource management tool critical for line managers of the organization?*

The current landscape with the process overview together with the theoretical framework allowed to identify the problematic areas that potentially can be improved by bringing better resource management solution. They were collected to the list of the requirements mainly as part of integration and automation. However, one of the visible outcomes of that review is lack of unified resource management practices among the line managers was indicated.

Kimai is the currently proposed tool for resource allocation is not found good solution to be the only tool for the process. All managers use own way of recording resource availability and analyze capacity. One of the reasons was limited access to the tool to line managers. As the result teams must fill their allocation separately and line managers preferred to keep using the same solution that is available for all and has the most recent view. Another limitation was raised that the tool doesn't allow enough flexibility for different type of work, to follow up different phases and doesn't support capacity panning and availability check for incoming demands. The line managers preferred to modify own tools that are already shared with the team that allowed to some to have the required visibility. These critical limitations of Kimai were transferred into the requirements for the future tool. It must allow to differentiate authorization rights and allow flexibility for the availability recording.

Other requirements were collected during interviews with the line managers, where they explained own way of resource allocation handling, their view on the process what the RM tool required functionality. It was noticed that managers that have recent experience from other companies are more unsatisfied with the level of resource allocation and availability used in the organization. They look for more detailed view of team's allocation and expect the teams to record their allocation to the projects and smaller tasks on daily basis.

Skill management possibility was raised as the requirement by line managers. However, there wasn't best practices found in the company for this matter. HR system contains only role description, that doesn't explain the main expertise of the workers, it also doesn't record the employees' experience and career change in the company. There is no skill database exist in the organization. A unified approach for all teams of the case organization should be agreed for skill management, and level of skill and expertise recording.

The requirements collected through the best practices on the market and interviews with the line managers were presented to the line managers. Those were discussed and the list was adjusted. The final list was shared with the project team responsible for the tool selection.

What are the existing tools used in the organization that potentially could be selected for the team to replace excel as the temporary solution until full automation? It is a secondary research question that was investigated during this work.

The list of used tools in different project-oriented teams was obtained to answer this question, and the tools' advantages were recorded. However, the selection of available tools is limited, with only four solutions listed, as most managers still rely on Excel. To improve this aspect of the research, it would be beneficial to compile a comprehensive list of all tools used by different teams in whole IT. Unfortunately, the current landscape only includes tools approved at the organizational level and does not contain those selected by individual line managers as a workaround for official tools.

One of the team decided to adopt Azure DevOps, a flexible tool that enables them to follow project life cycles and track availability during different phases. The team can also use the tasksboard to split projects into smaller tasks and visualize each team member's assigned tasks and their statuses. This feature provides better visibility to the line manager regarding the team's allocation and helps team members prioritize their tasks. Power BI was chosen as the tool for analytics and dashboards. Unfortunately, Azure DevOps does not solve the issue with manual work, as it lacks the required integration with other tools and does not offer functionalities for demand planning. As a result, visibility on future availability and capacity planning will be limited. The teams adopted Azure Devops are looking more detailed availability view from the future RM tool as well.

To ensure the successful selection of an RM tool for an ongoing project, it is crucial to share the requirements from the line managers. This helps to ensure that the selected tool is suitable and meets their needs. To encourage the usage of the selected tool, it is important that the line managers feel comfortable with it and would be also involved in the tool testing. This will help prevent them from reverting to previous tools such as Excel and encourage them to embrace the new tool.

6.2 Recommendations for further development

This chapter gives the researcher’s recommendations based on the concluded research. The source of these recommendations is mainly based on the observations during the discussions and interviews results.

To successfully implement a new resource management tool and process, it is crucial to align the resource management practices across different teams. It was discovered that managers have different view on the main processes of resource management. The new tool can help to support this harmonization, but it is important to involve managers in the decision making on the process details and changes, so the tool will not come as a big surprise with completely new process. As it was already said in the previous chapter it is crucial to involve the resource managers more in the decision making about the future RM tool and process change that it will bring.

One of the processes where managers have different view is level of resource allocation. Some managers prefer to have a very detailed view of project phases, with the ability to drill down to individual tasks, while others are content with high-level allocation. This process requires further discussion and alignment to ensure that everyone is on the same page and that the selected tool meets the needs of all parties involved. One potential solution to addressing these differing views could be to implement the required features in the Resource Management (RM) tool being used. Alternatively, the tool could be integrated with other tools, such as Azure Devops, to ensure that all parties involved have access to the necessary information and resources.

Some interviewed managers have used excel for resource allocation and never had better alternative. It is important to communicate the benefits of the RM tool to all managers involved. This will help them understand how the tool can improve their resource allocation process and streamline their project management efforts. It is also important to involve the managers in the decision-making process regarding the level of detail required in the tool. This will help ensure that the final decision is a collaborative effort that considers the needs and preferences of all parties involved.

There should be a decision taken whether skill capacity planning important for the organization and how to approach this process. The company and organization do not have skill and proficiency records stored in any view or system, only high level job description stored in HR. A skills framework should be developed that outlines the skills that are important for the organization and for the resource management. This should be based on the organization's goals and strategy and should be reviewed periodically to ensure that it remains relevant. Once the skills framework is developed, skills should be recorded in the resource management tool to track skills. Only after this new process introduced and implemented skill capacity planning can be implemented.

6.3 AI as emerging technology in resource management

When selecting a new solution for resource management, it is important to consider emerging technologies and future trends in the field. This is because technology is evolving rapidly, and new tools and techniques are being developed that can improve resource management processes.

One such emerging technology is Artificial Intelligence (AI) and its related field of Large Language Models (LLMs). ChatGPT, a chatbot developed by OpenAI, is an example of an AI tool that uses LLMs to generate human-like responses to natural language queries. LLMs are particularly useful in processing unstructured data such as text, and can be trained on vast amounts of data to identify patterns and make predictions.

As based on TPG webinar from January 2023, with the growing complexity of projects and the need for faster and more accurate resource allocation, organizations are increasingly turning to advanced technologies such as Artificial Intelligence (AI) and Large Language Models (LLMs) to improve their resource management process. It was indicated that 61% of participants would like to see AI functionalities in resource planning process. (Strasser & Pauels 2023.)

Currently, software vendors primarily offer AI support in project management tools that can be achieved by utilizing existing project data with robust reporting. However, there is no additional information with added value generated by AI available yet. AI can provide significant support in several areas such as automatic resource leveling, automatic project plan updates, and addressing "what-if" scenarios, which can greatly enhance the efficiency and accuracy of resource management processes. (Strasser & Pauels 2023.)

According to Gartner's prediction, artificial intelligence (AI) and chatbots will become so integrated into project management that leaders will start to view them as new stakeholders. It predicts that by 2030, 80% of project management tasks will be eliminated as artificial intelligence (AI) takes over traditional functions such as data collection, tracking, and reporting. AI-enabled project and portfolio management (PPM) is expected to emerge in the market disrupting the PPM market and causing a clear response by traditional providers. AI will improve data collection, analysis, and reporting, allowing for faster analysis and improved overall performance. PPM leaders will begin to staff their teams with those who can manage the demands of AI and smart machines as new stakeholders. (Gartner NewsRoom 2019.)

As AI takes root in the PPM software market, conversational AI and chatbots can be used to query PPM software systems and issue commands, replacing the traditional keyboard and mouse. Those PMOs that choose to embrace the technology will see a reduction in the occurrence of unforeseen project issues and risks associated with human error. (Gartner NewsRoom 2019.)

Conversational AI and chatbots are expected to transform the way project and portfolio management (PPM) systems are queried and controlled. Instead of using keyboards and mice, PPM and PMO leaders will be able to interact with these systems using natural language voice commands. This means that they will be able to ask questions, make requests, and issue commands in the same way that they might interact with a human assistant. (Gartner NewsRoom 2019.)

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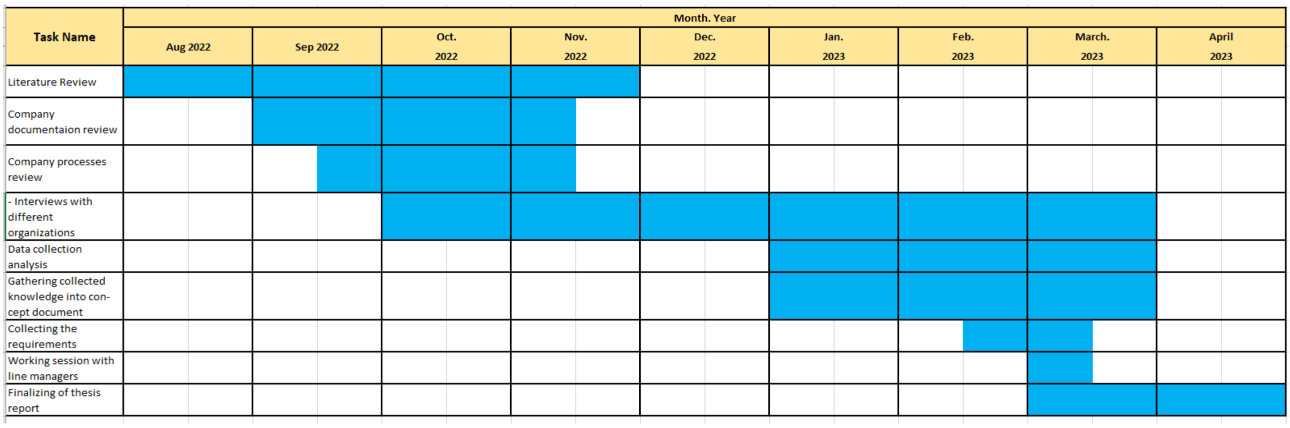
Appendices

Appendix 1. Project plan for the thesis research



Appendix 2. The template with interview questions

Interview Questions Template used during the discussion.
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?

Appendix 3. The interview notes

	Notes
Interview Questions Template used during the discussion.	IT Manager of Finance CTI
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	17 people, 2-3 projects per person
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	The recording: Nokia RM tools introduction-20230103_143520-Meeting Recording.mp4 Whole process in the excel. Complex excel is used, manual maintenance is required. The tool was created to be common for 2 teams. The excel part of shared space. Manual maintenance, heavy file Very detailed allocation. Initially excel visualization graphs and basic analytics was used
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	Main requirements raised: Detailed view on allocation, project phases, task drill down. Time tracking should be daily to support required visibility. Skill capacity planning is required. No source currently

	Notes
Interview Questions Template used during the discussion.	IT Manager of Finance BPA
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	10 people, more than 20 projects last year
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	The recording: Resource allocation process-20230105_103604.mp4 The process the same as in Finance CTI with the complex excel ad detailed view.
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	Main requirements raised: Posiility to follow up on skill level. Time tracking shouldn't be too detailed. Not sure how detailed level of allcoation should be followed. The team should not be oevrloaded with the tasks of recording

	Notes
Interview Questions Template used during the discussion.	IT Manager ERP Backend Development
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	The team just merged with another 22 people, more than 2 projects per person
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	20230109_103716.mp4 Azure Devops is the main tool. Very advanced visibility on the resource allocation. Detailed categories to capture allocation, phases and statuses followed up. Tasksboard is in use, all members assigned to the tasks, udnerstand prioritization. All team memebers responsible to follow up. Analytics and dashboard of Azure Devops. Big team, requires a lot of
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	The current tool satisfies the needs of the manager. The biggest challenge is to get up to date demand back log. The manager was going to discuss integration of the tool. Skill management is not important for the team. Timetracking is daily, people assigned to the tasks, important that everybody have access and could follow up

	Notes
Interview Questions Template used during the discussion.	IT Manager ERP Backend Development
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	The team just merged with another 22 people, more than 2 projects per person
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	The recording: Resource allocation process-20230109_103716.mp4 Azure Devops is the main tool. Very advanced visibility on the resource allocation. Detailed categories to capture allocation, phases and statuses followed up. Tasksboard is in use, all members assigned to the tasks, udnerstand prioritization. All team memebers responsible to follow up. Analytics and dashboard of Azure Devops. Big team, requires a lot of maintenance
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	The current tool satisfies the needs of the manager. The biggest challenge is to get up to date demand back log. The manager was going to discuss integration of the tool. Skill management is not important for the team. Timetracking is daily, people assigned to the tasks, important that everybody have access and could follow up

	Notes
Interview Questions Template used during the discussion.	IT Manager Order Execution
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	9 internal, 2-3 projects per prson
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	The recording: Resource allocation process-20230111_100222.mp4 Very simple excel used to record allocation that is used then to import data to Kimai. The manager relies on own understanding about capacity of the team and who can be allocated when new demand comes
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	All listed requirements are important. Importance of capacity planning is raised. However time tracking shouldn't be too detailed and shouldn't overload the team memebers

	Notes
Interview Questions Template used during the discussion.	IT Manager of PM team
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	15 internal people. 1- projects per person in average
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	Line manager of project managers. Very simple recording via emails, that copied than to Kimai. The manager fully relies on own understanding of team's capacity and availability, and discuss with the members is required. Project manager do not have proper visibility as well. The project manager from this team is allocated to the project where new RM tool to be selected. none from line managers
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	All listed requirements are important, but the process alignment is required. Skill management is not important for the interviewee as the manager, but very critical as for project manager.

	Notes
Interview Questions Template used during the discussion.	Head of BPS Finance
Team's background: How many team members do you have in your team? How many projects major and mini your team participated in last year?	
Could you please show and describe the proces from demand request to time allocation? How do you follow resource allcoation? What tool is used? How do you get visibility about your team availability? What level of allocation you record? What are benefits or limitations of the approach?	Recording: Resource allocation process in GBS-20230203_150904.mp4 The resource management is aligned across whole organization. Overall visibilty on all detailes. Sharepoint with Power BI used. The structure of Sharepoint is pre-defined. Only managers have access, Powr BI is easy to integrate, can be considered if excel used. capacity planning is not much used by the interviewed manager. Manager stil relies on own knowledge of the team
What are important requirements you see for the Resource management tool? Here are some possible options: Resource availability, utilization Skill management Time tracking Analytics and Dashboards Any other?	The requirements weren't collected from this team, and the manager not from IT. This interview was to bring another perspective to RM.