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Development of Collaboration with Stakeholders in Digital Services

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This study explores how collaboration with stakeholders should be developed in digital services alongside with ITIL 4 practices. The objective for this study was to create instructions how the current collaboration should be developed inside the case team.

The study was conducted as qualitative research and data was collected in three phases. The first data collection focused on gathering and analyzing information of the current status of collaboration with stakeholders. The findings of the current state analysis (CSA) pointed out which theories should be studied for this study in order to create a conceptual framework (CF). The conceptual framework, together with second data collection, led to the creation of the first proposal. The initial proposal was evaluated in the third data collection stage. The final proposal was created and presented with recommendations for next steps.

The outcome of this study is a proposition on how the collaboration with stakeholders should be developed based on ITIL 4 practices in the case company. The study gives a holistic perspective to developing digital services and is relevant now when the global pandemic is affecting the industry. Moreover, it provides for the case team a foundation to develop collaboration and methods how it could be measured and reported. The outcome supports the case team's strategic goals.

Keywords	ITIL, Collaboration, IT-Services, Digital services

Contents

List of Abbreviations

ITIL 4	IT-service management framework. Number four stands for fourth generation.
ITSM	ITSM stands for Information Technology Management
CSA	Current State Analysis

1 Introduction

During the last decades, business needs have changed and simultaneously technology has developed to the point it reaches every part of organizations (Smith, K. 2017). Due to these rapid changes, it has been discovered that businesses across the globe struggled with the same issues, caused by the increase in demand for service provision (Smith, K. 2017). By the start of the 2020 most services utilize technology, which creates an era where it could be said that most of the existing services are IT-services; which leads to the question - how should these services be managed to ensure maximum value and customer satisfaction? What should be taken into consideration inside of an organization to ensure that the whole value-chain benefits from the digital transformation? This study presents a case company with similar problems as mentioned. These problems were discovered during the implementation of ISO 27001 standard, which provides requirements for an information security. During the implementation, the case company understood that they need to develop their service management. The development ensures that the ISO 27001 standard is met to maintain the standard certificate.

In pursue for answers to the aforementioned questions, IT service management has been evolving for more than 30 years. It has led organizations to widely adopt guidance of ITIL (IT-infrastructure library) to solve the issues caused by the IT-service's development. (AXELOS, L. 2019)

1.1 Business Context

The challenge is studied in this study through a case company. This specific case company employs over 500 professionals in Finland and its annual revenue was 215 million euros in 2019. As a global company, the case company provides solutions for several technology industries. The case company was founded in the mid-18th century, inspired by groundbreaking technology inventions of the time.

This study focuses on the case company's local team of digital service production and maintenance. The team's main task is to set up new digital solutions and maintenance

of the solutions technical side. The teams work concentrates highly on communication between different stakeholders.

1.2 Business Challenge, Objective and Outcome

The team, which this study focuses on, concentrates highly on communication between different stakeholders. Well working collaboration with the stakeholders ensures that the case company's service level maintains high and is also able to expand the operations. During spring and summer of 2020, an implementation project of ISO 27001 standard was executed inside the team. During the implementation of the standard, importance and need of development for project and IT-service management was discovered. To develop the project and IT-service management, the case company needs to implement IT service management guidelines. ITIL 4 was chosen as a guideline for developing the development points. One other development point was identified while preparing the project management analysis; collaboration with the stakeholders needs to be developed, so it enables the operations to be expanded even more, while the customer satisfaction level stays high. Based on these development points this study proposes how the cooperation and collaboration with stakeholders could be developed based on ITIL 4 practices.

The study results comprehend the digital services and the stakeholders which are involved in the service production. The stakeholders are categorized in the table below (Table 1), based on what type of stakeholder is referred to in this study later. The names of the stakeholders are withheld in this study because of the sensitivity of the subject.

Stakeholder	Key interest (needs and expectations)
Suppliers and partners	Delivery of services and expertise
Customers	Receiver and user of IT-services from case company
Internal experts	Provide IT-services and expertise for customers

Table 1 Stakeholders

The outcome of this study is a proposition on how the collaboration with stakeholders should be developed based on ITIL 4 practices in the case company.

1.3 Thesis Outline

This thesis studies how the relationship and collaboration with stakeholders should be developed and maintained regarding the case company's digital services. In the first section of this study is the introduction of the case company, business problem and the stakeholders. In the second section the collected material, methods and other data sources used in different stages of this study is described. Section three provides a current state analysis and the results of that analysis. Section four describes the conceptual framework that guides what should be studied in order to create a proposition to the case company, based on the findings of the current state analysis. Section five consists of the initial outcome proposal, which is validated in section 6. Section 7 gives the evaluation and summary of the thesis and suggests the next steps that should be taken in order to execute and implement the proposal.

2 Method and Material

This chapter discusses the methods and materials, which will create the research guidelines for this study. This section provides the study's research design as a visualization, project plan and schedule as well as a table which presents what kind of data is used for carrying out the project.

2.1 Research Approach

For this study, the needed data was gathered via interviews for the current state analysis. The business problem was approached as qualitative research. The research consists of interviews from internal experts and external stakeholders. All the interviews were documented anonymously, and business insights were handled with for security and privacy. Therefore, anyone who has taken part in this study won't be identified. The gathered data from documents and literature with interview's results gave insights about this study's business problem. With workshop and discussions, these results are discussed and developed together in order to maximize the value of this study for the case company and the stakeholders.

2.2 Research Design

The objective of this study was the development of collaboration with stakeholders in digital services. Therefore the research contains data from different sources, to ensure the most accurate base for the study and to deliver the outcomes which are described in the illustration below (Figure 1).

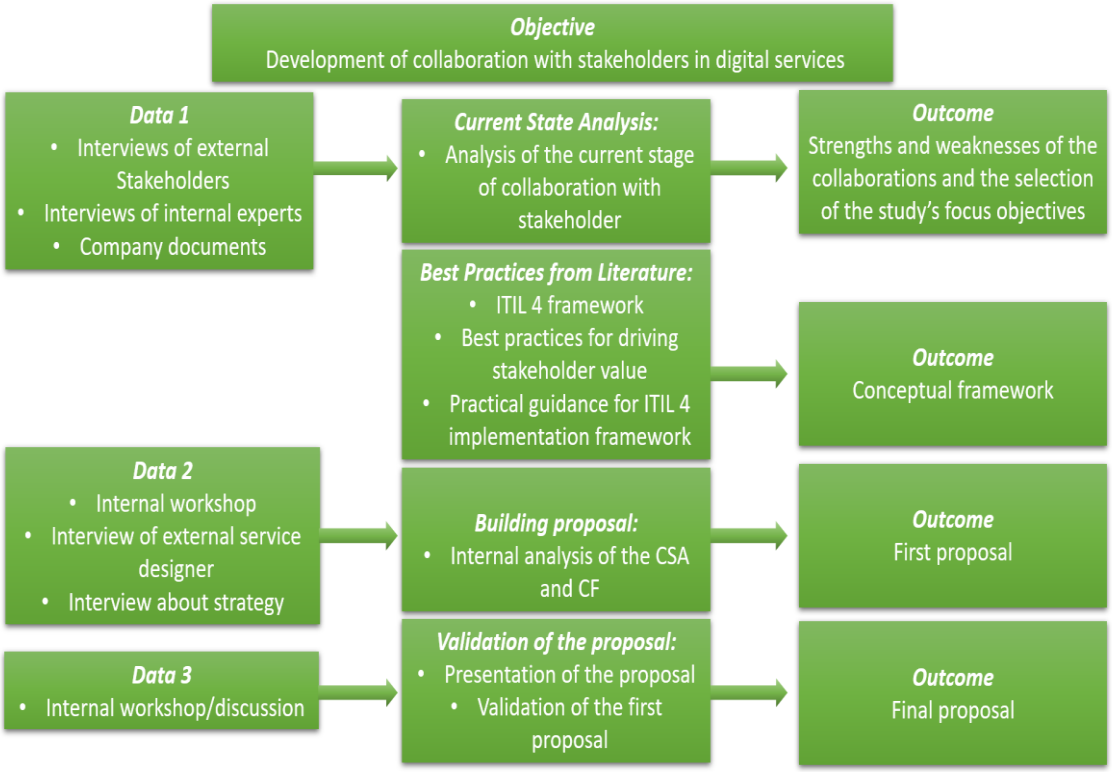

Figure 1 Research design

The illustration (Figure 1) demonstrates that the first data collection contains results from the interviews conducted and data from the case company's internal documents. Based on the gathered information, current state analysis was conducted. The current state analysis contained information which explained what the current state of collaboration with the stakeholders was and what were the strengths and weaknesses of the collaborations. Based on the analysis and the findings, the scope and development points that were focused on this study were selected.

To overcome the weaknesses and development points found, the best practices from different literature sources were gathered, based on the current state analysis. Because the digital services in the case company were implementing ITIL 4, the ITIL 4 framework and its practices have a big role in this study. Based on the results of the current state analysis and findings from literature, a conceptual framework was created as an outcome.

The second data collection consisted of internal data through an arranged workshop and interview of service designer and team manager. This data was gathered at that point, so the internal experts could share their expertise about the best practices, and it served as an opportunity to study existing skills. First proposal to develop the business problem was created based on the conceptual framework and the second data collection.

The last and third data collection consists of the final presentation of the proposition and discussion about it. In the discussion the first proposal was presented and then a discussion was held about it together with the internal experts and team manager. Validation of the first proposal was done based on the results of the discussion and the final proposal of this study was created as an outcome.

2.3 Data Collection and Analysis

Because this study's research approach is qualitative, the data was collected via interviews and workshops. These findings are described in detail in the table below (Table 2). In the table every data collection session is separated, with details about who had participated, what was the data's type, what was the topic of the session, when and for how long the session took place and how it was documented.

	Participants / role	Data type	Topic, description	Date, length	Documented as
	Data 1				
1	Respondent 1: Internal Expert	Online meeting	Current state of collaboration with stakeholders	12.6.2020, 1 hour	Field notes
2	Respondent 2: Internal Expert	Online meeting	Current state of collaboration with stakeholders	16.6.2020, 1 hour	Field notes
3	Respondent 3: Internal Expert	Online meeting	Current state of collaboration with stakeholders	17.6.2020, 1 hour	Field notes
4	Respondent 4:	Online meeting	Current state of collaboration with stakeholders	17.6.2020, 1 hour	Field notes

	Internal Expert				
5	Respondent 5: Internal Expert	Online meeting	Current state of collaboration with stakeholders	18.6.2020, 1 hour	Field notes
6	Respondent 6: Internal Expert	Online meeting	Current state of collaboration with stakeholders	18.6.2020, 1 hour	Field notes
7	Respondent 7: Internal Expert	Online meeting	Current state of collaboration with stakeholders	22.6.2020, 1 hour	Field notes
8	Respondent 8: Internal Expert	Online meeting	Current state of collaboration with stakeholders	23.6.2020, 1 hour	Field notes

9	Respondent 9: Internal Expert	Online meeting	Current state of collaboration with stakeholders	23.6.2020, 1 hour	Field notes
10	Respondents 10: External stakeholder (2 persons)	Online meeting	Current state of collaboration with the case company	30.6.2020, 1 hour	Field notes
11	Respondent 11: External stakeholder	Online meeting	Current state of collaboration with the case company	30.6.2020, 1 hour	Field notes
12	Respondent 12: External stakeholder	Online meeting	Current state of collaboration with the case company	1.7.2020, 1 hour	Field notes
13	Respondent 10:	Online meeting	Current state of collaboration with the case company	9.7.2020, 1 hour	Field notes

	External stakeholder				
	Data 2				
14	7 internal experts	Workshop	Value creation and proposal building	30.7.2020, 1,5h	Field notes
15	Service design expert	interview	Learning co-creation method used in industrial field	6.8.2020, 1h	Field notes
16	Team manager	interview	Strategy	10.8.2020, 1h	Field notes
	Data 3				
17	3 internal experts + team manager	Final presentation and discussion	Validation, evaluation of the Proposal	18.8.2020, 1h	Field notes

Table 2 Data collection

Table 2 shows that the data was gathered in three different parts and all the parts provided a separate outcome, providing more information to the final outcome, which is the final proposition based on data three.

In the first part of the table are interviews and discussions, which were used to create current state analysis. By identifying the participants in the table, the data can be analyzed more clearly, and the conclusions are simpler to understand by the case company. More details about the data collection sessions can be found from the Appendices (document B and document C).

After the first part of data, the second part of the data collection is presented. As described in the earlier section the second data collection includes internal data such as internal workshop, meeting with team manager and external expertise from external service designer. The third data collection includes meeting with the part of the case team's members and the team manager. During the meeting is discussed the first proposal and the evaluation of it. In (Table 2) is presented all the sessions which have been arranged for the need of data collection.

Internal and external documents are listed in the chart below (Table 3). The table provides the name, length and description of each document. This study refers to these documents with the letter mentioned before the name of the document.

	Name of the document	Number of pages	Description
A	Value Hacker	5	Information about co-creation method form interviewed service design
B	External interviews	2	Summary of external interviews as table
C	Internal interviews	3	Summary of internal interviews as table

Table 3

2.4 Project plan and Schedule

The project plan for this study is presented as a Gantt -chart below (Figure 2). The chart explains what the plan was for carrying out the project and all the steps through the timetable.

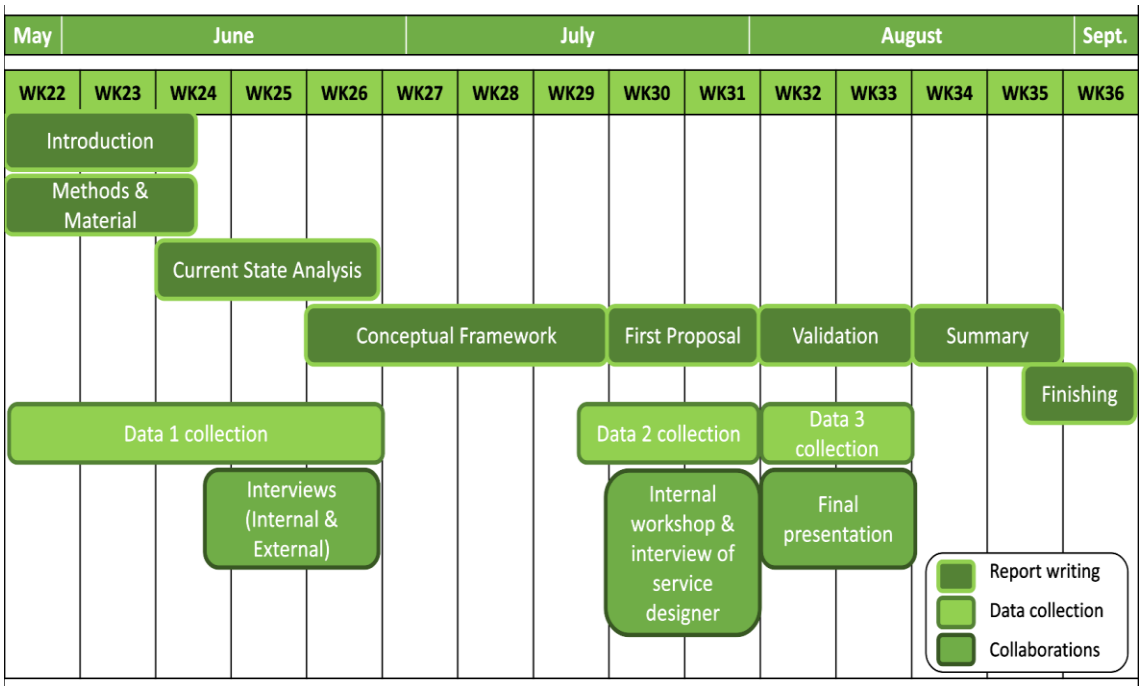

Figure 2 Gantt -chart

As presented in Figure 2, the project started in May with scoping the project and describing the business problem, scope and what data was needed in the study. After the plan and business problem was defined could the first data collection start. With all the gathered information from the interviews, it was possible to finish current state analysis before July which is common summer holiday month in Finland and that could affect the arrange of the meetings.

After the interviews and the current state analysis was planned to use four weeks for creating conceptual framework which contains literature research. Conceptual framework is the most time-consuming part of the study, and very valuable for the end proposal. After the conceptual framework was finished, the results of that work were validated and discussed during July and August. The final presentation was planned to arrange in August, so there was best possibility to contact the correct experts, after the holiday season.

In the figure was booked time for writing the summary and finishing the study. That gave space in schedule if something didn't happen according the plan. Separate risk analysis

is presented as table below (Table 4). In the table is presented separately the risk, what was the possible impact of the risk in for conduct the study and how to manage that risk.

Risk	Impact (1-5) 1: low 5:high	Way to control
Timetable exceeded	2	Make sure to provide all the planned outcomes in time.
Summer holidays	4	Map out when the holidays is spend in time.
Contact information missing	5	Map out all needed information in time and take time to search the information.
Pandemic crisis or other 3rd party problems	1/5	Everything can be done online, but If someone get the Covid-19 virus might delay the study.
Systems aren't working	5	Make many copies of the reports and storage them to differend places.

Table 4 Risk analysis

The next chapter describes all the gathered data, which was needed to create current state analysis and description of the current state. The current state analysis results describe what were the current status of the collaboration with the interviewed external stakeholders and in internal experts in digital services.

3 Current state analysis of collaboration with stakeholders in digital services

This chapter provides an overview to the current state of collaboration with stakeholders in the case company's IT & Digitalization team. The team provides IT-services to the customers and solve all the appearing problems relating to the services. The stakeholders are the providers and receivers of services. They adopt new ways of working based on the solutions the case company provides. Suppliers, as the stakeholders, provide services and solutions which supports the case company's own IT-services and the production of them. This chapter discusses the current situation of these collaborations and what were the strengths and weaknesses of the collaborations.

3.1 Overview of Current state analysis

To carry out the current state analysis interviews were organized. With internal experts and external stakeholders who were involved in the collaborations. Because this study was conducted during the Covid-19 epidemic, all the interviews were carried out as online meetings.

The persons who were invited to participate in the interviews were chosen with the IT & Digitalization team's manager. The interviewees where chosen based on the expertise level, so there was a variety between the interviewees, for how long the collaboration had been going on with the case company. All the internal experts were interviewed from the IT & Digitalization team.

The meetings were carried out with following steps; First were discussed as an introduction why the following interview was organized and why the exact person's expertise was needed. This part was conducted with all the interviewees
Secondly was discussed with external stakeholders, what kind of image they had about the case company, with descriptive adjectives. This gave insights, how the interviewee thinks about the company and what point of view the interview should be conducted. this warm-up exercise gave understanding how the interviewee explains the answers to the questions.

Thirdly, the responsibilities and work tasks were discussed with internal experts. The discussion with external stakeholders was about what solutions and services they have from the case company or what solutions and services they provide to the case company. Based on the third part of the interviews, there was a discussion on the performance of the collaboration with work tasks, solutions and services. With the understanding of the interviewee's wishes, an insight was gained to what were the development points and how they could be improved. Following topic in the interviews was the general collaboration and if there was something the interviewee would want to improve. Lastly the positive points of the collaboration were discussed. It was an important part that the discussion would end with a positive attitude. The discussion about the positive points gave also insights to what should be kept in the processes and remain during development.

After the interview, the interviewees were asked for feedback, and it was explained to them how the gathered information was going to be used.

All the interview answers were written down as fieldnotes and based on the answers two different summary tables were created. Internal experts and external stakeholders have separate tables. The summary tables describe the overview of the interviews and the main development points. The table is presented and described in more detail in chapter 3.2.

Figure 3 presents an overview of how the current service production was organized at the time of analysis. The suppliers provided needed services and solutions for the case company's IT & Digitalization team, which supports the team own IT-service production for the customers. Customers are located internationally and locally in Finland, while the suppliers are local Finnish companies. The IT & Digitalization team consists of 12 employees, including the manager of the team.

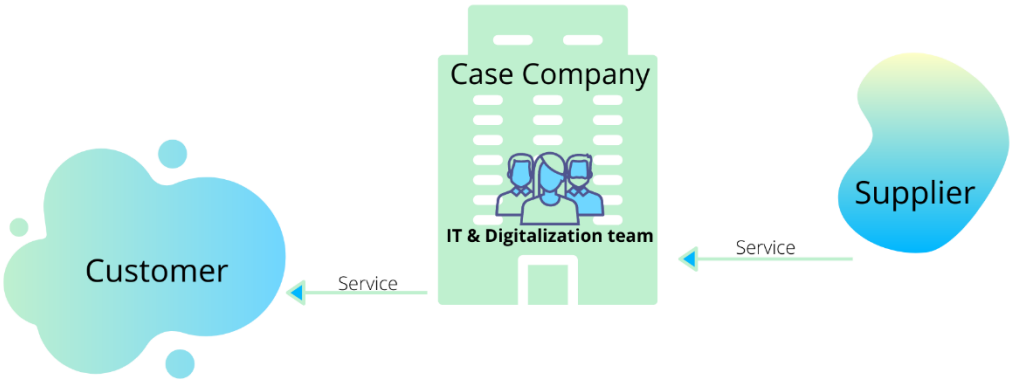

Figure 3

As the objective of this study was to develop collaboration with stakeholders for development of the team's service production and maintenance, the interviews concentrated on how collaboration at that time worked. The development points, which came up during the interviews, but don't go under the scope of this study, were all documented, but not taken as part of this study.

3.2 Description of Current State of Collaboration with Stakeholders

The current status of collaboration was analyzed based on conducted interviews and internal documents. The interviews were collected and summarized as tables, which are attached in the Appendices (Document B, Document C). The document B describes summary of the external stakeholder's interviews and the document C describes summary of the internal expert's interviews. The tables describe the development points which were gathered from the interviews and the ones which are in the scope of this study are bolded to give the reader clear understanding which development points are taken as part of the analysis. The tables also describe the proposition how the found development points could be developed based on the interview discussions. The tables also describe positive points of the current status, which came up during the interviews.

Positive points were the ones which were wished to keep in the collaboration by the interviewees.

The main points from the summaries were that the information about the customers and contacts was not available when needed, there was a lack of understanding of the solutions and processes, skills were centralized for specific experts, there was good team spirit, there was honesty and that the team had active and skilled experts.

Customer's information and contact information were experienced to be often outdated. Because the information wasn't available, it has been experienced that the correct customers could not be reached and extra work hours went to research, which impacted the work efficacy. It was also noticed that the customers were not served as well as it could have been, because of the missing information.

The stakeholders experienced that they don't have enough understanding about the solutions the case company was offering and that created uncertainty with the stakeholders. The bidirectional processes in the collaborations were not clarified enough which added to the uncertainty and extra work was needed during service production.
On the matter of the team's skills, the stakeholders had worried that if certain experts are no longer available, certain expertise would be lost. Inside the case company's IT & Digitalization team there was a lack of introspective insight which in turn caused time consuming research and had affected the customer service.

Positive points impacting the collaborations should be persisted during development. The positive points that were discovered - a good team spirit, honest relationship between the case company and stakeholders and an active and skilled team, show extra value to the collaboration. Table 5 presents the gathered points from the interviews which were analyzed in the current state analysis.

Information about the customers and contact information are not available when needed		✖	✖
Lack of understanding of the solutions and processes	✖	✖	
Skills are centralized around specific experts	✖	✖	✖
Good team spirit		✖	
Honesty		✖	✖
Active and skilled experts in the team	✖	✖	

Table 5 Weaknesses and Strengths

3.3 Strengths of Current State of Collaboration with Stakeholders

Based on the interviews several points were discovered which affect the collaboration in a positive way. During the interviews the case company was described as *co-operative, professional, stable* and *a high-quality operator.*

One of the strengths of the collaborations that was discovered was good team spirit in the IT & Digitalization team, which can be seen through positive work culture, well-being and job satisfaction of the employees. Honest communication between stakeholders and the IT & Digitalization team was seen as a bonus from the stakeholder's point of view. From the interviews it was discovered that the IT & Digitalization team was considered to be active and skilled in their responsibilities and work tasks, which was visible to the

stakeholders through quick service and quality problem solving. The discovered strengths are summarized in a table below.

Table 6 Strengths

3.4 Weaknesses of Current State of Collaboration with Stakeholders

Several Development points which are considered as weaknesses in the current state analysis were discovered during the interviews. The Image that the external stakeholders had about the whole case company might have affected the image they had about the IT-service production and its features. The case company was described as *big, stiff* and *expensive.*

One of the weaknesses of the collaborations that was discovered, was that the information about the customers and contact information were not available when needed. It was showing as ineffectiveness in the delivery of the service or during problem solving. The stakeholders felt that they do not have enough knowledge about the solutions, which made them feel anxious. At the same time the stakeholders and internal experts felt that they don't have enough knowledge about each other's processes, so that they could get the best results out of the services. The final weakness that was discovered in this analysis was that the stakeholders felt that certain expertise was only available through specific technicians, which led to doubt in the consistency of quality. This was visible in the

feedback, where the experts had a feeling that they did not know everything that was going on inside the team and with the customer. Table 7 presents a summary of weaknesses discovered from the current state analysis and based on the scope of this study.

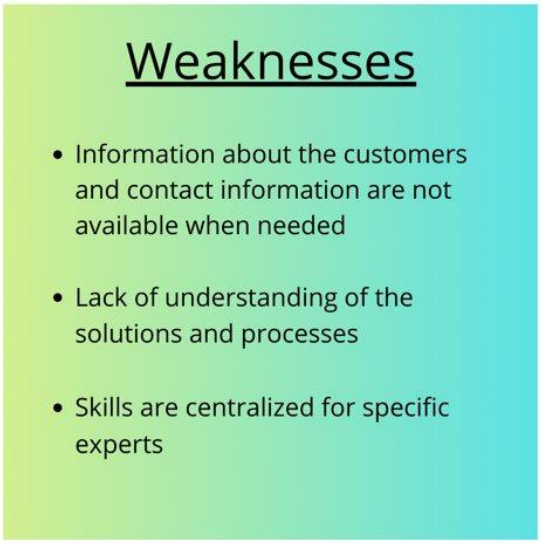

Table 7 Weaknesses

3.5 Summary of the current state analysis

In the interviews both weaknesses and strengths of the current state were discovered, and a discussion on how to improve the present situation was held. The discussed improvements are taken in concern in chapter 5, in which the first proposal of the outcome of this study was created. The discovered improvement areas in this study were the found weaknesses and the case team's wish to implement ITIL 4 practices in the collaborations. One of the intents of the interviews was to not cause any harm to the existing relationships and this goal was reached according to the feedback from the interviewees.

The discovered improvement areas are described in table (Table 8) below. The improvement area's column presents the question that was discovered from the weaknesses. The last improvement area describes the ITIL 4 practice as its own focus point. The "Why"-column describes why these areas should be improved.

Improvement area	Why
How to gather needed information and access it when needed?	Updated information about customers is easily found to ensure efficient process.
How to keep the expertice of existing solutions and processes?	Share expertice and develop better relationships with stakeholders.
How to manage and share existing knowledge to those in need?	Create efficient workflow and trust for the whole team and realtionships.
How to implement ITIL 4 practices to Collabotarions?	Need to implement ITIL 4 principles to IT-service production.

Table 8

The next chapter discusses theory and literature, which answer the questions that came up from the current state analysis, and its outcome is the conceptual framework.

4 Conceptual framework

This section discusses theories about ITIL 4 practices, collaboration from Agile perspective, collaboration in digital age and measuring value and success. From the described theories conceptual framework was created which is represented in visual form at the end of this section.

4.1 ITIL 4

ITIL 4 has evolved from more than 30 years of experience in ITSM industry. ITIL 4 gives practical and textual guidance for IT-service management. ITIL 4 has two different key components which explain ITIL 4 framework. These components are the ITIL 4 service value system (SVS) and the four dimensions model. These key components have core components which can be combined in a flexible way to ensure that the integration of these practices is the most beneficial. (AXELOS.2019)

4.1.1 The ITIL Service Value System

The service value system (figure 4) describes components which are claimed by Axelos to make service management to work properly. All the presented components of the system support organizations to enable value creation. Through the service value system can be formed an ecosystem which can create value for the organization and its stakeholders. (AXELOS.2019)

The service value system enables flexibility and encourages organizations to not to work in silos. Axelos claims that the service value system's functions are not rigid and can be scoped to anything, but Axelos prefer to include the whole organization as part of the value chain. With the service value system an understanding of the whole organization could be achieved - how to focus on value, work agility, facilitate the adoption of new directions and how to continuously improve throughout the organization. (AXELOS 2019)

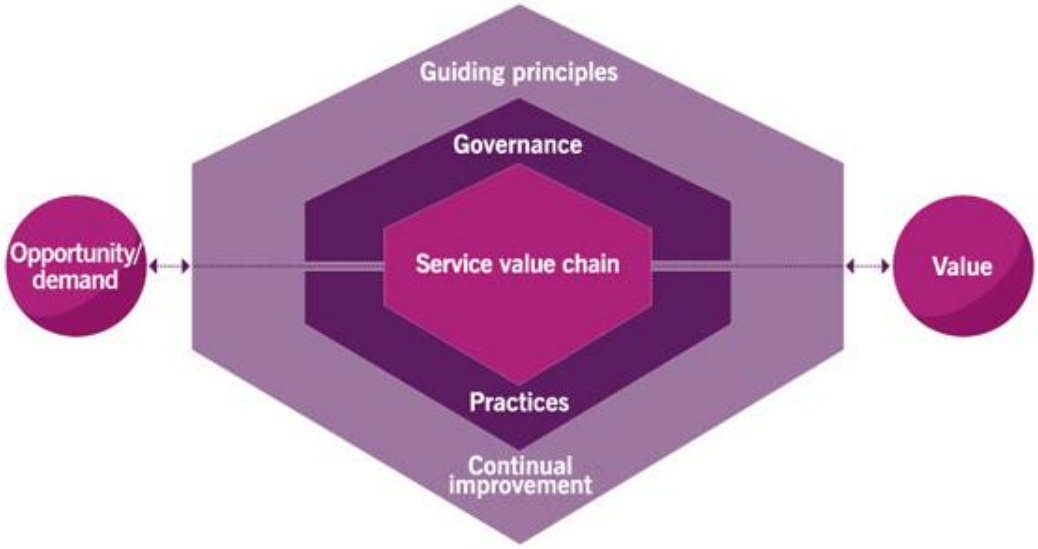

Figure 4 ITIL 4 Service value system

The service value system's key inputs were presented in figure 4 as opportunity and demand. The key input opportunities represent possibilities to add value and improve organization's activities. Demand, as the key input, describes the need for the service. Organization doesn't need to accept all the opportunities or demands.

The guiding principles component in the service value system presents a recommendation which could guide organization in every circumstance, regardless of the organization's strategy or goals. The principles are universal to use. The guiding principles are described in table 9 below. (AXELOS.2019)

Guiding principle	Description
Focus on value	All organization's actions need to be focused towards creating value
Start where you are	Organizations should consider assets that they already have available, instead of starting from scratch with everything
Progress iteratively with feedback	Organize work into smaller sections, do not try to do everything at once. Use feedback for guidance to ensure focused actions even in changing circumstances.
Collaborate and promote visibility	Work together across boundaries. Avoid hidden agendas and share information to the greatest degree possible.
Think and work holistically	Organization must work as a whole, not just as on its parts.
Keep it simple and practical	Anything that doesn't provide value should be eliminated. Use minimum number of steps required to reach an objective.
Optimize and automate	All resources should be used to their full potential.

Table 9 ITIL 4 Guiding principles

The Guiding principles interact with each other. For that reason, it is important to make sure that every principle's relevance is considered according the development of the service. (AXELOS.2019)

The Governance component means a person or group of people who are at the highest level for the performance and compliance of the organization. The governance is achieved through following activities: evaluating, directing and monitoring. All those acts affect organization's activities including service management. The role of governance depends on how the service value system is applied into the organization. Governance activities can work using the presented guiding principles or create its own principles, when it is suggested to share the principles across the organization. The governance component should provide visibility to the measurement of the value and to the outcomes of the improvements for the organization and stakeholders. (AXELOS.2019)

Axelos presents that the following points are crucial for the service to work:

- *"The service value chain and the organization's practices work in line with the direction given by the governing body (governance component)*
- *The governing body of the organization, either directly or through delegation of authority, maintains oversight of the SVS.*
- *Both the governing body and management at all levels maintain alignment through a clear set of shared principles and objectives.*
- *The governance and management at all levels are continually improved to meet expectations of the stakeholders. "*(AXELOS.2019)

In the center of the figure 4 the service value chain component was presented. Based on Axelos, the service value chain is a model which describes the activities which are needed to respond to the key input demand. The service value chain facilitates the value creation through the management of the organization's products and services. The service value chain is displayed in figure 5. (AXELOS.2019)

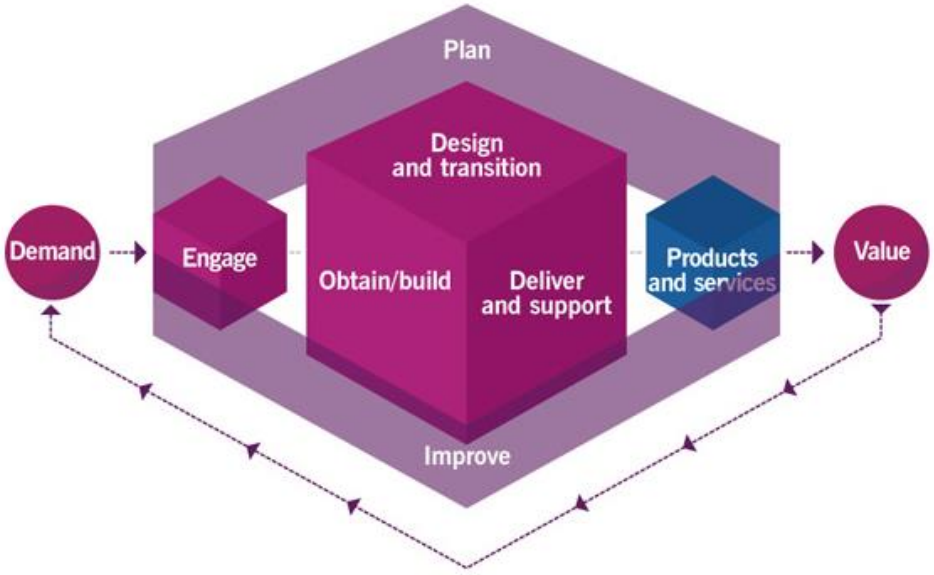

Figure 5 ITIL 4 Service value chain

The service value chain's activities are to plan, to improve, to engage, to design and transition, to obtain or build, and to deliver and support. These activities create steps to value creation. To execute the service value chain, the activities are utilized via ITIL practices, which will be discussed more in the chapter 4.1.3. Beside the ITIL practices, the service value chain has four common standards which are used always in a same way. The engage activity is performed on all incoming and outgoing interactions with stakeholders. The obtain or build step means to acquire new resources. Planning is performed in the plan activity. All improvement activities are performed in the improve activity. (AXELOS.2019)

The continual improvement component of the service value system affects products, services, service components, and relationships. The purpose of continual improvement is to support and develop the whole service value system. The support comes from the ITIL continual improvement model (Figure 6), the improve activity from service value chain, which ensures improvement of the service value chain, and the ITIL practice called continual improvement which is describes in chapter 4.1.3. (AXELOS.2019)

Figure 6 ITIL 4 continual improvement

The continual improvement model in figure 6, describes steps for improving the topics discussed earlier. The steps can be added to adjust an organization, to improve its culture and goals. Each step provides a question and activity that should be executed at that step. The creator of the ITIL 4 Foundation book reminds that while using this model, critical thinking should be applied. (AXELOS.2019)

The service value system's key output is described in the figure 4 as value. Value is created when the relationship with stakeholder creates more positive effects than negative. Axelos claims that value includes three different features. These features are supported outcome, removed costs, and removed risks. (AXELOS.2019)

4.1.2 The Four Dimensions of Service Management

All service value system elements are impacted by the four dimensions of service management model. The model supports service management to be more holistic and to have more perspective. As the name tells, there is four dimensions, which gives perspective on what should be considered in the whole service value system. These four dimensions are organizations and people, information and technology, partners and suppliers, and value streams and processes. When the dimensions are addressed, it ensures that the service is deliverable and meeting all the expectations. The four dimensions model is described in figure 7 below. (AXELOS.2019)

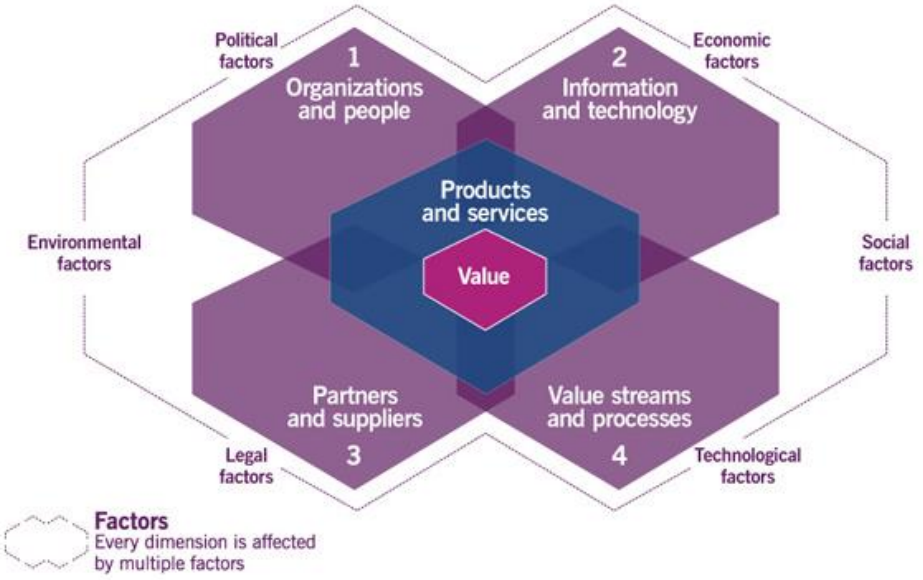

Figure 7 ITIL 4 Four dimensions model of service management

The first dimension in figure 7 is described as organization and people. The organization and people dimension give organization's culture, structures, stakeholders and employee's perspective to the service and its value. The second dimension is information and technology which considers what kind of information and technology is required to provide the service. The third dimension is described as partners and suppliers. This dimension guides how to consider organization's relationships with stakeholders, which affects the service provision and how it can be delivered and improved. The fourth and last dimension is value streams and processes. Value streams are combinations of activities and practices in a defined scenario, which can be than subject of continual improvement. The fourth dimension reminds to think how the organization can work in a way that it supports value creation for the whole service value system. (AXELOS.2019)

External factors are taken in concern in the four dimensions model of the PESTLE analysis. The PESTLE analysis is a tool for analyzing how business interacts with external environment and factors. The P stands for Political environment and how it might affect the four dimensions model. The E stands for Economic environment and how current and the trends of the economic situation might affect the dimensions. The S stands for Socio-cultural environment and how human's behavior and its trends might affect how the dimensions performs. The T stands for technological environment and how rapidly developing technological solutions might affect the dimensions. The L stands for Legal environment and how local and international laws might affect the dimensions. The last letter and second E stands for Ecological or Natural environment and for example global warming and other catastrophes might affect the dimensions. (Perera, R., 2017, AXELOS.2019)

4.1.3 ITIL Management Practices

The practices which are part of the service value system are separated into three different categories. These categories are: General management, Service management, and Technical management. All the practices act as subjects to the ITIL four dimensions model. The purpose of these practices is for the described categories to perform in a best possible way to support organization's operations and to accomplish goals. The

origins of the practices are from real life business and they have been constantly developed since 1980. (AXELOS.2019)

Altogether there are 34 different practices (AXELOS.2019). For the purpose of this study, only the ones which are the most valid for the subject of “development of collaboration” were selected. The choice was made based on whether the practice interacts with relationships or collaboration with stakeholders.

From the category General management, the practices that interact with relationships and collaboration are continual improvement, information security management, measurement and reporting, relationship management, strategy management, supplier management, and workforce and talent management. This category’s purpose is to give best practices to manage general business management domains. (AXELOS.2019)

From Technical management category only one practice interacts with relationships or collaborations: software development and management, to which the General management category’s continual improvement practice, to support the development aspect of the practice, is also needed. (AXELOS.2019)

From the Service management category, the practices which interact with relationships or with stakeholders are capacity and performance management, service design, service level management and service validation and testing. (AXELOS.2019)

Linda Persson and Stefan Cronholm present in their research about strengths and weaknesses of using ITIL practices that strengths are high reliability, improved cost efficiency, a tool for communication, and more structured work. The weaknesses of ITIL practices Persson and Cronholm claims to be lack of concentration, adaptation difficulties, too comprehensive, and high costs. (ProQuest. 2016)

4.2 Collaboration from an Agile Perspective

Agile manifesto was created in the year 2001 by seventeen experienced developers to represent alternative way of conducting software development and SCRUM-like processes as more documentation driven and lighter to execute. (Agile Manifesto. 2001a)

The Agile manifesto emphasizes interactions, working software, customer collaboration, and responding to change while developing software. The mentioned points are values which are preferred by the creators of the Agile manifesto. (Agile Manifesto. 2001b)

The Tech at GSA claims that effective collaboration in agile teams is affected by the following guidelines (GSA Tech Guides):

- Clear separation of work and objectives to ensure understanding and minimize duplication of effort. (GSA Tech Guides)

- Silos inside department should consist of small and cross-functional teams to create success. (GSA Tech Guides)

- Architecture should be collaborative and for designing. The collaborative architecture should follow the guideline based on principle number 11 from the Agile Manifesto which is “The best architectures, requirements, and designs emerge from self-organizing teams” (Agile Manifesto. 2001b). (GSA Tech Guides)

4.3 Collaboration in the Digital Age

For creating effective meetings, the first step is to set an objective to be achieved by the meeting. The objective should be set before the meeting. To manage the time for the meeting it should be streamlined as much as possible. Time management can be managed with prepared agenda for the meeting. (MindTools. 2016)

For planning a meeting, it should be prioritized what topics should be covered in the meeting and what result is wanted from the meeting. The topics are formed based on

the theme and participants of the meeting; therefore, it is important to decide who needs to attend the meeting. When the topics and participants are set, the next step is to set time and place for the meeting, and lastly it is needed to inform all the attendants before the meeting about the agenda. After the meeting, it is important to gather feedback about the meeting and to confirm that everyone has been able to participate the discussion. (MindTools. 2016)

During the meeting it is important to create memo about the meeting and make sure the memo is sent to all the participants (MindTools. 2016) (Slack. 2020).

Digital transformation is claimed to mobilize work culturally and socially (Riemer, K., Schellhammer, S. and Meinert, M., 2019). Technology tools are evolved to answer to this transformation (Y. Nof, S., Jeong, W., Ceroni, J. and Moghaddam, M., 2015). Visual boards such JIRA and Trello help teams plan their work together and provides visual view of the progress. Visual boards can also be used to foster collaboration and co-planning. Real-time collaboration tools such Slack, Skype and MS Office 365 enable communication between persons who are not co-located. (GSA Tech Guides)

4.4 Measuring Value and Success

To ensure that the collaboration and service provision is satisfying, the customer journey should be measured and tracked. This can be done by measuring customer experience, conducting customer satisfaction surveys, and requesting and processing feedback from service consumers. (AXELOS, 2020)

Functional experience, Emotional experience, and satisfaction criteria can be used as experience criteria. Functional experience identifies how the service works. Emotional experience identifies how the service feels. Satisfaction identifies to what degree the service fulfils needs. (AXELOS, 2020)

Table 10 describes which metrics can be used to track the experience criteria. (AXELOS, 2020)

Experience criteria	Metrics
Functional experience	Number and frequency of user errors.
	Frequency of returns to the previous stage. Identifies back-button usage.
	Number and frequency of dropped/unfinished service actions.
Emotional experience	Number and percentage of transactions where users used the interface help.
	Average handling time from customer's contact to ticket solution.
	Customer effort score measures customers satisfaction. How much customers must give effort to getting their issues solved?
	First response rate. How fast provider responds to customer.

	Average and minimum rating given by users about service interface.
Satisfaction	Average and minimum rating given by users to the service
	Number and percentage of users who cancel subscription after trial period
	Customer churn rate. Percentage of customers that stopped using the service during a timeframe.
	Net promoter score measures customer loyalty. Percentage of customers who are promoters of an organization or service.

Table 10 Tracking service experience and satisfaction

Methods like creating periodic questionnaires and customer surveys, gathering instant feedback from service review meetings, handing out satisfaction surveys, A/B testing by using focus groups, and experience sampling methods can be used to monitor the customer experience. (AXELOS, 2020)

A/B testing method outlines a way to test several different versions of a website or any other system. The concept of A/B testing is straight forward: show different variations of your interface to different people and measure which variation is the most effective at turning them into customers. This should be done periodically. The outcome of the testing points to which interface works best. (Siroker, D., Koomen, P. and Harshman, C., 2013)

Experience sampling method (ESM) is a method for researching what people feel and think during a specific time. Through this method individuals can provide open or structured data over a period based on the researcher interests and goals. It can deliver comparison data for other data collection methods. (Hektner, J., Schmidt, J. and Csikszentmihalyi, M., 2007)

To realize value, it is required to report and assess gathered data. Report should be conducted in a way that it is appropriate for supporting decision making. Service provider should map the metrics, indicators, and strategic objectives of the consumer performance, in order to understand the customer. It should be at least qualitatively analyzed how well the service contributes to the consumers purpose.

Axelos presents a table (Table 11) in the book Drive stakeholder value, where two levels of assessing and reporting for creating value are described. (AXELOS, 2020)

	Assessing and reporting on experience, performance, and output data	**Assessing and reporting outcomes, risks, and costs**
Procedure	Relate the captured experience, performance and output data to agreement targets, if applicable	Correlate experience, performance, and output data with service
	Combine data using proper techniques	

	Build reports using agreed report templates or dash-boards	Link service experience, outcome, risks, and costs with consumer objectives and purposes using map-ping tools
Data aggregation and correlation techniques	IT component to scorecard hierarchy	Organizational improve-ment cascade or similar
Assessment and report-ing methods	SLA scorecard	Return on investment eval-uation
	Service level reports and dashboards	Cost-benefit analysis, in-cluding outcomes, costs and risks
	Service reviews	Post implementation re-view, retrospectives, audits and more
		Benchmarking

Table 11 Assessing and reporting on value realization

When data is consolidated the results should be analyzed with the questions related to the results. Are the targets being met? What are the dynamics? Are there any clear trends and are they positive or negative? Are there underlying structural problems? Are

there any improvements required? Is there new information about the market? (AXELOS, 2020)

4.5 Conceptual Framework

Based on the described theories, a figure is built as a summary, which describes the literature topics and points, that are collected from it to make the development of collaboration possible. The figure (Figure 8) is presented below.

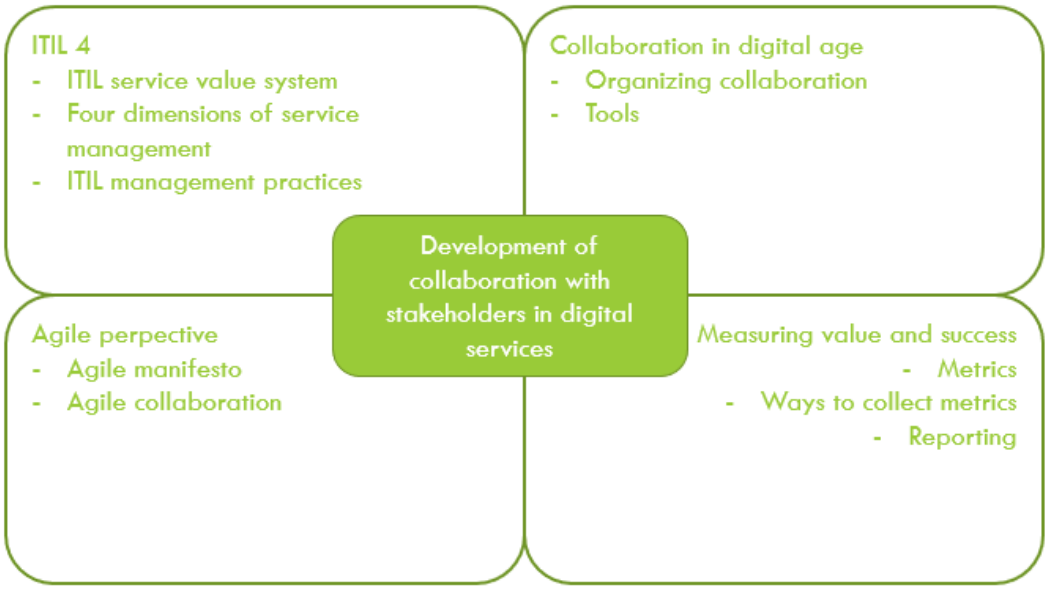

Figure 8

In next section is discussed how the proposal for this study was built and what it is.

5 Building proposal

This section discusses how the results of the current state analysis, conceptual framework and second data collection, have impacted the outcome of this study and its proposal building. First is discussed how the proposal was built and what has affected it. After the overview of the proposal building a visualization of the proposal and the explanation of it is presented and how second data collection have affected it.

5.1 Overview of the Proposal Building

The current state analysis revealed weaknesses and the case team's need of implementation of ITIL 4 practices. The weaknesses that were discovered were a lack of understanding of the solutions and processes as well as lack of needed information about customers, and centralized skills inside the case team. Based on these topics, information was gathered and used to create a conceptual framework to summarize the knowledge and to support building the proposal.

After gathering the needed knowledge from theories such as ITIL, Agile, collaboration, and measurement of the success of collaboration, a need was discovered for discussing internal understanding of value and how it affects daily work with stakeholders. The discussion was held as a workshop based on the co-creation method. The method was discussed with service designer and the discussed topics can be found in the Appendices of this study.

After the workshop was conducted a meeting was organized with the team manager, to discuss about the team's strategy and to create understanding how the strategy might affect the final proposal. When all the discussions were conducted, first proposal draft was created as a visualization. Evaluation of the proposal is discussed in chapter six.

5.2 Developed Collaboration with ITIL 4 Practices

The first proposal is presented in figure 9 below. The proposal is visualized based on ITIL 4 service value system and on top of it a two directional line has been added, to show where collaboration with stakeholder take its place inside the system.

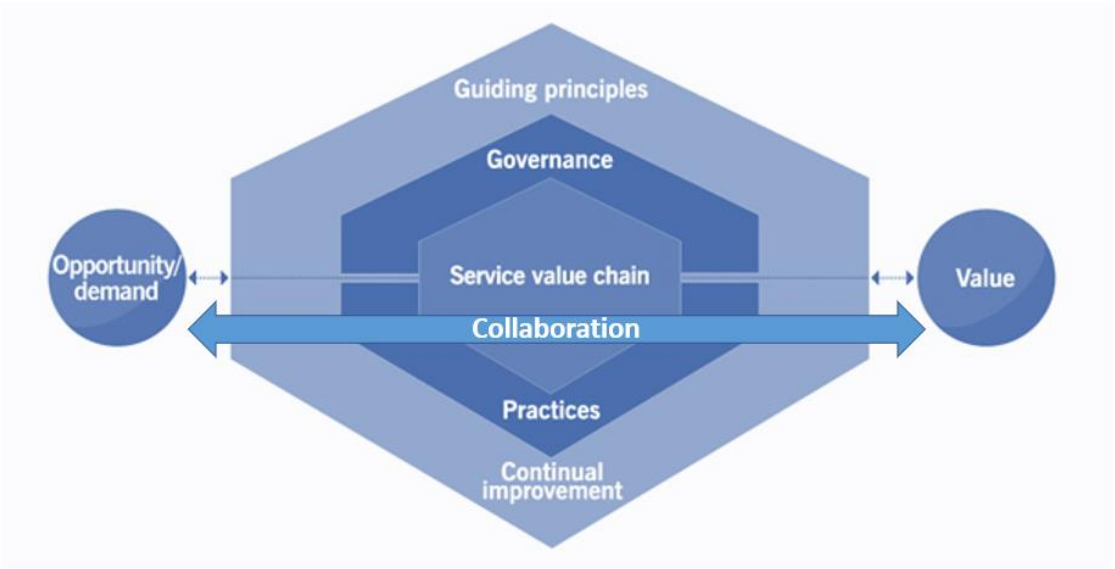

Figure 9 First proposal

5.2.1 Opportunity/demand and Value

Figure 8 presents opportunity or demand as the first key input, which, in this proposal, takes place as the customers' orders, needs, and suppliers' products, which demands the case team's service to work with.

Value is shown as the last key output of the figure 8 and it describes that as outcome of the first proposal should be value for the customer and for the service provider. The value creation and realization are one of the key interests of the outcome for the service provider and for the customers themselves.

Value section also evaluates whether the given opportunity or demand has been reached and it gives performance data which can be used to develop the whole service provision and collaboration with stakeholders.

5.2.2 Guiding Principles and Governance

Guiding principles are part of the ITIL 4 service value system. The list of the principles gives guidelines to the governance how the system or service should be managed and guided in order to get maximal value out of it. The guiding principles were the following, and they are described in more detail in chapter 4.1.1:

- Focus on value
- Start where you are
- Progress iteratively with feedback
- Collaborate and promote visibility
- Think and work holistically
- Keep it simple and practical
- Optimize and automate

Governance is the managing component and the team manager is responsible of that component and strategy creation. The strategy has been discussed with the team manager and it has been realized for the governance component.

The strategy has the following guidelines for the governance component:

- Industry is the domain that the team is working with
- Service production is based on IT systems and data
- In digitalizing world our team will be number one in the industry.
- Services focused on value realization are the best for the customers
- Strive for technology partnerships
- Follow the global trends

5.2.3 Service Value Chain and Practices

In the component service value chain is described as the part where the internal experts execute their work with the support of ITIL 4 practices component.

For the realization of the service value a workshop was held where 7 internal experts attended. In the workshop it was discovered that value should also be obtained and not only given. The team is not only a service provider but also a supplier's customer, as the team members have different roles with the stakeholders which should be maintained with a different point of view.

For stakeholder type customer, the team needs to think how they can be the best possible provider for them. For supplier type of stakeholders, the team needs to think how they can be the best possible customer for them.

The practices that support the collaboration with stakeholders in service value chain are the following:

General management practices

- continual improvement, information security management, measurement and reporting, relationship management, strategy management, supplier management and workforce and talent management.

Technical management practices

- software development and management

Service management practices

- capacity and performance management, service design, service level management and service validation and testing

5.2.4 Collaboration

Collaboration is added as an extra component to the original ITIL 4 service value system. It can be seen in figure 8, where the added component interacts with every component of the original service value system. That tells the importance of the collaboration and that it should be considered while conducting the whole service value system.

In business most of the collaboration actions take place through meetings. That is why it is important to prepare the meeting carefully and make sure all the needed experts participate the meeting.

The meeting should have a clear agenda, time and place, and the following steps need to be informed to all the attendants as a memo of the meeting. After the meeting, feedback should be asked about how it has been performed. Same goes to workshops.

During digital transformation the team should use visual boards and real-time collaboration tools for collaborating internally and externally.

Based on the current state analysis, meetings with stakeholders should be organized regularly and with a clear and efficient agenda. The meeting needs to guide the collaboration to an agreed way and the approved steps should be informed to everyone who are part of the collaboration. The progress of the steps should be checked regularly, and the stakeholders wish that the team is an active part of the collaborations.

5.2.4.1 Measurement of Collaboration Success

To realize success with the collaboration, it needs to be proven to the manager level and to the stakeholders. That can be executed with measuring value and success which have been discussed in chapter 4.4.

The experience of the service can be divided to three different criteria: functional experience, emotional experience and satisfaction. Each of the criteria has different metrics which can be measured. The Governance component should line out which metrics should be gathered. The data for the metrics can be gathered in various ways. Surveys, A/B testing, Experience sampling are an example of good ways to gather needed data.

After gathering the data, it needs to be decided how the data should be reported. This depends on what needs to be known and for who the report is for. Different ways to assess and report are presented in chapter 4.4, in table 11. The scope of the report should go in line with the governance components guidelines and the results should be affecting business and collaborating development.

5.2.5 Continual Improvement

Continual improvement is represented as its own component in figure 8. With the gathered data and set metrics, continual improvement has base information to start the improvements. To support continual improvement the continual improvement model in is

described in chapter 4.1.1, figure 6. It provides clear steps to improve the whole service as well the collaboration with stakeholders.

The next chapter discusses the validation of the initial proposal from chapter 5. In the chapter it is discussed how the evaluation affect the proposal and the final proposal of the study is presented.

6 Validation

This section discusses how the validation of the initial proposal was executed and what were the changes to the first proposal. In the end of the chapter the final proposal and recommendations for the next steps to implement and develop the presented proposal in the future are presented.

6.1 Overview of the Validation Stage

The validation of the first proposal was conducted in a meeting, in which internal experts and team manager participated. In the meeting the study's topic, project how the proposal was built, and the outcome were presented. After the presentation a discussion was organized where feedback was gathered about the presented proposal and the scope of the project to the attendees was clarified.

From the organized validation meeting the feedback was gathered as notes and added to the final proposal. Overall the proposal got good feedback and the participants in the meeting saw the value of the proposal.

6.2 Findings of Data Collection 3

Data was collected from the meeting as feedback. The participants described that the proposal is clear and well-reasoned. The future of the project got attention in the meeting and it was said that it needs to be described and planned carefully.

The findings from the feedback to develop the proposal were discovered as following:

- Well-structured and explained proposal
- Metrics for measuring the collaboration should be validated together with the stakeholders.
- The future roadmap for the project is important for realization of the value of the study

6.3 Final Proposal

The final proposal stayed similar to the one described in figure 8. Based on the findings of data collection three, a point was added to chapter 5.2.4, which states that it is not only Governance component's decision to choose the metrics. Metrics can be set together with the stakeholder and they can be monitored and developed based on ITIL 4 practices.

The developed chapter 5.2.4.1:

"To realize success with the collaboration, it needs to be proven to the manager level and to the stakeholders. That can be executed with measuring value and success which have been discussed in chapter 4.4.

The experience of the service can be divided to three different criteria: functional experience, emotional experience and satisfaction. Each of the criteria has different metrics which can be measured. The Governance component should line out which metrics should be gathered. *Metrics can be set together with the stakeholder and they can be monitored and developed based on ITIL 4 practices.* The data for the metrics can be gathered in various ways. Surveys, A/B testing, Experience sampling are an example of good ways to gather needed data.

After gathering the data, it needs to be decided how the data should be reported. This depends on what needs to be known and for who the report is for. Different ways to assess and report are presented in chapter 4.4, in table 11. The scope of the report should go in line with the governance components guidelines and the results should be affecting business and collaborating development. “

6.4 Recommendations for Next Steps

Four steps are recommended as part of this study. The outcome of this study will be executed and implemented inside the case team. The steps are presented in figure 10.

First, all the possible metrics should be identified with the case team. Each service/product should be discussed as its own objective and it needs to be handled separately, even if there are the same experts working with them. The theory of successful collaboration should be taught to the case team’s experts.

How the measures need to be reported, should be decided with the governance component of the proposal and with the case team. Pilot should be executed, after deciding on metrics and a way of reporting. When the metrics for one service are set, the data needs to be collected, analyzed and reported. Other metrics can be set up for production according to the pilot’s results. The metrics should be developed further if the results are not giving any value.

After the metrics are set up and the team really understands the new way for collaboration, the team can start to work together with stakeholders. What the phrase “working together” meant is the step four in figure 10. Meetings or workshops with the customers can be organized to create metrics and to start to collaborate on an even deeper level, which means creating technical partnerships which is one of the goals in the team’s strategy.

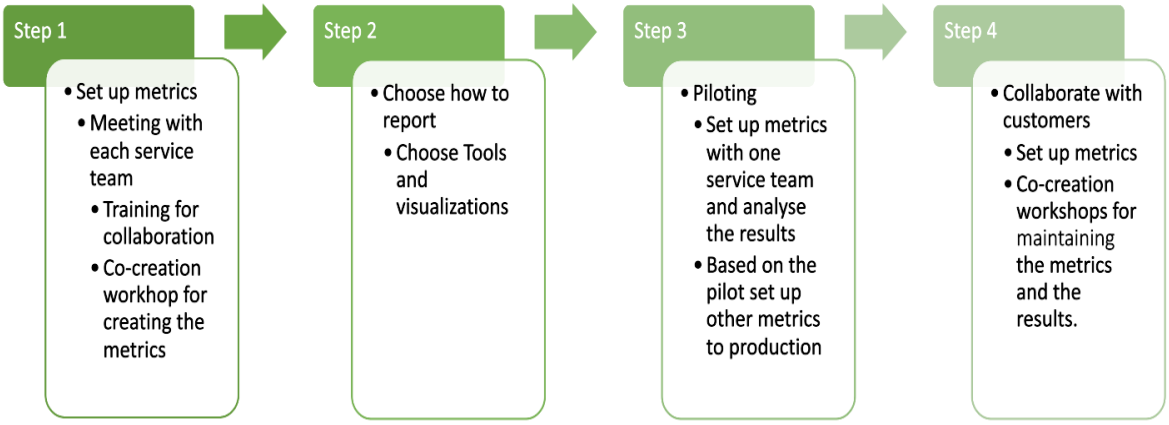

Figure 10 Next steps

The next section discusses the conclusions of this study and evaluates the thesis.

7 Conclusions

This section discusses the conclusions of the study. It contains the executive summary of this study to explain the results. The evaluation of the thesis and how well it has answered to the presented objective of the study, is presented after the summary. This section ends with closing words.

7.1 Executive Summary

The purpose of this study was to develop collaboration with stakeholders in digital services using ITIL 4 practices. The objective was picked based on the case team's need for implementation of ITIL 4 practices and its need for developing better collaboration with stakeholders. The need for the ITIL 4 in the case team was discovered from the implementation of ISO 27001 standard. To maintain the standard, following ITIL 4 practices is recommended as well as open relationship with stakeholders, so that gaining maximal value from the standard can be ensured.

The project started with identifying the study's objective and a plan was made based on it. The plan included how the project will be executed and who needs to be involved. The project started with the current state analysis, where three weaknesses and three strengths were discovered from the current status. The weaknesses are presented below in table 12, which is also presented in section three as table 7.

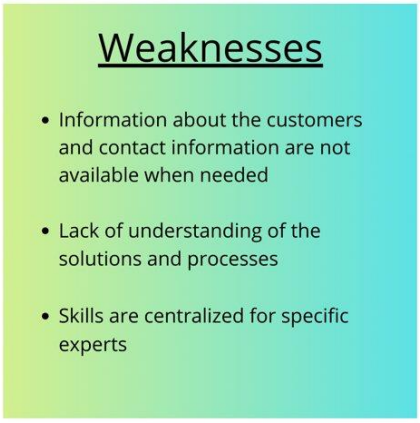

Table 12 Weaknesses as represented in section 3

The identified weaknesses and the need for ITIL 4 practices gave the direction what literature and theories should be researched to eliminate the weaknesses and to implement better collaboration.

The outcome of the study was created as a proposal which describes how a good meeting should be organized, how to set up metrics and execute analysis, and how to create a report, so to have an understanding of how the current collaboration is functioning, and what could be done better. Axelos, in ITIL 4 Foundation book, claims everything should be improved continuously.

The proposal was discussed together with the case team's members and team manager. In the discussion the proposition was validated. It was described as clear and good, but the main consideration was on how the implementation will be executed after this study. To answer this concern, section six presents recommendations for next steps and describes how the they should be executed.

The proposal will help the case team to reach its strategy while developing its experts to be better with relationship management. The case team will be able to collect valuable data from its services and customers, which will help to develop the services to be more customer centered, which is one goal of the case team's strategy.

7.2 Thesis Evaluation

As mentioned previously, this study's objective was to develop collaboration with stakeholders. As the objective concentrated on stakeholders it was valuable for the study to be able to interview them. Numerous possible improvement points were discovered, but also positive feedback was gathered which could then be passed on to the experts.

The objective of this thesis was reached as well as it was possible inside the scope of a bachelor's thesis. In the validation phase the concern of the implementation for this study was discovered, which was a valuable addition to this study.

The thesis had a tight schedule, but it was managed to be finished in time. Other risks which were identified in chapter two weren't faced. The current, as of the time of performing the study, pandemic (Covid-19) made the thesis even more valuable to make, because the collaboration is transforming towards new ways where fast innovation and digital communication is needed. As a consequence of the current transformation, this topic might improve, because there can be more practical experience and research done. With that considered it is even more important to continuously analyze the current situation and aim to improve it.

7.3 Closing Words

This study has provided many insights. As one of the case team's expert described: "It is always good time to time sit down and go back to basics". The reasons why experts are doing what they do can be found from the discussions about value and importance of collaboration. It is understood that for companies the main interest is in costs, but even if we talk about IT and its benefits, there is always the human holistic aspect. With that statement in mind, providers can achieve success from developing the services.

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Document C

Development point	propose how to fix	Positive point	Propose how can be maintained
Not enough information about servers and how the maintenance of then is executed	co-creation meeting at least once a year, where is discussed together how the maintenance of the servers should be handled	New portal for customers is very handy.	Portal should be developed and maintenance in a way that it keeps the existing value
Collaboration meetings doesn't have clear structure	Process for executing meetings: agenda, memos, who is attend in the meeting and why etc.	Skilled experts	Sharing/documenting the knowledge so other experts can grow their skills
Only one person has the expertise	Sharing/documenting the knowledge so other experts can grow their skills	Active communication from server service	Workflow and processes should be kept flexible, so experts have the time to react if server have an issue.
Develop orientated customers, but don't want to waste time on something that could not happen in real life.	Regular Co-creation meetings/workshops where is focused on development of existing solutions and process.	Help is always easy to get	Agile process which serves the customer's needs.

Not regular meetings	Organize regular meetings with clear agendas	Open and honest communication between stakeholders and case company	Open communication and collaboration regularly with stakeholders
Information about solutions missing	Co-creation meetings/workshops where is focused on development of existing solutions and process.		
Regular meetings agendas on supplier's responsibility	Send list of topics to the participators before meeting		
Case company's/ collaboration processes are not clear	co-creation workshops regularly for developing and evaluating the processes		
At a low threshold communication way not in use	co-creation workshops regularly for developing and evaluating communication processes		

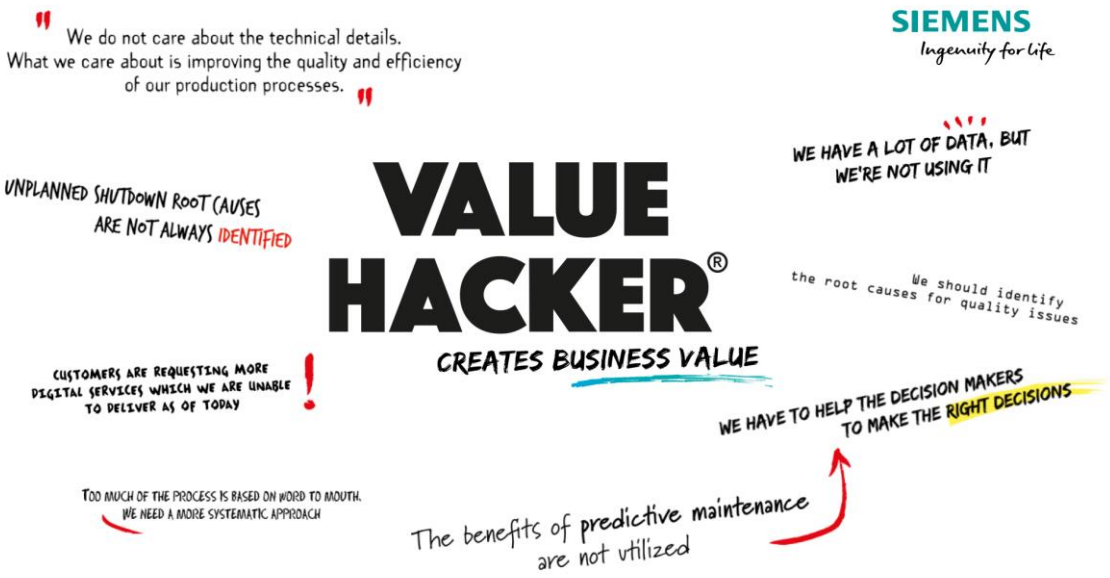
Document B

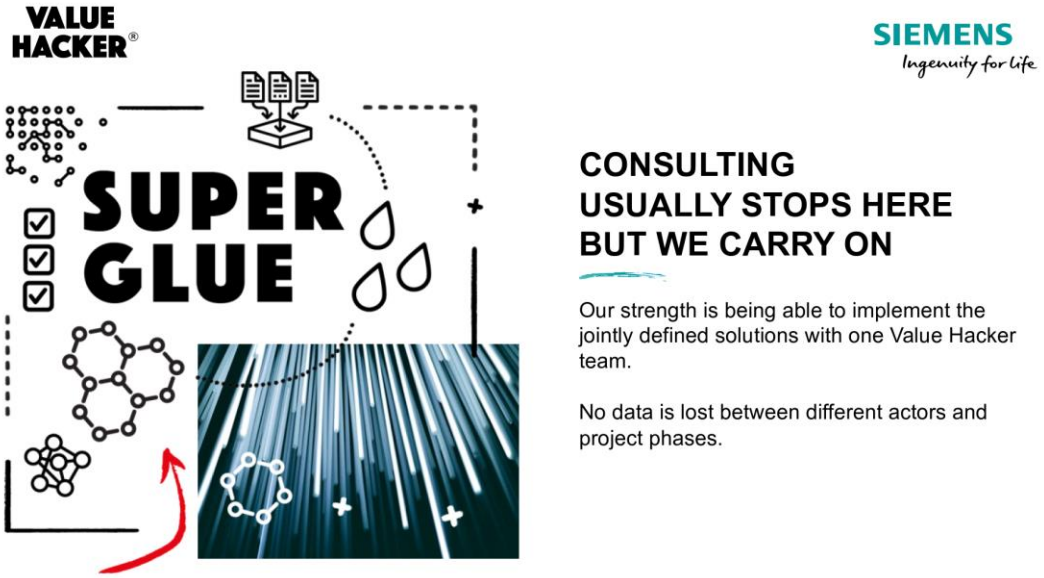
Collaboration of	Development point	propose how to fix	Positive point	Propose how can be maintained
Supplier	Hard to contact a person with right expertise	Development of contacting process with supplier	Inside team the attitude is development oriented	Important factor when recruiting new experts
Factor outside the team (company employee)	Information of critical change or need comes too late (creates bottlenecks)	Creation of timeline process for the requests with collaboration of experts outside of the team	New solution installation process is going well	Keep the process updated and regular meetings/discussions about the process.
Factor outside the team	Information flow of development projects: not enough information given to execute projects	Creation of process/template what kind of information is needed and when it needs to be delivered and who is responsible of what Documentation needs to be updated	Team spirit is good	Official and outside work meetings.
Supplier	Process could be faster	Development of the collaboration process (SLA)	Cybersecurity	ISO 27001 implementation
Inside the team	**Meetings with the whole team for** example once in quartal	Arrange meetings once every quartiles/month where is		

		presented as an insight what each team have done/highlights		
Customer	**3rd party collaboration (outsourced services) are hard to contact and agreements between customer and the service provider might impact case company's services**			
Customer	**Customer's don't always have correct contact information easily on hand, so calls comes to the wrong experts**	Definitions in contracts?		
Customer	**Customer's contact information is often missing or outdated**	Definition in contract: When contact information change that need to be informed to the case company.		
Supplier	Not enough in contact	Lead by example and take contact and require more active communication More meetings/workshops with agenda as		

		future development needs		
Customer	**Customer information is not collected in to one place**	CRM etc. system which gives all the needed insights		
Customers and Factor outside the team	Technical specialist no involved during the definition of the projects	Since start of the collaboration technical specialist should be involved.		
Customer	**Project/solution development ends too soon after POC**	Workshops with the agenda as roadmap for the future.		

Document A


We do not care about the technical details.
What we care about is improving the quality and efficiency of our production processes.
SIEMENS
Ingenuity for life
WE HAVE A LOT OF DATA, BUT WE'RE NOT USING IT
UNPLANNED SHUTDOWN ROOT CAUSES ARE NOT ALWAYS IDENTIFIED
VALUE HACKER®
CREATES BUSINESS VALUE
We should identify the root causes for quality issues
CUSTOMERS ARE REQUESTING MORE DIGITAL SERVICES WHICH WE ARE UNABLE TO DELIVER AS OF TODAY
WE HAVE TO HELP THE DECISION MAKERS TO MAKE THE RIGHT DECISIONS
TOO MUCH OF THE PROCESS IS BASED ON WORD TO MOUTH. WE NEED A MORE SYSTEMATIC APPROACH
The benefits of predictive maintenance are not utilized


VALUE HACKER®
SUPER GLUE
SIEMENS
Ingenuity for life
CONSULTING USUALLY STOPS HERE BUT WE CARRY ON
Our strength is being able to implement the jointly defined solutions with one Value Hacker team.
No data is lost between different actors and project phases.

VALUE HACKER®

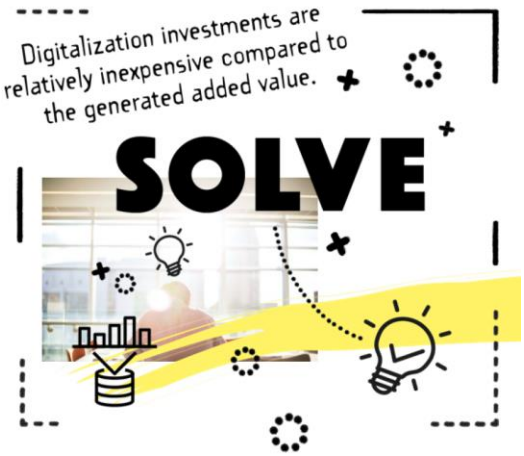
CUTTING EDGE TECHNOLOGY AND EXPERTS UNDER ONE ROOF

Siemens has the most comprehensive industrial digitalization portfolio in the market.

Value Hacker takes full advantage of the Siemens' offering and aligns it with your targets.

Our Value Hacker team of experts are the essence of value driven problem solving.

SIEMENS
Ingenuity for life



VALUE HACKER®

DREAM TEAM

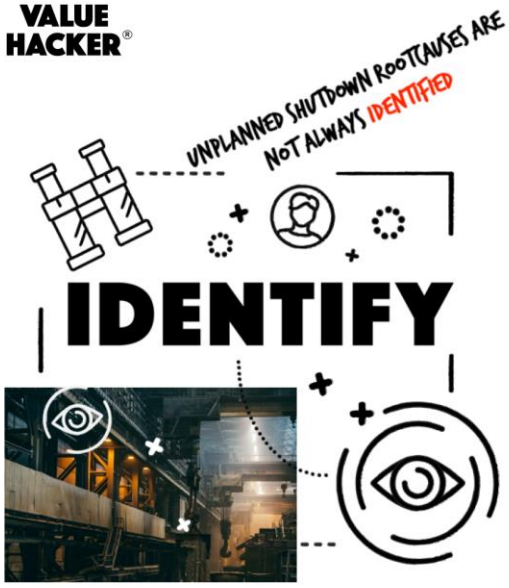
Value Hacker unleashes the full potential of your employees across the organization. Participation creates buy in and commitment for change.

We build a cross-functional team together with experts from Siemens to support your business objectives. We ensure you get the relevant expertise from Siemens.

SIEMENS
Ingenuity for life

VALUE HACKER®

SIEMENS
Ingenuity for life



DEEP DIVE INTO YOUR BUSINESS

Value Hacker co-creation methods are used to identify the possibilities and challenges that lie in your business horizon.

As one team we define the root causes of your selected challenges by combining qualitative research with analytics.

Once the root causes are clarified, the goals and success metrics can be defined.

VALUE HACKER®

SIEMENS
Ingenuity for life

PROCESS

Get together

Build a dream team for co-creation.

Select the most business critical challenge.

Identify

Identify the possibilities and challenges that lie in your business horizon.

Solve

Value Hacker takes full advantage of Siemens' offering and aligns it with your targets.

Super glue

We proceed as one team.

No valuable data is lost between different operators and phases.

Implement

Make sure that the targets are met as planned.

Continuous improvement

Digital transformation is a never-ending journey.

VALUE HACKER®

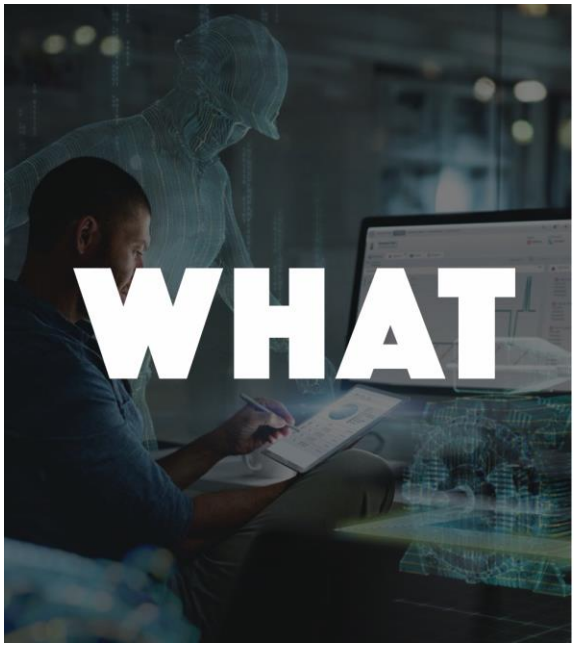
DREAM TEAM

Value Hacker **breaks organizational silos** by bringing together your key players with Siemens' experts.

Having a **joint team** striving towards a shared target brings efficiency and ensures transfer of knowledge throughout the project.

Working together, encourages an open atmosphere – from the shop floor to C-level.

Everyone gets a say.



SIEMENS
Ingenuity for life

CO-CREATION

Value Hacker is a **modern, collaborative and holistic approach** for solving business challenges.

Value Hacker is where **agile** meets **design thinking**.

It relies on **human insight** enriched with **data analytics** leading to creative, yet measurable solutions.

Value Hacker is a unique opportunity brought to you by Siemens in Finland.

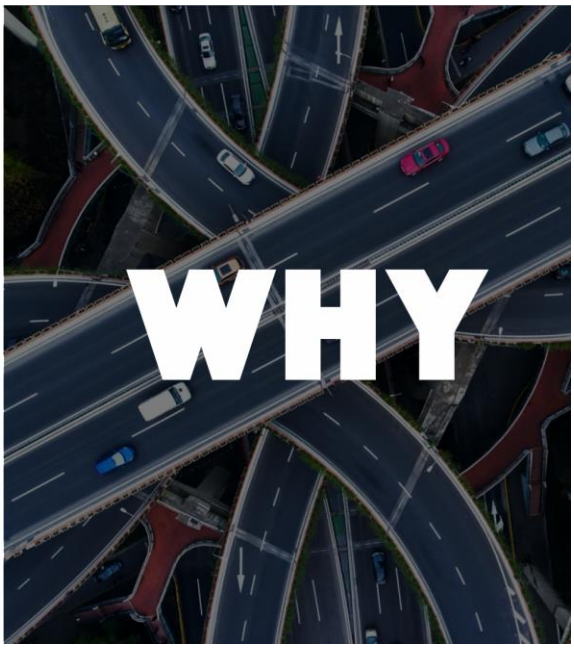
VALUE HACKER®

UNLOCK POSSIBILITIES YOU ARE NOT AWARE OF

Business as usual is history. **Complexity** increases. **Digitalization** is a never-ending journey towards a moving target.

Creating **measurable business value** with digitalization and new business models requires a creative mindset and cross-functional collaboration.

This is where Value Hacker steps in.



VALUE HACKER®

SIEMENS
Ingenuity for life

We don't stop until your objectives are achieved

Digital transformation is a journey of continuous improvement.

Value Hacker ensures that the results are directly aligned with your business objectives.

We are not in the business of building digital silos. We build open ecosystems that are continuously improved with insight from the real and the digital world.