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Challenges of Large-Scale Agile Transformation in a Financial Enterprise - A Case Study

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**Challenges of Large-Scale Agile
Transformation in a Financial Enterprise -
A Case Study**

Utmaningar med ett finansföretags
storskaliga agila transformation - en
fallstudie

Astrid Jansson

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Abstract

In this case study, we investigate the context and challenges associated with undertaking an agile transformation in a financial enterprise. We perform 9 interviews with employees with diverse positions and backgrounds to study the field effects of the transformation. Combined with a study of internal design documents, we establish the organizational context of the transformation and perform an analysis of its challenges.

We find significant friction between the transformation's intended outcomes and its day-to-day implementation, which we link to three main areas. First, we find that the development organization is characterized by cross-dependencies that contribute to overhead work, affecting the ability to deliver software as efficiently as planned. Second, the new governance and steering strategy remain detached from an agile value-based approach, hampering the organization's adoption of a widespread agile methodology and mindset. Further, the company's funding model and strategies are not adapted to its transformational efforts, affecting the working environment, employee morale, and the company's ability to retain skilled IT personnel.

In light of these findings, we provide recommendations to address these challenges, specifically utilizing a more value-based approach to guide further transformational changes. We suggest increasing autonomy and self-organization of the development areas, by giving additional attention to the effects of rigid structures and steering processes in the company.

Keywords: Organization, agile, software development, collaboration, governance

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Chapter 1

Introduction

Agile transformations in IT departments are undertaken to enable the development organization to be more effective and with the hope of increasing the value of the delivered software [13]. These transformations change how the organization is structured and how it organizes its ways of working.

While the transformational changes are focused on efforts in the IT developments departments of the organization, the traditional business departments may be unchanged or slightly modified in how they interact with the IT Unit. The consequence is that when companies try to implement new ways of working (from traditional to agile) in their IT departments, the organizational structures in other parts of the company create friction [22]. This challenges the work within the IT departments and the benefits of the agile model [12] and the company transformation may be undermined.

The financial enterprise in this case study is undergoing a transformation, that recently introduced a full large-scale agile framework into its IT department. The organization has been active for many years: several structures and cultures are firmly put in place. The IT organization used to be scattered across several departments where different development methods were used, some more or less successful in their implementation. The new organizational process is aimed to align the departments on the method used as the previous divergence created misalignment. A larger part of the company employees, 80 percent, continues to work as it has been doing previously. The IT unit contains several thousand employees that play an important role, in keeping up with customer demands as well as new regulations, developing and maintaining the company's technical solutions used in both internal and external products. The goal of the transformation was to have teams and departments autonomous and end-to-end responsible for their solutions and deliveries, a basis for successful agile development. In autonomous teams (and departments), the management hierarchies are not apparent and the decisions in relation to products are done by the teams themselves to allow for adaptivity and efficiency [17]. The goal of our research is to investigate how the IT Unit is affected by agile transformational efforts and how the IT unit is affected by the collaboration with the non-agile parts of the organization. The areas not transformed include

business units, regulatory units, compliance units, and risk units to name a few.

The IT unit has recently reorganized and has implemented entirely new structures and processes. The new ways of working are derived from a modification of the Spotify model (a large-scale agile development model) utilizing an agile governance framework to communicate direction and purpose more efficiently. The reorganization adds complexity to the research and results are related to issues either with discrepancies in the model itself, the implementation of it into the IT unit along with friction of the model in relation to the other organizational entities and their working structures.

The problem that this thesis address is that a company's agile IT unit experiences friction in their interaction with surrounding organizational entities due to differences in work model and culture and that these differences reduce their ability to fully embrace and implement agile principles. The transformation is very new and constantly developing, we view our investigation as a snapshot of an organization in change and the challenges that occur within. The focus of the investigation will be to map the transformation, the challenges within the IT Unit, how the agile governance processes work, how the transformation affects the organization by exploring potential friction points these lead to, as well as understanding the effect it has on the IT unit's work process and alignment with stakeholders.

Given the initiating problem and the background the following research questions will be explored:

- **RQ1** What is the background of the transformation?
- **RQ2** What is the context, structure and governance process of the IT Unit and the transformation?
- **RQ3** What are some of the challenges the tribes are experiencing in living up to the transformation goal of autonomy and end-to-end delivery?
- **RQ4** What are some of the challenges in the IT Unit's agile governance processes?

Chapter 2

Background, Related Work and Case Description

The purpose of this chapter is to present methods that highly relate to the agile work model that the organization is, being investigated in this case study, are striving to use. This chapter provides an overview of the methods and provide a baseline for understanding the issues that the organization are experiencing as they highly relate to the implementation of methods and concepts.

The chapter presents concepts that the agile model design has been inspired from and is included in the organization's development strategy. The development methodologies presented are large-scale agile development, The Spotify Model, and Objective Key Results

2.1 Large-Scale Agile Development

Agile is a broad term referring to software development methods adhering to certain values and principles [2]. Agile methods have been acknowledged to make the development more successful and effective in comparison to other traditional approaches [4], [5]. Initially, agile methods were used mainly to enable smaller teams to effectively execute tasks. These methodologies have drawn the attention of larger corporations that develop large-scale methods even as the initial application of the method is intended to be used by smaller teams. Due to this, the original methods are extended to include coordination, larger teams, oversight of development, as well as communication with business and among teams [4].

Organizations' efforts to apply large-scale agile is challenging and success is not a given [8], [13]. Modification of the agile methods is arguably necessary to be employed in a large organization [4]. Modifying a method is a challenging task where design decisions come with both strengths and weaknesses attached. Common large-scale agile methods are SAFe, LeSS, Scrum-at-Scale, and the Spotify model [3]. Frameworks such as the ones mentioned above, are combining small-scale agile methods (Scrum) with that of additional concepts and practices

to allow for and manage development in a larger setting. Customizations of these are not unusual [13].

LeSS (Large Scaled Scrum) apply the agile method Scrum in larger projects, in offshored or co-located environments. Organizational changes are specified to remove the traditional roles of project managers and team leads, while creating cross-functional and end-to-end feature teams [4], [3]. Most principles and practices in LeSS are borrowed from other agile methodologies, with the main overall idea being to operate with simplicity, objectivity, and transparency. The cross-functional teams are syncing their sprints and share the same backlog. Product owners and dedicated scrum masters may be shared between teams. Planning consists of two parts, where the first sets overall objectives and product backlog items across the team landscape, and the second is the teams' development of items in accordance with objectives. LeSS is mid-size where the maximum size is 8 teams with 8 members each. Less Huge is for even larger settings stacking several LeSS structures [3].

SAFe (Scaled Agile Framework) contains three-segment levels that each have integrational activities and processes. The three segments are team, program, and portfolio. The team remains similar to that of a Scrum team. The team has a product owner and scrum master that may be shared between several teams. Teams are not necessarily cross-functional, and may instead be specialized. Close coordination is of importance and teams should be able to design, build, and test their product. The program segments contain roles such as system architects, program managers release train engineers to support coordination and alignment. SAFe also mentions the possibility of additional teams for business ownership, system, release management, and DevOps. Interactions with teams should be time-boxed, the release process containing interactions between teams are timeboxed with fixed time and quality. The usable product increment is released quarterly. The portfolio level introduces concepts of investment themes and value flow to align the work between areas at the program level and is used to ensure a continuous value flow to the business [3].

Scrum at Scale allows for work structure and coordination of multiple Scrum teams to achieve linear scalability while addressing complex issues and at the same time value delivery to customers. The framework reflects the following principles: light, easy to understand and difficult to master. Similar principles to that of Scrum is applied although new roles and events are added. The SoS (Scrum of Scrum) event coordinates activities with the teams' product owners and scrum masters. They are responsible at the end of each sprint for the integrated products' incremental delivery. The SDS (Scaled Agile Delivery) event containing one team representative identifies impediments and dependencies between teams. If needed this may be scaled to another level adding the concept of SoSoS. Multi-layers require steering and leadership in the form of an executive team with the mission of coordination between SoS and SoSoS teams and other parts of the organization. The organization model aims to support impediments identification more transparently and based on need allowing the organization to grow organically and sustainably [3].

2.2 Spotify Model

The Spotify model is a result of adapting agile methodologies to fit a large scale project [26], [25]. The model structures IT development organization using Tribes, Squads, Chapters and Guilds as viewed in Figure 2.1.

Each squad has a product owner who has the responsibility to prioritize the work in the squad's backlog and maintain a high-level roadmap [25]. The squad members develop the product by collaborating to find the best solution. A squad is supported by a coach to improve ways of working.

A tribe contains several squads and aims to facilitate collaboration and minimize dependencies slowing the development in the squads. A tribe is expected to be smaller than 100 people. Chapters consist of people in the tribe with similar skills and competencies. They are considered to be acting as a connector between squads in the tribe and meet regularly to solve issues. Guilds are essentially a group of people, that can belong to several tribes. A guild host a topic area where the aim is to share knowledge, good practices, and tools across the entire organization [17].

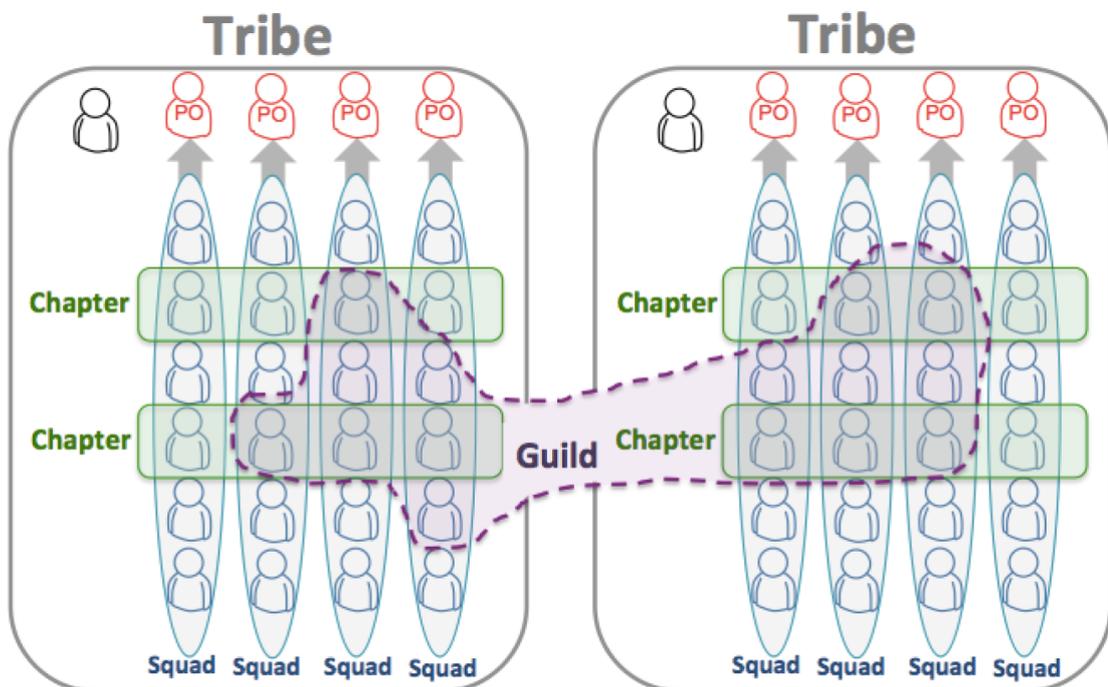


Figure 2.1: The Spotify model as intended by initial design in 2012 [17]. Picture exemplify the structure of Tribes, Squads, Chapters and Guilds.

The squads in Spotify are self-organized, loosely coupled, have 5-9 members and have the freedom to choose agile methods like Kanban, Scrum, Lean Startup and DevOps [4]. The squads are autonomous, optimized when management hierarchies are not apparent and the members of the squad can act on decisions being made in the squads. Development planning and setting of direction are done through long term and short term mission statements. The long term mission reflects the product strategy and the short-term one is revised quarterly [16].

Communication issues between teams are expected to be solved by the squads themselves[4]. A squad is autonomous and have the ability to take decisions on what to develop, how it is done and how to collaborate to make it happen. However, the squads still need to be aligned with the organization's strategy and goals through their understanding of the bigger picture along with focused team interaction and collaboration [16].

2.3 Agile Governance

The adaptation of agile methodologies to large organizations has created a need for adaptations of governing processes. Governance is "related with mechanisms and responsibilities through which the authority is exercised, decisions are made and the strategy is coordinated and steered on the organizations" [20]. The application of governance together with agile methodologies may seem counterintuitive. The broad concept of Agile Governance is described by Luna et al [19] as "a cluster of steering capabilities, based on three dimensions: (1) strategic planning: have a prospective view, strategic thinking, overall alignment; (2) control: establish mechanisms to ensure accomplishment of the strategic plan; and (3) multiskilling: develop dynamic capabilities to sense and respond to change". There are 6 principles to describe driving agile governance [20]:

1. Good enough governance: "The level of governance must always be adapted according to the organizational context".
2. Business-driven: "The business must be the reason for every decision and action".
3. Human focused: "People must feel valued and incentivized to participate creatively".
4. Based on quick wins: "The quick wins have to be celebrated and used to get more impulse and results".
5. Systematic and Adaptive approach: "Teams must develop the intrinsic ability to systematically handle change".
6. Simple design and continuous refinement: "Teams must deliver fast, and must be always improving."

Chapter 3

Case Description

The company in this case study is a large enterprise that has an internal software department. In this study, we will refer to the IT Unit: the home of most of the company's software product development and maintenance.

The financial allocation of resources in the company is provided by the Central Financial Unit. The IT Unit contains a fifth of the company's allocated capacity (referring to employees). The IT Unit is responsible for the delivery of products to customers along with internal products supporting the business areas.

The company is undergoing a change in its operating model. The transformation change is implemented into the IT Unit allowing for improved software engineering using agile methodologies, with the intention of improved development speed and quality. Other areas of the company are expected to undergo structural and procedural changes as a later stage of the transformation. The support unit with the responsibility of driving the transformation changes is Agile Development (Center of Excellence).

After the transformation, the IT Unit consists of several domains. Each domain consists of one or more Tribes (department of 70-300 employees). The leadership of the tribe consist of the Tribe leadership: Tribe Lead, IT Lead, and Tribe Coach. Each tribe has its own area of responsibility and the product development is done in smaller groups called squads (about 10 people). Each squad has a dedicated Product Owner. And the agile methodology commonly used in the squads is Scrum: with an iterative cycle of two weeks. Deviation from Scrum practice is that the Squads do not have a Scrum master. The squad leadership consist of Product Owners, Chapter Leads, and Agile Coach.

The development within the IT Unit is aligned to the strategic priorities of the company through the implementation of governance processes. The purpose is alignment between stakeholders and the output is prioritization to help the IT Unit work on that which provides the most impact and is of highest importance first. The governance process consists of the ABR (annual business review) and the QBR (quarterly business review). The governance process is facilitated by the support unit Agile Execution.

There are three areas that deliver and together support the transformation of a large-

scaled agile work model. These are Agile Coaching, Agile Execution, and Agile Development. Agile Coaching consists of about a hundred coaches that functions as squad leadership in tribes. They work directly with squads to strive for high-performance and agile ways of working. Agile Execution is running and facilitating the governance process as described above. Agile Development mentioned previously, has the overview of and develops the transformation, support changes in structure and processes in areas outside the IT Unit and works closely with higher management in the IT Unit, areas outside of the IT Unit and management in the Executive Leadership Team.

Chapter 4

Method

A case study was performed to investigate the ongoing large-scale agile transformation in the case company with focus on the context of the company's IT unit, its governance and challenges related to the agile transformation. We here present the method where we clarify underlying processes and decisions behind the proceedings, related to research and analysis, of this case study. Our case study was conducted based on guidelines by Runeson et al [24] and consisted of three main phases, namely preparation, data collection, and data analysis, see Figure 4.1. Our method consist of a combination of phases including among other semi-structured interviews, observations of company documentation (document study), literature review, thematic coding, and data comparison.

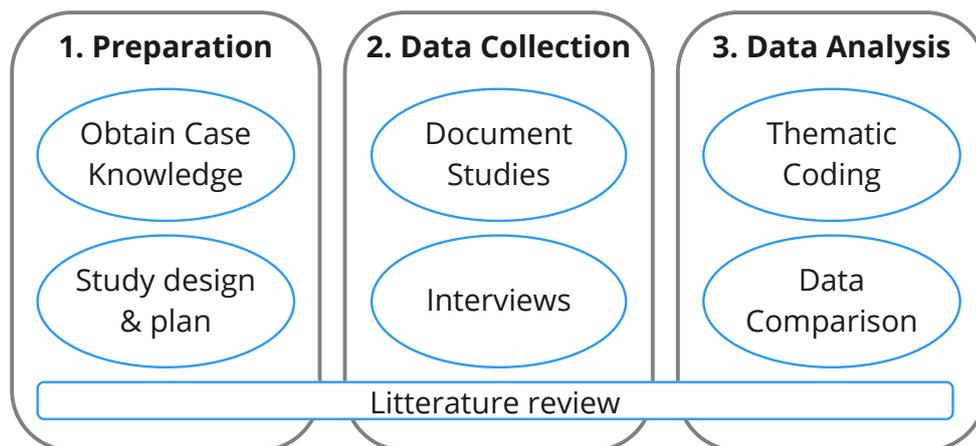


Figure 4.1: The case study phases consisted of the phases preparation, data collection, and data analysis. Literature studies have been performed throughout the study. Source: Own elaboration with inspiration from [24]

4.1 Preparation

The preparation phase consisted of obtaining case knowledge as well as designing and planning the study. By exploring the case we aimed to develop an initial understanding of the case and context of the organization that enables us to design and plan the study to explore possible challenges in the organization related to the agile transformation.

Case knowledge was obtained through discussions with two company representatives and by studying company documents about the agile transformation. These representatives, with a background in the IT unit's governance execution, provided us with the context and governance of the IT Unit through knowledge-sharing discussions and documentation.

The case study design and planning were based on the case knowledge in combination with literature reviews on related work. We choose this approach to gain case knowledge to scope the thesis investigations and find interesting research questions from the company perspective.

By choosing our method to include principles of a case study, as described in [24], we aimed to do research around the challenges of the IT Unit. To do this we further need to understand the company structures and how it operates to allow for analysis of what challenges might affect the transformation and the software development process. Therefore, we added research questions (RQ1, RQ2) in order to investigate the IT Unit's and the governance's structures and processes along with transformation history and direction. The research questions (RQ3,RQ4) relates to governance challenges of the IT unit along with challenges in reaching the transformation goal of autonomy in the tribes. Initially, the scope of the case study with regards to challenges was broader due to the openness of the interview questions. Due to time constraints, we have focused the thesis report on the challenges around governance and the transformation goal.

4.2 Data Collection

The data collection phase iterates development of the interview guide, interviews and document studies. We have chosen to use this approach to adapt the interviews as we gain more case knowledge. The document studies provide the initial understanding of how the organization works. The interviews, using the semi-structured method, were then more focused on clarifications of the organizational context along with discussions and reflections on challenges. The interview guide was updated for each interview to include questions relevant to the interviewee's background and updated with follow-up questions on areas mentioned by previous interviewees to be validated and followed up upon.

Through the initial document study, we saved time in mapping processes and structures to answer the research questions around the context of the company (RQ1,RQ2). The document study was done on documentation provided by the company on organizational structure, processes, current agile work model, and governance through PowerPoint presentations and documentation on the company's Confluence and websites. The PowerPoint presentations contain information on internally communicated governance processes. Confluence contains ways of working, structures and roles in the IT Unit and tribes along with the current design of the scaled agile work model that functions as a guideline and documentation for the IT Unit.

We choose to structure the interviews with the help of an interview guide. The knowledge obtained from the documentation study is used in the creation of the interview guide through brainstorming. Questions aimed to provide the means to map and clarify the structure and processes of the organization that had been obtained from the case study. Further, questions were inspired from brainstorming based on case knowledge combined with literature reviews on transformation and large-scale agile development challenges. Further documents were provided during or after the interview to clarify the interviewee's answers and explanations of details on the workings of governance and transformation. After each interview, the interview guide was updated with new questions to clarify processes/structure and validate challenges in regards to the research questions. Hence, allowing for follow-up on topics and challenges that benefit from clarification, validation or another perspective. The interviews were adapted to the knowledge of the interviewee. Questions were reviewed before each interview to adapt to the interviewee's areas of expertise. We recorded interviews and after, used recordings to transcribe the answers of the interviewees. By transcribing and reflecting on the answers and topics mentioned, we adapted our interview questions allowing for follow-up and confirmation of previous interviewees' answers in the following interviews. The transcriptions created from the interview recordings contain direct quotes or are slightly rephrased, if necessary, to better display the intent of the interviewee and the discussion.

The goal of interviewee selection is to, within the scope, find a diverse selection of candidates with different roles and perspectives of the IT Unit and its governance. The perspectives of interest include the governance, the tribe, the domain lead, and the transformation. We did nine interviews with employees that were chosen to cover these perspectives. In relation to the tribes, we choose a focus tribe with well-working processes to allow for relevant challenges. The focus tribe chosen is one of the early test tribes (proof of scale) and is renowned for having one of the most well-functioning processes, by recommendation from a company representative in the preparation phase. The basis for choosing the focus tribe is the assumption that a less mature area will experience challenges that are broader and more likely to have challenges where it is less clear where they might come from. A more mature area is expected to recognize the specific issues that are appearing in relation to the organization and its governance. The data collection includes nine interviews, see Table 4.1. In the focus Tribe, we interview IT Lead (I3) Product Owner(I4), and Agile Coach (I5). The Product Owner and the Agile Coach were chosen based on their squads being perceived as well-functioning by their tribe leadership (Tribe Lead). Further interviews have been done with relevant employees from the Centers of Excellence around transformation and governance (I1, I2, I7, I9). As interviewees mentioned challenges related to the finance of the IT Unit a representative from the central finance unit was interviewed on this topic as well (I6). The domain lead perspective (above tribe) is provided by the executive advisor of the Domain Lead (I8).

4.3 Data Analysis

In the data analysis phase, we used thematic coding [10] to enable data comparison. From the thematic coding of the results of our data collection, we have compared the data from several sources on different themes. This is to make use of data provided from the document study along with the different perspectives of employees in different parts of the organization.

The data analysis made partial use of the document studies. Mainly statements of purpose

Interviews			
#	Time at company (years)	Role	Relation: what organizational association the interviewee belong to
I1	3	ABR Facilitator	Agile Execution
I2	20	Model Delivery Lead	Large Scale Agile Delivery
I3	10	IT Lead	Focus Tribe
I4	4	Product Owner	Focus Tribe
I5	-	Agile Coach	Focus Tribe
I6	4	Finance representative	Central Finance Unit
I7	-	QBR Facilitator	Agile Execution
I8	-	Executive Advisor	Domain Leadership (IT)
I9	-	Transformation Lead	Agile Development

Table 4.1: Interviewees' roles and their relation to areas in the organization. Interviewee short names (I1, I2, etc) will be used to reference statements or citations from the interviews.

and specific elaboration on why structures and processes were a certain way were included in this phase. This is compared with statements from employees allowing for comparison on whether the intent of the use from design is implemented and perceived from the perspective of the employees.

Using thematic coding we structured the data from the transcribed interviews. We connected statements based on themes around organizational structure and background contexts, the content from the document study, and the perceived challenges. By coding topics according to themes, we used this to compare different employees' statements, with each other and when relevant material from the document study. We compared the themes and the different interview discussions and statements against each other. As the interviewees are from very different parts of the organization this is sometimes seen in the statements as the knowledge of different interviewees differ depending on what their area of expertise is.

We have weighted some comments above or below others on some themes. For example on challenges, the transformation lead is the one person that may have an overview of the challenges in the transformation. Others may provide valuable input on the challenges from different perspectives, however, the transformation lead can confirm and complexity the challenges from a holistic point of view. Another example of this weighting of interviewees' comments on specific themes is that where interviewees have been disagreeing this is noted as misalignment. Further, the consensus among the majority of the interviewees that are the closest to the topic in their work responsibilities is accepted. An example of this is control questions asked about agile software development or the purpose of certain governance processes. A finance representative without a close relation to working with the IT unit will not be weighted the same as others working closely with agile development teams or the governance. Therefore the answers of the interviewees in the focus tribe and governance facilitator are given more weight on those themes.

During the last interview with the transformation lead, several of our results from other interviews were validated. This interviewee, by having the holistic knowledge and overview of the transformation, could confirm and elaborate on several of the challenges found. Further,

the transformation lead along with a tribe coach has read the report and provided feedback. A few comments were challenging and these were followed up on and addressed by elaborating the intent more clearly. Some comments requested more details, and in a few areas, some processes had changed since the interviews and requested further investigation. As we have a limited scope and respect the research of the organizational snapshot we have investigated, we will leave the effect, from adapted processes and other details to future work.

Chapter 5

Results: Establishing Organizational Context, Structure and Ways of Working

This result chapter answers two research questions (RQ1, RQ2) by presenting the organizational structures and processes of the agile and governance transformation. The results in this section are compiled from the interviews and supporting document studies. Our investigation of the case company's context, governance and transformational background allows us to analyze and discuss challenges in chapter 6.

We answer RQ1 in Section 5.1 by describing the transformational background. RQ2 is partially answered in Section 5.2, covering the general context and structures of the IT Unit, and partially answered in Section 5.3 regarding the governance process.

5.1 The Background of the Transformation

The purpose of this section is to answer RQ1 and describe the transformational background. This will allow us to understand the context the IT Unit is working within. We here describe the previous working model, the pilot project before the full implementation (Proof of Scale), and the purpose of the full reorganization.

5.1.1 Previous Working Model

We find that the organization, using the previous working model, experienced ineffective financing and funding of projects that lacked insight and impact. The model was project-based (and time-restricted), where a small part of the organization received a bulk of the money to achieve what was promised beforehand. As there was a lack of alignment across

the organization sometimes the company where overlapping the projects and some of the expected outcomes were not always covered by the projects that were running.

These IT projects had the freedom to choose how they worked and some were running agile sub-groups in the overall-waterfall [18] organization. We discern that these agile sub-groups had issues drawing the full benefits of working agile due to the organizational waterfall processes and requirements along with experiencing friction from stakeholder expectations not aligning with the agile ways of working.

5.1.2 Proof of Scale

From the interviews (I2, I3, I6, I7) we find that there was an initial pilot project of the transformation. It was called Proof of Scale, started in June 2020, and aimed at implementing a part of the new ways of working model. It was only partially tested on a small scale and without support units (Centers of Excellence). The current implementation contains additional steering and support units outside the IT Unit. The initial pilot project included five tribes and contained about 600 people.

The initial purpose, from the document study, was to improve on the following three things:

1. Realization of customer and financial value throughout the company.
2. Redesign the operating model and structure.
3. Improve efficiency and lower time to market.

The Focus tribe of this study had a role in the Proof of Scale and is a contributing reason to their processes being more mature than other tribes. Interviewee (I3) have mentioned that the Proof of Scale also had the benefit of much support and guidance from the consultancy with vast knowledge of organizational transformations beforehand.

5.1.3 Full Reorganization Working Model

The full reorganization went live in January 2021 and contains 27 tribes in the IT-Unit. The model strives towards a culture of continuous testing and adaptation of processes, within limits. The processes are run and altered based on reviews and feedback. From the design perspective of model delivery lead (I2) the goal of the tribes in the IT-Unit is to be End-to-end responsible for what they deliver while aligning their work with the company strategies.

The aim is for the model to develop from firstly being in a stage of processes in place and then adapted to gain maturity. Currently, the IT Unit is transformed and there are expectations that other areas will be developed as well, specifically Centers of Excellence that tribes receive support from (I9). The agile tribes collaborate with or are affected by areas in the organization that follow traditional processes. In this case study, we observe a distinctive separation between the agile Centers of Excellence. Agile Coaching and Agile Execution are working within tribes or with strategies related to tribes. Agile Coaching and Agile Execution are supporting the agile work model, while Agile Development is the main actor of expanding and maturing the model from a higher organizational perspective. It is the area where the work on the model expansion and restructuring of organization and

processes happen. Therefore, it falls under Agile Development to have an overview of the transformation

5.1.4 The transformation challenge context

Transformation of a large organization is an effort that takes time [3]. Therefore, we find several transformation challenges being present (I2, I9). The IT Unit has new structures set but a large part of the organization still have processes that are incompatible and therefore create possibilities for friction in processes and ways of working. We want to highlight, that the way that the organization previously dealt with many things now seems even harder and makes no sense to people within the organization, both within the IT Unit and outside(I6, I9). We realize that due to different parts of the organization working in the same way they previously did they now struggle when the IT Unit require different processes to function. The transformation challenge includes convincing people that changing will be worth it even as they from their personal experience and perspective not yet realize the benefit.

We have found that the main drivers of transformation and implementation of new ways of working are three departments (Center of Excellence): Agile Coaching, Agile Execution, and Agile Development. Agile Coaching mainly resides within the IT Unit influencing ways of working mainly in the squads but also the tribes. Agile Execution and Agile Development reside outside of the IT Unit. Agile Execution facilitates and runs the agile governance processes within the IT Unit. Agile Development is the centre for research of the model for ways of working, they provide centralized knowledge to the organization on the agile work model and also the governance model. Due to the organization being in an early stage of transformation many processes have not yet fallen into place. Agile Development has a responsibility together with the other two agile Centers of Excellence to change this and together they aim to deliver a functioning scaled agile work model.

5.2 Organizational Structures, Processes and Working Models

The purpose of this section is to partially answer RQ2. We aim to present how the organization is structured, how it functions, and what its agile model looks like both on a development level in the tribes as well as on how it is steered from higher management. This section provides the fundamental understanding, of the case company context, that will allow us to analyse challenges in chapter 6.

5.2.1 Context of the IT Unit

This case study focuses mainly on the IT Unit, its implementation of agile methodologies and governance. However, the direct value that the IT Unit produce is the output of the work within the squads. Therefore, the context of the organization needs to be understood to allow for evaluations and improvements into the governance of the organization[19].

We have found that the agile methodologies that are strived for within tribes are affected by other parts of the IT Unit as well being influenced by factors [19] coming from other parts

of the company or even outside of the company. This was motivated by the discussions with several interviewees (I2, I3, I9).

In Figure 5.1 we exemplify the association between the IT Unit and other areas in the company. The external environment for the IT Unit (Figure 5.1) consists of other parts of the company mainly Business Units, Executive Leadership Team, Agile Execution, Central Finance Office, Risk Unit, Regulatory Unit, Compliance Unit and Assessment Unit. The effect these have on the context varies slightly.

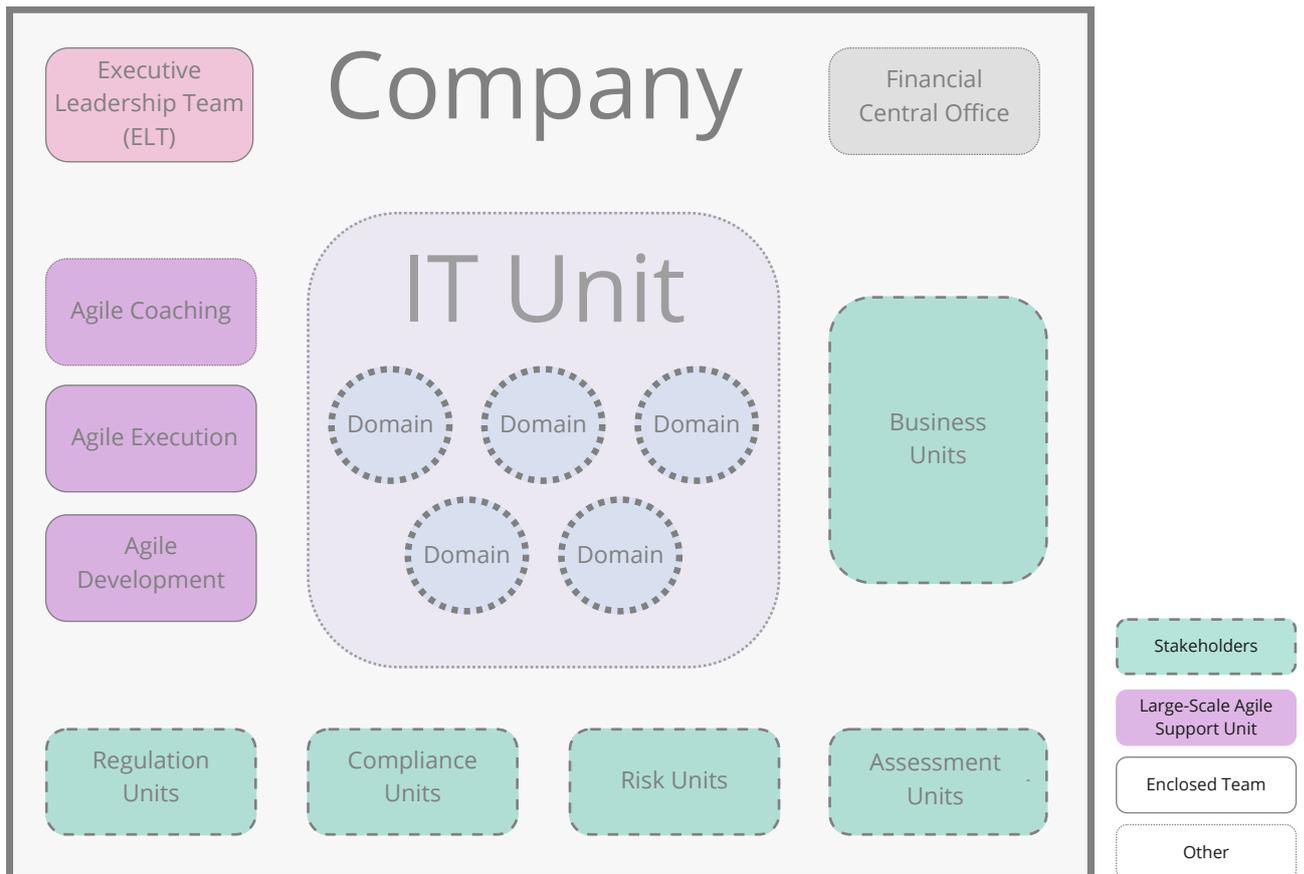


Figure 5.1: Units and other areas or teams that have been mentioned by Interviewees (I1, I3, I4, I7, I9). In this study we define the IT Unit to be the part of the organization that contains all domains and tribes. The purpose of this figure is to exemplify organization from the perspective of the IT unit and therefore is not a full representation of the entire company. Source: Own elaboration

The Executive Leadership Team and the Financial Central Office affect the domain units on an organizational level, indirectly setting the playground rules of how the transformation in the IT Unit may develop. Risk, regulatory, and business units affect the IT Unit on an operational level where there is a potential of friction with the agile teams where external units follow traditional ways of working. The context that affects the IT Unit is further not limited to within the company. It may also be affected by the company's market context, for

example, regulatory change from authorities and [19] shows how these market contexts affect small or large entities of an organization.

We draw a similar conclusion observing aspects of competition. The company stakeholders' interest is of importance for investments into the company as mentioned by several interviewees (I2, I6, I9). Therefore, showing that internal costs, compared to revenue, can be lowered may be a short-term goal that affects cost-saving within the company. In turn, this affects the funding of the IT Unit, its tribes and squads.

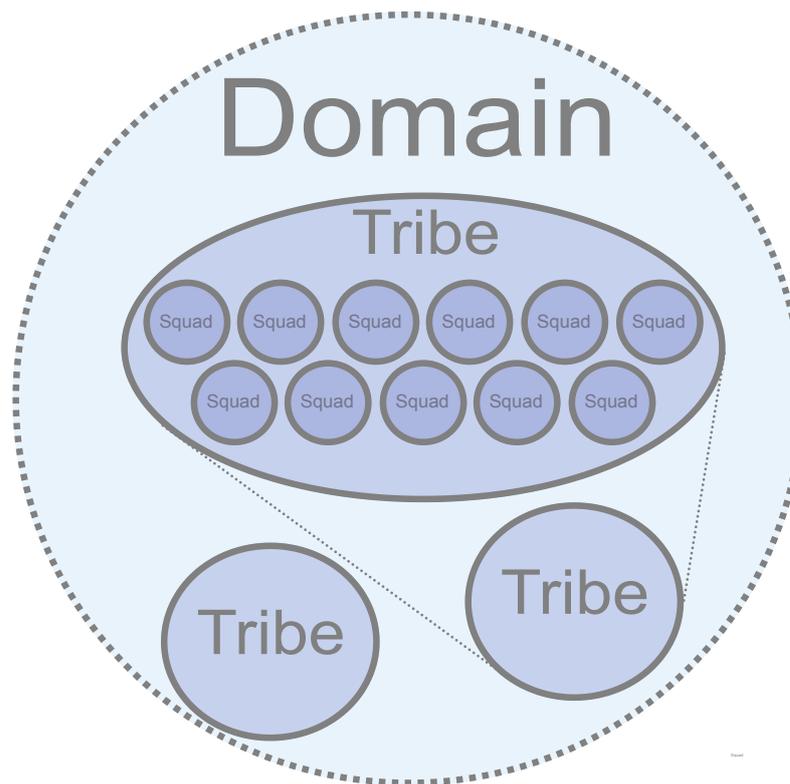


Figure 5.2: The different levels of entities of the IT Unit are Domains, Tribes, and Squads. Tribes are structured into domains. The purpose of this figure is to exemplify how a domain and tribe may look like. Different domains vary in size where some domains contain several tribes while others only one. Same variation can be viewed in tribes relating to squads. Source: Own elaboration.

5.2.2 Organizational Matrix Structure Overview

From the discussion of company and IT Unit structures in the interviews (I1, I2, I6, I9) we found that the organization is utilizing a matrix organization ?? with both a line organization as well as a project organization. The IT Unit structure with domains, tribes and squads reflects a project organization where the entities have missions and goals as a group. At the same time, management hierarchies with HR responsibilities reflect a line organization. For example, within a tribe, there are people from the business line as well as the IT line of the

organization. Funding of the tribes is done on domain level following the line organization. The IT Unit is about 20 percent of the entire organization in regards to employees and as motivated by the finance representative (I6) the domains hold the funding envelopes that are distributed by the domain lead for each line. There are two domain leads, one for the business line and one for the IT line, and each domain contains one or many tribes, see Figure 5.2. Challenges, created from the administration of the funding, are presented in chapter 6.

Each tribe has a Tribe Leadership Team consisting of three roles that belong to different parts of the line organization. These leaders, therefore, have three different line managers. We have mentioned the IT line and the business line. The third one is the coaching line that relates to Agile Coaching, described in 5.1.4.

Our focus in the case study is a selected part of the organization that carries out the main development and maintenance of software. This part of the organization we refer to as the IT Unit. To avoid confusion on the term, this includes all efforts that enable the development. For example, business analysts that belong to the business line organization are enablers and work together with software developers in a squad and tribe to deliver a product, see Figure 5.3. All within the IT Unit should work according to agile methodologies that differ from surrounding organizational entities working in more traditional planning (waterfall) settings. In the company the transformation (see Section 5.1), may relate to other parts of the organization than the IT Unit as well. However, as we refer to it in the rest of this chapter it relates to the IT Unit ways of working and its governance.

5.2.3 Relation Between Theory and Practice

In this section, we aim to place the model in a perspective of industry practices to allow for comparisons to other studies and research in related areas. We present model adaptations and relations to common industry development strategies as well as present an example of squad structure.

Model Adaptations

We have discussed the origins of the work model with the Model Delivery Lead (I2) and other interviews (I1, I3, I5, I9). A version of the model has been implemented in several other financial organizations and initially provided by a consultancy firm. We have been told that the model has been adapted to fit the organization. However, we have found it difficult from our investigations to differentiate the reasoning behind the changes. It is in some cases unclear where designs, that are not included in the Spotify model originate from. Partially due to structures and processes presented as the new model is what has been communicated through documentation and is reflected in the answers of the interviewees as well.

Information about the early development and stages of the design is unclear from the discussions with interviewees. The Proof of Scale was overseen by a consultancy firm and when the reorganization went fully live the consultancy support was replaced by an internal design team. Perhaps, this contributes to early knowledge about the design creation was difficult to find.

Model Relation to Common Industry Development Strategies

According to transformation lead (I9) the agile work model used in the IT unit is inspired by the Spotify model, described in Section 2.2. We have made our observation by combining document studies with statements from interviewees describing processes and comparing this with our literature review results, some of these are presented as background in chapter 2. Interviewees have motivated that inspiration, besides the Spotify model, also comes from Scrum, Scrum at Scale [3], and Objective Key Results??. The model in the IT Unit utilises the Spotify model in the tribes and Scrum in the squads. Both of these models are intended for smaller departments and development teams. The model in the IT Unit differs in its approach of utilizing them on a much larger scale than industry practices intend. Objective Key Results in the case company are very different (I5) from the industry practice ??, and is therefore a source of confusion in terms of how it should be implemented.

The model terminology in the Spotify model refers to development teams as Squads and departments as Tribes. We observe that the model implementation in tribes reflects the Spotify model regarding the structure of squads, chapters, and guilds. Scrum@scale could be compared to the alignment on priorities between squads. The Squads are using Scrum as the agile methodology for development purposes. The use of Scrum differs from common industry practices in that Squads do not have Scrum Masters. Further, there are more agile coaches compared to the industry, according to the transformation lead (I9). Each agile coach has two to three squads. Objectives and key results in the design are aimed to be used for alignment and transparency of objectives and tangible results in the tribes.

5.2.4 Differentiating Tribes

We know from the transformation lead (I9) that the intended design suggests that each tribe contains 100 employees. The maximum of how many people should be in a tribe was intended to be 150 employees. The reason for this limit is due to the added difficulty of collaboration and alignment within a tribe. The design requirements on tribe sizes do not reflect the implementation of transformation in the 27 tribes, which contain from 70 to over 300 people.

The model structure in the company described so far is quite close to that of the intended design. However, the implementation of the design has in some tribes been altered (I2, I3, I9), partially due to size among other challenges.

The focus tribe, that is chosen for this case study, is about 130 people and is very close to the intended design with no obvious alterations. It was part of the Proof Of Scale and is considered by support teams to have among the more mature functioning processes. For more details on why this tribe was chosen see Section 4.2.

5.2.5 The IT Unit and Leadership

In this section, we present leadership both within the Tribe and other leadership both within and outside of the IT unit. We further explore how the tribes are structured according to the intended implementation and the relation between different roles in the organization.

Leadership Within the Tribe

Each tribe has tribe leadership as well as squad leadership as presented in Figure 5.3. The tribe leadership consist of Tribe Lead, IT Lead and Tribe Coach. Tribe Lead takes the role of ensuring the mission delivery of the tribe, aligning the squads, guiding product owners and aligning with chapter leads. The IT Lead is responsible for supporting the tribe from a technological perspective and the development of technological capabilities. The Tribe Coach is leading the implementation of new ways of working with the help of the agile coach chapter and guides the Tribe Lead and the IT Lead.

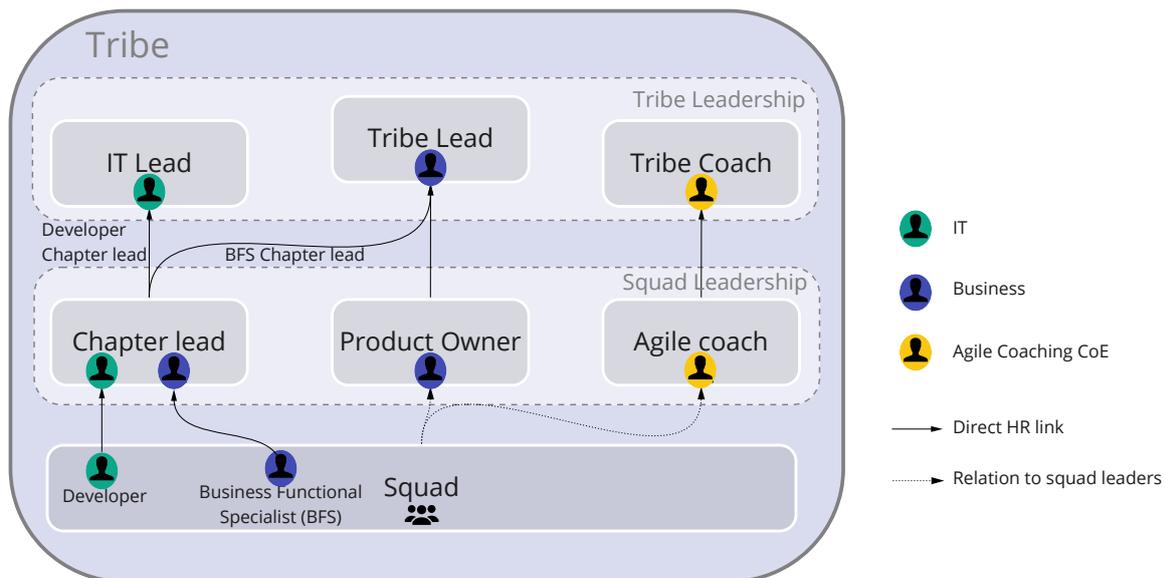


Figure 5.3: Structure of the leadership within tribe. HR responsibility is displayed with black arrows pointing to the manager. The BFS chapter leads report to the Tribe Lead while the chapter leads for developers report to the IT Lead.

The Squad leadership consists of Agile Coach, Product Owner and Chapter Lead. These three roles are replacing a traditional manager role with the purpose to enable (doing/action/active, find another word). The Product Owner is responsible for "what" the squad is working on and prioritizes work so that the squad works on the most important things. The chapter lead defines practices and grows professionalism in the chapters and therefore is responsible for the product development to be done in the "Right" way. The Agile Coach has teamwork as a focus and aims to enable efficient collaboration and improve ways of working.

Chapter Leads also have formal HR responsibilities for members of the chapter. This means that the Product Owners, that is the squad leader that work closely with the squad, can focus on the product. HR management for the squad leaders falls on the tribe leadership, see Figure 5.3. Product Owners have the Tribe Lead as their closest leader (and line-manager), and Agile coaches the Tribe coach. Chapter Leads for development chapters refer to the IT Lead while Functional Business Specialist chapter leads refer to The Tribe Lead.

Unlike the agile coach and the chapter lead, the product owner is dedicated exclusively to one squad. The product owner set the priorities and roadmap and the squad contain developers and business functional specialists. Together the squad members use their combined

technical knowledge and business knowledge to develop and maintain products used by the squad's stakeholders/customers (as seen in Figure 5.4).

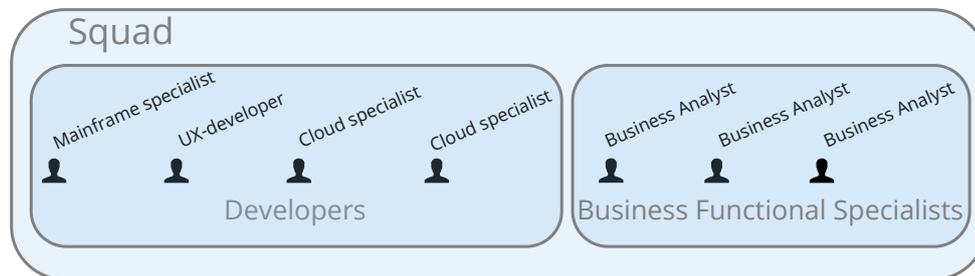


Figure 5.4: Example of what roles a Squad can contain. The different specialties of a person determine what chapter this person belongs to. So, a Cloud specialist developer will have the official role of a developer, but also belong to a chapter for Cloud Specialists. Note that the only official roles are developer and BFS while the actual skills of the squad member determine the chapter they are part of.

IT Unit and leadership

The tribe leadership answers to different people in several parts of the organization. In Figure 5.5 we present the relations between the tribe leadership and the executive leadership team. As described in Section 5.2.2 the tribe leadership reports to different lines in the organization: IT, business, and centre of Excellence (agile coaching). The IT Lead answers to one Domain Lead, Tribe lead to another. The two domain leads in turn refer to two different managers in the Executive Leadership Team. The Tribe Coach is in the project organization belonging to the IT Unit, however, in the line organization to Agile Coaching (Center of Excellence). The transformations role of the centre of excellence is described in Section 5.1.4. There are several more management layers to the executive leadership team (ELT) from the tribe coach compared to the tribe lead and IT lead. The centre of excellence reports to the same person as the IT leaders domain lead. The person to which the Domain Lead on the business side reports to, depends on the domain but is not the same person as the domain Lead on the IT side. We discuss leadership challenges on the domain level in Section 6.5.

5.3 Governance Description

In this section, we partially answer RQ2 by describing the agile governance processes of the IT unit. The understanding of the governance processes in this model will allow for reflections of issues and possible improvement in chapter 6.

We start by presenting the flow of how company strategies are translated into deliverables in the squads, and how the annual business review and Quarterly Business review is used for alignment. This section is the result of company documentation compared to interviewee descriptions of governance processes (I1, I2, I3, I4, I7).

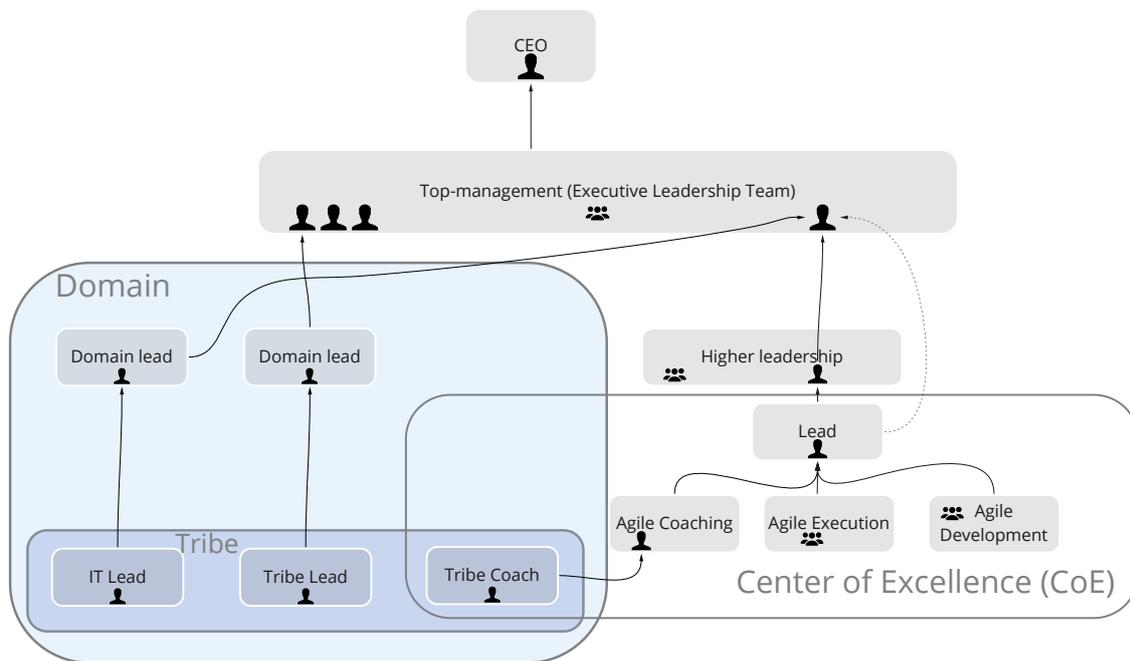


Figure 5.5: Higher leadership relations in the organization. The executive leadership team (ELT) is the top-management of the company.

5.3.1 From Strategic Pillars to Deliverables

The formal structure being implemented is intended to facilitate organizational steering and ensure alignment between the stakeholders and the IT development organisation on prioritization. The purpose is also to translate the company’s high-level strategies in alignment with the development work in the tribes, as seen in Figure 5.6. The governance, of agile steering and alignment, rely on ceremonies related to ABR (Annual Business Review), QBR (Quarterly Business Review), and squad (development team) interaction with direct stakeholders.

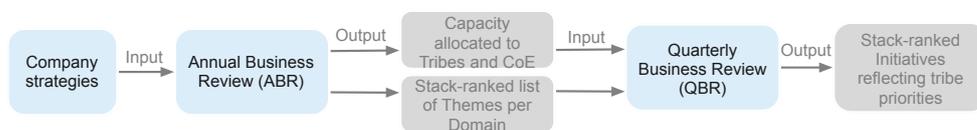


Figure 5.6: Simplified governance process model on how company strategies are reflected in tribe priorities.

Execution is aligned with strategy through TIES: an abbreviation for Themes, Initiatives, Epics and Stories. Relation to QBR and ABR can be seen in Figure 5.7. Strategic pillars are the organization’s strategies and direction that are used as input into the ABR. The strategic pillars themselves are set outside of the scope of the IT organization of the company. These are in the ABR broken down into Themes and the ABR produces an output of stack-ranked themes that in turn serves as an input for the QBR. Stack-ranked refer to all themes being

prioritized in a list that becomes a guideline for the tribes on what is the highest priority to work on. As all items are ranked no items have the same ranking. Instead one will always have a priority over another. The QBR process similarly results in stack-ranked initiatives that then set the priorities within a tribe.

The ABR is run outside of the tribes with the help of the team responsible for implementing the governance process in the IT organization: Agile Execution. Tribe leads take part in the ceremonies where they contribute from the tribe perspective. The QBR process is run by and implemented by the tribe leadership and product owners take part in and give input from the squad perspective. The ABR, done annually set the themes to be prioritized in the coming year. The QBR in turn sets initiatives and Epics to be prioritized in the coming quarter. In the QBR progress is evaluated internally in the tribe and previous assumptions and prioritizations are revised. Each QBR results in a memo recording the priorities being made and shared outside the tribe for whoever is interested (stakeholders for example). This memo is the bill of what the QBR resulted in. Each squad is expected to focus on the work through the epics broken down into stories as seen in Figure 5.7.

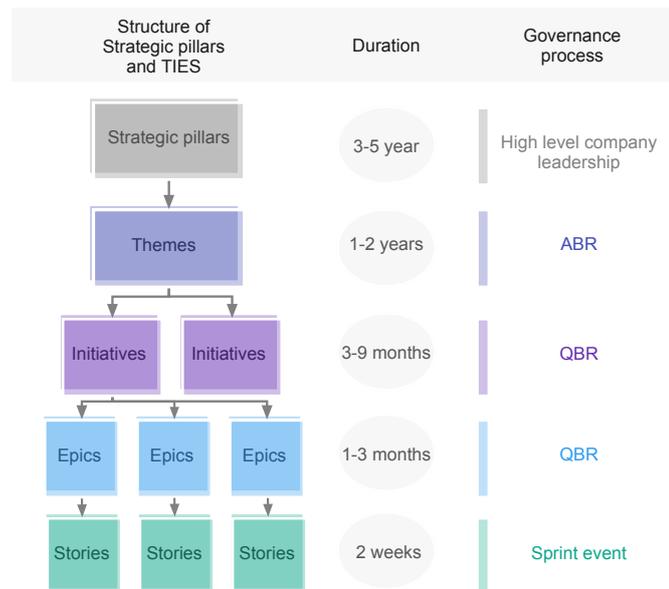


Figure 5.7: Strategic pillars are broken down into themes, themes into Initiatives and so forth. The IT Organization operates and sets all TIES on different levels, the strategic pillars are outside of the IT Organization. Formalized processes to agree on priorities are the ABR and the QBR.

5.3.2 Annual Business Review

The Annual Business Review (ABR) essentially translates company spanning strategic guidance into tangible priorities and allocating capacity. The ABR has the purpose of ensuring alignment across strategic objectives and priorities for the coming 12-18 months. It evaluates

and iterates progress and performance, revises the strategic direction and that resources are revised concerning the objectives.

The main output of the ABR is the Stack-ranked themes. These have the purpose of setting a clear priority on themes. This will then guide priorities on work being done by several tribes. The highest priority items will be worked on. If one tribe is dependent on another for contributing to a high priority theme then this is something that will help guide the tribes on what to work on first. Much effort is put into the ABR through various events involving stakeholders and tribes. To support the ranking of themes, impact assessments are done to evaluate what focuses will bring higher impact. This is compared against estimation of implementation efforts.

5.3.3 Quarterly Business Review

The Quarterly Business Review (QBR) is a 4 week-long process. It has several events where the main ones are related to syncing on different levels as well as solving impediments between tribes and stakeholders. The QBR should facilitate the reflection of what was done in the last quarter, if ambitions were achieved, what was delivered and if did it bring the expected impact.

The main outcome of the QBR is the QBR Memo: a document containing the priorities of the tribe for the coming Quarter. This document contains the Initiatives that will be worked on in the coming quarter along with the OKRs (Objectives and Key Results).

The QBR is facilitated by a representative from Agile Execution supporting the main actors of the QBR: the tribe leadership. The Domain Leadership teams are a sparring partner for the tribe leadership on solving impediments (for example between tribes) and is consulted on the strategic priorities within the tribes.

Chapter 6

Results: Observed Challenges (RQ3, RQ4)

In this section, we analyze challenges within the IT Unit and its governance to answer research question RQ3 and RQ4. The purpose of this section is to present the result of analysis of the investigation on the perspective of the software development delivery and agile governance, what challenges have been found and ideas for improvement. By understanding how the challenges affect the IT Units delivery we aim to picture how governance and the transformation affect the software development in the tribes.

In total, we identified 15 challenges (C1-C15) related to impediments of the tribes' ability to deliver (C1-C2), the governance of the IT unit (C3-C7), and various challenges (C8-C15) concerning financial steering and transformation in the organisation. Table 6.1 presents an overview of the challenges found in this case study. The challenges exemplify areas of the complex organization's working model and its implementation concerning the governance, transformation, and funding of the IT unit's software development organization.

Interviewees have contributed with statements and explanations from governance, transformation and from tribe perspectives. Interviewees outside the IT unit include ABR facilitator (I1), QBR facilitator (I7), central finance representative (I6), Model Delivery Lead (I2) and Transformation Lead (I9). Tribe interviewees are IT Lead (I3), Product Owner (I4), and Agile Coach (I5). The domain perspective in the IT unit is provided by the executive advisor (I8) of the domain lead (IT). Together their point of view shows separations in ways of thinking and also provides an opportunity to find challenges in both the model itself as well as the implementation of it.

In Section 6.1 we answer RQ3 by describing why and how dependency management (C1) and end-to-end responsibility (C2) challenges affect software development in the tribes. This shows having an impact on the delivery and efficiency in the IT unit. We argue that this section describes core issues that the challenges in other sections indirectly add up to. The following sections aim to answer RQ4; In Section 6.2 we discuss several interpretations of the TIES model (C3) that combines top-down and bottom-up approaches. Alignment and prioritization in the governance processes ABR and QBR are discussed in Section 6.3, reflecting on whether the purpose of the governance processes is fulfilled (C4) and the effect

Challenges	
#	Description
C1	Managing Dependencies
C2	Enabling end-to-end responsibilities
C3	Multiple interpretations on governance using TIES
C4	Fulfillment of purpose of ABR and QBR process
C5	Short ABR input window while long prioritization "living" expectancy
C6	Governance processes control rather than support
C7	Resistance towards change
C8	Agile Maturity
C9	Leadership facilitates transformation challenges
C10	Agile governance partially implemented
C11	Friction between different organizational entities
C12	Funding model is not adapted to the agile organization
C13	Funding model and cost-saving measures risk the success of the transformation
C14	Cost-orientation in the lower segments of the organization is not supported
C15	Current cost-saving environment hinders retention of skilled IT personnel

Table 6.1: Challenges found in the case company relating to tribes ability to deliver, governance, transformation, and funding.

of certain input and prioritization procedures (C5). The risk of top-steering in Section 6.4 is discussing the challenge of governance processes controlling rather than supporting (C6) the development organisation. Section 6.5 is discussing the organization's resistance towards change (C7), the immaturity of the agile mindset and culture (C8), and the leadership facilitating transformational challenges (C9). Further, we discuss the agile governance in Section 6.6 and find the agile governance incomplete along with its processes creating friction in the IT unit. Lastly, Section 6.7 presents challenges around the funding model not being adapted to the agile organization (C12), the funding model along with cost-saving measures risking the success of the transformation (C13) and cost-saving ability not supported in the lower organizational segments (C14). We also highlight the nature of the software development industry and how the current cost-saving environment hinder the retention of skilled IT personnel (C15).

6.1 Impact of Challenges On Delivery And Efficiency In The IT Unit

Within large enterprises, it is non-trivial to achieve end-to-end responsibility for individual agile units and teams, partially due to the need to manage dependencies between tribes. This continues to be a challenge at the case company, even if end-to-end responsibility was one of the main aims of the transformation. The interviewees I3, I4, I5 describe challenges around these dependencies that affect the tribe efficiency and ability to deliver. These challenges are of high importance as they relate to the software development in the tribes and that they act as a catalyst for other challenges related to transformation and governance. We here will discuss these challenges and they should be put in the perspective of core issues essential for the tribes' transformation and governance.

Cross-tribe dependencies (C1) are a challenge since they affect coordination and collaboration, within and between tribes and squads. To deal with the dependencies co-planning between tribes and squads is used, leading to several consequences in the organization. The planning needs excessive communication and collaboration, costing much time and effort, both initially and to deal with changes later. The co-planning take hold of resources and capacity, lowering the self-organization of the squads and transformation buy-in from squad members. This might also prevent some features to be delivered as capacity is not enough. The challenge also affects the self-organization of the tribes and the dependencies may take several forms. Essentially the problems appear as excessive planning and coordination involving many people across the organization. The ABR and the QBR involve planning to sort out possible dependencies between tribes as well as prepare and flag for where collaboration will be needed between tribes. Then an effort is to align the capacity and work needed between tribes through prioritization. What one tribe can work on will affect others tribes ability and what they can commit to producing in the foreseeable future. What they try to avoid is that one tribe develops something that cannot be released in the for-seeing future due to them waiting on another tribe to deliver their part. In this working model, the goal is to bring as high an impact as fast as possible to the customer. Once the planning of the development is performed an effect of this can be seen in the delivery of the squads. If squads in other tribes for some reason cannot commit to what was planned then this affects the value and impact of the delivery. Due to the dependency, the squad cannot achieve the planned impact. They either develop something that does not reach the customer or they need to rework their planning. Either way, much time is spent on both the initial alignment and communication with other squads and tribes. The dependencies between tribes take much time to align, plan and prepare according to product owner (I4). Sometimes the efforts are in vain as situations and priorities change. We find that there is much alignment going on, not only on the levels of squad leadership and tribe leadership but also with stakeholders and governance facilitators (I1, I8). Some tribes are also waiting on other tribe delivery to be able to deliver as well.

The management of **cross-tribe dependencies (C1)** is also affected by enabler tribes having a high impact, the model being implemented and designed in a way that creates dependencies, and the size of the tribes adding to the challenge. Some tribes are enabler tribes, meaning that they are maintaining and improving systems that the other tribes are dependent upon (core systems, etc). If high priority stakeholders have big requests in these enabler tribes it means that they cannot deliver to anyone else. Product owner (I4) provides an exam-

ple of this in pointing out that his squad cannot deliver without the software delivery from the enabler tribe. Dealing with dependencies leads to inefficiency and time is spent to create plans that are uncertain and unreliable. From the focus tribe perspective (I3, I4, I5) dependencies are something that reduces efficiency of the delivery and creates overhead work for all parties involved. Model Delivery Lead has mentioned that tribes are designed to include much collaboration. They are expected by design to collaborate on 30% of their work and 70% working on their own. This comment from the interviewee is surprising as it is the first time hearing that coupling between tribes is expected and according to design. This could translate to dependencies not being recognized as a contributing reason for the high internal cost (motivated by several interviewees) and affecting employee time spent on overhead communication and alignment. Given the size of tribes, this adds further to the challenge of the prospects around cross-tribe dependencies. We are told that this is a challenge created by design from the need of different customers wanting several products(I2). We would like to argue that perhaps there are other ways to achieve this without compromising the integrity of the end-to-end responsibility. In follow-up discussions with tribe leadership in other tribes, we believe to have found indications that many dependencies between tribes and specifically squads are the result of the division of responsibilities and inheritance of systems from the old organization. It seems as if the consequence of the design implementation is that systems are divided between squads and even tribes. Previously one or two squads were dedicated to a system that now is divided between several squads resulting in one squad then owning part of different systems, requiring more alignment with other teams compared to if they own fewer systems while having full ownership. It seems that the creation of squads perhaps was done centrally from a perspective where consideration of the technical architectures and systems were not a priority. Further investigations into this would be of interest finding out how the responsibilities of squads and tribes were divided and what the main perspective was, if not the technical, for the implementation.

While enabling squads and tribes to have **end-to-end responsibility (C2)** of the entire development process is one of the main goals of the transformation, this has not been achieved in the case company. The Model Delivery Lead (I2) described that the aim of the transformation was to move away from the previous hierarchical structure of top-down command to a model based on agile principles where tribes are autonomous and have end-to-end responsibility. Even so, there are several issues related to dependencies and end-to-end responsibility. These were in the interviews mentioned by IT Lead (I3), concretized by product owner (I4), and validated by agile coach (I5). One of the core things that are the result of these discussions is that end-to-end responsibility is not possible in the current ways of working. Product owner motivates it as follows: "Squads and tribes ability to deliver on their own is not the told truth (the real story) from my point of view. We are too interlinked and there are too many dependencies". For end-to-end responsibility and autonomy, the tribes and their squads need to work more independently and minimize dependencies.

Discussion. How the organization treats its dependencies hinder end-to-end responsibility. Conway already in 1968 in [9] showed how a solution reflects the organization and its structures, processes, etc. The nature of the division between tribes will affect the software development work in its quality and efficiency. The establishment of a clear and single-minded vision for an area under ownership [28] is difficult when the tribes are not self-organizing and cannot on their own work towards their mission. It is not the IT Unit as an entity that should strive for end-to-end responsibility. Collaboration in large groups should

be avoided as much as possible. The more areas and people involved the more overhead work is created. The design of a system may be defined as the intellectual activity that creates a useful whole from its parts [9]. By this, we refer to the customer need that leads to the design choice. It should not be a driver in the design but rather be a challenge for the tribes (their architects) to solve. Communication and alignment should continue, however, each tribe should have the ability to move in the right direction on their own. To achieve end-to-end responsibility within each tribe it is necessary that they have full ownership of their delivery and solutions. The introduction of dependencies should be introduced by necessity and not by the design itself.

The environment created in the IT unit through development methodology, dependencies, structure and collaboration will eventually affect the efficiency and delivery of the development teams. To achieve long-term productivity high-quality delivery is a requisite [27]. So if something is undermining the delivery quality in the squads then it is something that fundamentally becomes a challenge. There are reasons to develop software using certain development processes, in this organization, the tribes use agile methodologies. These processes are iterated to allow for smaller teams to become high-performing. The teams' environment, being optimal, is what matters as their delivery impact is what defines success in regard to development. All items on our list are challenges from this perspective and are in extension the effect on the squads in the tribes. Potential friction against the tribes' agile methodologies and the transformation goal of end-to-end delivery will show in terms of their efficiency and impact of development. The faster these challenges related to the organizations are improved the more the company will save in cost long-term [14].

The level of cross-tribe dependencies relates to the size and organisation of the tribes and squads, which in the studied case often are larger than recommended, see Section 4.2.4. Each tribe contain between 70-300 people. This undermines the intended design where tribes should strive to be around 100. Larger teams are considered ineffective in delivering as well as unwieldy [1]. And the size manifests into other challenges that are amplified. It is easier to solve issues on a lower scale than a higher one. Further, the development team size is ideally 5-10 individuals according to most experts[1]. In the IT unit, the size of most squads is usually 10 or more. Therefore, in terms of size, many squads are also already on the upper scale.

6.2 Model implementation combining a top-down and bottom-up approach

There is a challenge in managing requirements identified at different levels in the organisation and balancing organisation-wide requirements of a strategic or legal nature, with requirements from the technical roadmaps of each tribe and development area. Within an agile organization, the development organisation expects teams/squads to be self-organising and autonomous while aligning the development with the directions of the company. From an agile perspective, teams are expected to be supported by the surrounding organization to innovate while working in a bottom-up fashion by developing requirements for their technical area based on their insights into the area. The governance part of the model using TIES contains a logical inaccuracy that can lead to several interpretations with negative consequences on either the implementation of agile methodologies or the creation of gaps in the connection of strategies and tangible deliveries. The logical inaccuracy is expressed by the

approach of governance implementation through the use of TIES (Themes, Initiatives, Epics, and stories) that risk undermining the software development autonomy in the tribe.

Some company-level strategies and directives aim to steer and direct the development. These company-wide requirements represent a top-down requirements flow that needs to be 'translated' and incorporated in the agile working model of the IT unit. The challenge is to create direction while not undermining the development units' own organization based on agile principles and ways of working. The TIES (themes, initiatives, epics, stories) tool is the link between the company strategies and the development work in the squads where the development of stories and epics is essential and close to the product development. The themes and initiatives are the focus of the governance processes to support dependency management and prioritization from a strategic perspective. The implementation of the model contains rules that have consequences in the linking of ties. There is an informal restriction on how many themes are allowed to be created and signed off. The amount of themes is restricted to provide an easier overview of the planning and prioritization. In the ABR there is also efforts of dependency management for development where several tribes are involved and perhaps in need of sync. However, many of the Initiatives that are connected to a theme this way do not necessarily have any dependencies between each other so the dependencies are not clear only by looking at the theme the initiative is connected to. From the answers of the interviewees, we believe there is a risk that the tool Jira, where the TIES are linked, is not used as expected. On the lower levels of TIES like epics and stories, it is common to mark dependencies in the tool. We expect that if the dependency linking is not done one would seek other ways to find dependencies, perhaps by relying on the link between initiatives and themes.

The governance part of the model using TIES (themes, initiatives, epics, stories) has a logical inaccuracy that can lead to **several interpretations (C3) of using TIES** and leads to issues on either the implementation of agile methodologies or the creation of gaps in the connection of strategies and tangible deliveries. The TIES part of the model in the design, see Section 5.3.1, has elements of a top-down approach as well as a bottom-up approach, however, the inaccuracy lies in the several interpretations of when the top-down approach has precedence over the bottom-up and vice versa. Translating company strategies further than Themes is the top-down effect that can have consequences, as we will see. The idea is that the themes set the direction of priority that the tribes then strive to contribute to through the linking of the different levels of TIES. The bottom-up approach is reflected in the tribe creation of epics in squads contributing to initiatives at the tribe level. By comparing interviewees' (I1, I2, I3, I4, I5, I7) descriptions on how ties are used and approached in the ABR, QBR and squad related work we find that there is some difference in how the themes can be linked to the initiatives. We observe two scenarios that can happen, due to the interpretation of the double approach design of implementing both top-down and bottom-up. This is something that may also depend on the tribe and how the use of Themes is supported by different ABR-facilitators in the domains. In other words, most likely the implementation of how the TIES part of the model is used in practice differs between tribes and even domains. The implementation of the model would probably improve by more concise communication of how the design should be interpreted.

We provide an example to visualize the two scenarios observed related to the use of TIES that is present in the governance model using TIES: the top-down approach, as well as the bottom-up approach. In the creation of themes and stack-ranking of them, described in

Section 5.3.1, it follows that a certain amount of themes could be expected. From the point of view of an ABR facilitator (I1), the focus is the overview of the themes. The more themes, the higher the effort doing the prioritization and the harder the overview becomes. Further, it is also very difficult to know what thousands of people divided into tribes will work on. The themes are often broad to allow all kinds of areas to be added to them later on. The effect of how the themes are created is that the scope and size of themes are fixed top-down. Initiatives are then attached to the themes. The initiatives are connected to themes but should also reflect the more detailed Epics and Stories created by Scrum teams. This means that either the initiatives are adapted to the themes initially risking affecting the epics scope within the squads. The other possible interpretation to this is that the initiatives should be created mainly from the epic structure in mind (bottom-up): keeping in mind the technical requirements and needed coordination within the squads and tribe (related to challenge C1 discussed in previous Section 6.1).

The realisation of the transformation goals is dependent on what approach is chosen to implement the TIES part of the model. From the example of the two possible scenarios, there is a disagreement between the interviewees on how the model should be interpreted due to distance and different exposure to issues. We have found that most interviewees prefer the bottom-up approach from stories to initiatives. The initiatives are then in the control of the tribe and autonomy is after all a goal the transformation strives for. However, the ABR facilitator described more of a top-down approach to be preferable due to issues seen in coordination on what initiatives are linked to the themes. Several interviewees have mentioned that the connections between the themes to the development TIES are not linked in a way that allows understanding of their connection and the details on squad level compared to themes on a very broad level is not obvious. Our observation concerning this is that in the bottom-up approach this is isolated to a gap between initiatives and themes with less effect on TIES related to the tribes' daily work. We observe that the ABR facilitator should have a higher exposure for the gap issues compared to others while not having the insight on the direct consequences of gaps between initiatives, epics, and stories affecting the development in the tribes and that this could be a reason for why this specific person diverge. Due to the consequences impacted on the tribes, the bottom-up approach to the initiatives is more desirable from a software development perspective, as it protects the autonomy of the tribes. This as the other option brings consequence of top-down changes leading to the steering of how the tribes and squads need to work to adapt to the structure surrounding them. This is highly challenging from an agile perspective as the value of the model is undermined. The stories and epics are within a product owner's domain to have full decision authority over, and it is up to the squad how they prefer to work. Squad ownership allows for higher performance and impact of what is delivered. And as the transformation efforts are to promote self-organizing teams in an agile software development environment this also may apply to the tribes' initiatives. To allow for the transformation goal of autonomy, also the tribes need to have ownership of how they work and if the initiatives, that are within their scope of responsibilities, are dictated or affected by external authority or entities this goes against the goals of the transformation.

Discussion. The bottom-up approach interpretation from stories to initiatives, beneficial for dependency management within the tribe, introduces a gap requiring dependency management using other means. If tribes create initiatives by considering the roadmaps and collaboration adapted to the development methodologies. Then the use of initiatives both

reflect the details of the development as well as allow for a structure that can be used independently in the collaboration between squads and also dependently within the squad. Some initiatives could have epics from different squads linked to them allowing for an overview in dependency management while other initiatives may contain only epics from one squad if dependencies are not present. In agreement with most interviewees, we support the approach where initiatives are created with the development and collaboration in the tribes in mind over top-down creation from themes. The top-down approach goes against the guidance from agile methodologies as it removes autonomy from tribes and squads by imposing how they manage the initiatives and epics. It is not realistic that leaders have as clear and deep insights into opportunities and potential value-adds as the people who could work bottom-up in the organization. The guideline of the model is that Scrum is used by the squads. In scrum guidance, on how to work with epics and stories might conflict, with the TIES model if the epics are not created bottom-up. Further, dependency management between squads is supported in the tribe as a consequence of the autonomy that we have linked to the bottom-up creation of initiatives. In the ABR there is an expectation of the TIES model being used to deal with dependencies. The initiatives connected to themes is expected to be an indication of where dependencies are present. However, due to the restriction on the number of themes that can exist while the initiatives are created bottom-up and then linked it will not be obvious where the dependencies lie as many initiatives connected to an epic will not necessarily be dependent on other initiatives. The dependencies will have to be sorted outside of the TIES and will require much alignment effort between tribes. Due to initiatives in a theme not being dependent on one another, the alignment through TIES does not equivalently support the management of dependencies between tribes. The dependencies between initiatives in different tribes then require to be distinguished in another way. We observe that this probably is part of the root cause for the different views on how the alignment should be done and how dependencies should be sorted. The TIES are linked in Jira and there is functionality to link dependencies where cross-tribe dependencies can be controlled. However, we wonder if perhaps people involved in the ABR have incoherent knowledge of the tools they are using. Perhaps, a possible improvement would be to increase the use of linking dependencies on initiative level rather than relying on the current use of TIES. We know that the purpose of TIES is to link the company strategies with what is being delivered. Somehow TIES is also used for dependency management planning in the ABR. We recommend diligence in the purpose of both model and tools and perhaps clarification of how cross-tribe dependencies are expected to be managed.

6.3 Alignment and prioritization through ABR and QBR

The purpose of agile steering in the organization is to align tribes deliveries in the IT Unit with that of the company strategies and direction set by the top management. The implemented governance process allows for the steering of the agile organization's development capacity. Through these processes priorities are set along with dependencies being managed between tribes. It is unclear whether or not the current implementation of the ABR and QBR processes meet the intended purpose (C4). Moreover, the positive aspects of stakeholder collaboration risk getting lost in alterations of the implementation (C5) due to the

relation between rigidity (outcome of the implementation) and changing the behaviour of the stakeholders.

The alignment and prioritization in the governance process are complex and it might be **unclear whether the ABR and the QBR fully fulfil their purpose (C4)**. Issues in alignment and prioritization are partially related to the gap between initiative and themes mentioned in the previous section. Agile steering through the ABR and QBR is dealing with prioritization on several levels, both on themes and initiatives. The themes are very broad and further effort is often required to sort out dependencies between tribes initiatives where the prioritization affects the delivery potential of the tribes. It is not clear through the TIES structure what is a higher priority compared to something else when it comes to dependencies between tribes. Themes are stack-ranked, described in Section 5.3.1, while initiatives linked to them often fully do not reflect the reasons behind the prioritization. As an example, an initiative in a low-priority theme may be more urgent compared to another initiative in a more prioritized theme. ABR facilitator (I1) has mentioned that it happens that tribes are adding their initiatives to the prioritized broad themes containing high-priority content together with other content that perhaps should not be a high priority. It is suggested, that they do this due to competition with others on what will be developed by enabler tribes and squads where the capacity is limited. If the item is not of a high priority they risk not being able to deliver impact to their customers. The consequences of not delivering will show in measurements of the leaders and affect their bonuses.

Changes in the ABR process, that are iteratively improved, may risk losing positive benefits seen in the stakeholder interaction with the tribe. **The ABR stack-ranking lasts a year where the input window for tribes and stakeholders is short (C5)**. The yearly ABR has shown to be a success according to the ABR facilitator (I1) due to the alignment between several parts of the company and visibility of what the development organization is planning to deliver following the strategic direction set. The value, agile steering provides from a Tribe Perspective, according to IT Lead (I3) in the focus tribe is that the prioritization of themes stops stakeholders from interrupting the agile processes as was previously common. The interviewee is referring to stakeholders asking for things on an ad hoc-basis and using their influence to interrupt the workflow of agile departments. Stakeholders have changed their behaviour towards the Tribe as they have realized that prioritization is already set and that things need to be added into the ABR to be included unless it is of an urgent and prioritized nature. Previously stakeholders were managing the IT side working against the agile self-organization in the squad. Product Owner (I4) describes the stakeholder interaction improving from the start of the transformation journey in the proof of scale: "In the beginning, it was a lot of asking for features, but I asked them to provide their needs. Then we [squad] can find a solution once we know what business needs we aim to solve". This aligns with Model Delivery Lead (I2) description where stakeholders provide support and the product owner is responsible for driving the direction of the product. Firm prioritization is then seemingly framing stakeholder interaction with focus tribes and squads. that is an improvement from an agile development perspective where stakeholders adapt their approach towards the development squads providing feedback and support through knowledge sharing. This item is a positive outcome related to the challenge of ABR and QBR fulfilling the intended purpose (C4) and care should be taken to not risk losing this positive benefit when adapting the governance processes.

The product owner (I4) in the focus tribe has mentioned that the steering in regards to

the ABR is lacking adaptivity as the product owner needs to provide input on what the squad will do for the entire year. Things can be different in three or six months and as described by IT Lead (I3): "[It is] very early we need to set out a yearly target. Just because we put something in the ABR that is relevant now it doesn't mean it will be relevant later". Priorities change and the "plan" signed off by the ABR will not reflect the priorities that often change throughout the year. Dealing with changing priorities is expected in an agile development setting where the purpose is to develop the most important thing first. What the most important thing is today will be something else in 6 months when new knowledge has come to light.

According to the QBR facilitator, the QBR is there for the adaptivity and revisitation of priorities within and between the tribes. However, the QBR focus on initiatives while ABR relates to themes. Theme prioritization affects the collaboration mainly between tribes. An outdated stack-ranking of themes affects the IT Unit's ability to work on the highest priority outcome reflecting the current need of the organisation. Many of the tribes have dependencies (C1) and the more dependencies the higher the importance of the prioritization being accurate and the alignment being updated. At the same time, the value of stakeholders respecting the prioritization should not be underestimated. It has in the focus tribe shown that the stakeholders have adapted their behaviour due to this. A way forward would then perhaps be to revisit some of the prioritization more often on theme-level while preserving stability in the area on what is to be worked on.

Discussion. The rigidity of the stack-ranking as experienced in the tribe is somewhat in conflict with the agile principle of welcoming changing requirements. The issue here is that the rigidity of the process might affect the adaptivity of the development as is one of the sought benefits of using agile methodologies.

We here point out that prioritization on several levels can create issues in the implementation as it becomes unclear what is the most important from a tribe perspective. The model here seems to be unclear and does not cover dependencies between tribes as the initiatives are prioritized within tribes. Within the tribes, the prioritization of initiatives is more important than the themes. Outside of being an indication of the direction, the themes are not relevant in the tribes. The TIES model is limited and may not be the only way tribes sort their dependencies, partially due to the intended use of the design as well as the themes being very broad. Priority of theme cannot directly be translated to initiatives due to the gap discussed in Section 6.2. Instead, the priority can be defined on a case basis during the QBR where tribes negotiate and prioritize initiatives that depend on other tribes' initiative prioritization and dependency management.

We here observe that the stack-ranking of themes should not be the main factor affecting what the tribes work on. It is acting as a plan in the ABR and plans should be expected to change. Perhaps the ABR efforts could be streamlined further, saving much effort on a large part of the organization as so much time is. We bring this reflection from our analysis of the challenges and recognize that this needs further investigation that we leave for future work. We acknowledge that the ABR from the interviewees' descriptions involve much work and an aspect of this is the effort put in during the ABR to do impact assessments (described in 5.3.2). It is done on theme-level and therefore does not reflect the impact the software development produces on a detailed level. And due to the gap in the relation between TIES in 6.2 the accuracy of impact assessment should be questioned. The impact is much easier to measure closer to the development as this is where the value affecting stakeholders of software development is created. Impact assessment on a theme level could be compared

to assessing the impact of a long-term plan in a best-case scenario. There is not enough information without going down to the details but can give an initial rough estimate. The purpose may primarily be to give a rough estimate of impact on the highest level. We leave further investigations of details of the extent of impact assessment for future works and adds that the use of the priority based on a rough estimate would be inline for the stack-ranking of the themes to be considered a plan and expected to change and perhaps needs refinement on a more detailed level.

Prioritization on initiative have a higher impact on the development and the dependencies cannot in the current setting be sorted based on the prioritization of themes. Focus on initiatives further provides more flexibility from a tribe perspective when revisited in the QBR every three months. The model intends that tribes have their own initiatives that they contribute to a common theme that is prioritized. The themes themselves function as the connector between initiatives in different tribes. We have observed that not the connection to themes but the initiatives themselves are used by actors in the QBR to sort out dependencies between tribes. In practice the stack-ranking of themes is not used for alignment or prioritization as expected, it is simply an indicator for prioritization within tribes. It is further not used for dependencies either, as these are sorted on an initiative level. It would be interesting for future work to measure how much time is spent on the ABR. It does not fully bring the expected outcome and we question whether the amount of man-hours that it consists of today is worth it. From the interviews, numerous employees are involved: all levels of leadership from squads, tribes and domain to stakeholders all over the company.

6.4 Risk of top-steering

The currently implemented processes, with aim of steering the organization towards common goals of the organization, introduce the risk of top-steering along with other exercises of control undermining the efforts of the agile transformation. Agile development relies on self-organizing teams to achieve the intended benefits of following agile methodologies. In adopting agile methodologies for software development purposes, care must be taken to move away from processes that create a top-steering effect or intends to control how the agile team makes decisions (product owner's role) or structures their work. From this lense, we discuss the challenge of **governance processes controlling rather than supporting (C6)** the agile development organization. The agile governance processes risk becoming one of the processes where the value of its implementation undermines the value of the development model used in the tribes. The reporting and top-steering often come from an effort of other parts of the organization to be in control instead of trusting the tribes and the methodology in place. The main purpose of a squad is to develop impactful products while fulfilling the needs of its stakeholders. Less effort will be spent on the squad's main purpose when reporting to various areas and stakeholders.

Elements of the governance process risk friction with agile methodologies and reporting procedures show signs of (I3, I4, I5) being put back against the intentions of transformation. This goes against the aim of the communicated transformation (document study) to remove overhead work, making the tribes more efficient and by autonomy improving the implementation of agile methodologies. An agile coach (I5) from the focus tribe has pointed out that "there is something about how governance exercises are communicated to the tribe. I feel that

if it [communication] was done differently, we would be pulling them in more [reaching out for support rather than governance processes being enforced top-down]. It is not clear how we should use them [the Agile Execution teams]". Governance exercises refer to the work that falls on the tribe in relation to the ABR and QBR. The governance risk interfering with the agile methodologies is motivated by Tribe Lead (I3) comparing the proof of scale, described in Section proofOfScale, with the full implementation where Agile Execution introduces more governance requests in the tribe.

Reporting is part of the organizational legacy and may explain perceptions within the agile transformation. The IT Lead (I3) points out the reporting effort that previously was a large part of how the company functioned. There is still this controlling behaviour that especially shines through in the higher management. Transformation Lead (I9) reflects that there is a need in trusting the agile process that has been put into the IT Unit. At the same time, the reporting is what most employees have known from before. The requested efforts by Agile Execution related to QBR and ABR are required from an administrative point of view while not necessarily seen to benefit the tribe itself by creating value and is experienced as a reporting exercise by the tribe. An example of this is the writing of the QBR memo where the product owners put much effort into the preparation efforts. IT Lead comments that "agile steering should measure but it should not require adding x pages of writing". The product owner we asked about the QBR memo argues that it doesn't benefit the development in the squads and that it feels like an administrative exercise where the value of it is not visible from the squad point of view. In the proof of scale implementation, the QBR memo was considered to be a temporary solution for alignment. QBR facilitator (I7) comments that what was temporary was a word document that now is in Confluence and that "the purpose is not for it to be a written exercise but a start for discussion". The facilitator is referring to the collaboration of alignment that happened on the tribe leadership level, and would not be visible to the product owner as tribe leadership partakes on the tribe's behalf. However, the product owners (and in some tribes also squad-members) take an active part in the preparation of the QBR memo delivered by the tribe leadership and expect to experience the benefit of their efforts. The product owner (I5) has mentioned that the amount of work needed for the preparation differs for different squads depending on the amount initiatives (needing stakeholder alignment) and the dependencies to others in the development organization (C1).

The direction of the governance changes is not reflecting the intended transformational outcome. The IT Lead describes the situation as a misalignment between communicated intention and the resulted implementation: "When we started [the transformation implementation] we were told Jira is the one source of truth and that we should not do any more reporting, and right after we are asked for extra reporting. We see this starting to come more and more, with added special/extra reporting, and if we are not careful here we will end up doing the same as we did before. We need to be careful not to transition back to what we tried to get away from".

There are other ways to ensure steering and direction, perhaps more suited for an agile organization. The tribe (I3) would like the measuring of Transparency in general of what is going on in the area could be improved according to agile coach value impact of the development to be the focus, not a reporting document that doesn't bring value to the development. The agile governance could make an effort to measure customer satisfaction and user satisfaction: "then we don't need to invent so many OKRs (Objective Key Result) and KPIs (Key

Performance Indicator). I believe the OKR setup is fine but having it in the memo with so many words that already are in Jira. The old set-up was bad in terms of reporting the same thing in different formats, this being control and lack of trust in the organization (culture). An alternative approach is that business managers extract interpretation of key deliveries instead of this being done by tribe leadership. This would allow for the tribes to go on about their agile work model and will create the need for others outside of the tribe to seek new ways of doing things rather than falling back on the tried and failed reporting method".

Discussion. We observe a distance in what the ABR and QBR facilitators (I1, I7) are trying to achieve compared to what is the intention in the tribes(I3). Agile Execution should be a support unit but they risk becoming a managing unit of what goes on within the tribes related to governance.

The QBR is a planning exercise that takes much time from the tribes. Comparing the QBR preparation to a planning exercise from the squad perspective and in that risk friction against agile methodologies. The purpose of using agile methodologies like Scrum and others is that the preparations are done on the basis of need and impact to allow for adaptivity and placing the effort where it matters. The QBR instead requires the squads to map things beforehand. And as is with any plan mixed with agile ways of working, some things might never actually make it into the sprints if other things become a priority. This essentially leads to the effort being lost along with time being spent on other things than what is directly related to development, mainly product owner effort but also squad members whenever they are involved. If the development teams spend time away from their main purpose, delivering a development system that provides direct value, this time is lost from a value development aspect. Is the QBR memo bringing so much value to the alignment that we can excuse its friction with agile ways of working? Do the organization accept the vast cost of an entire IT organization's leadership (consisting of several hundreds of leaders) for several working days spend time on planning four times a year? All the time that is expected of a squad to be taken from their main purpose should probably be considered. Perhaps it is a question of detail that can be considered. If the QBR goes into too much detail then perhaps this could be adapted? Autonomy and increased impact of the development is the goal of the transformation, not control over the IT Unit. Control, in the non-traditional sense, could be the result of a functioning working model supported by leadership that understands the needs of the squads within the tribes and supports what is shown to work from a software development perspective. We argue that tribe leadership are the boundary between the tribe and the reporting cultures that leadership and support units are used to. There is clear transparency within the organization on what changed with the transformation within the tribe as the efforts of the transformation mainly focused on the tribes in the IT Unit. However, this is not the case outside of the tribes where changes in the management approach and other parts of the organization are not as clear.

If the tribes are not functioning then the areas supporting them is failing. The measuring should be on the tribe and mainly squad outcome. If the leadership do not follow the agile ways of doing things it is usually due to other parts of the organization and will affect the tribes' ways of working. This is where friction could be present in the governance coming out of Agile Execution and the leadership of the tribes: the domain leads(see Section 6.5), along with other units supporting tribes while following a traditional work model with more rigid processes (see Section 6.6).

6.5 Agile Transformation and Mindset

Achieving an agile mindset is essential for the progress of the transformation and is a challenging task in a large enterprise with a history of traditional top-down management. The transformation is affected by the resistance to change in the organization along with how well the change drivers in the tribes, the agile coaches, are supported by the organization. Domain leads leadership transformation is halted from leading several areas with different ways of working. Coaching of this leadership is irregular in comparison with the coaching in the tribes due to employee lack of time. The choice to focus transformation efforts on the development organization brings forward collaboration issues with the other areas of the organization following the previous work model and creates collaborative issues that may affect the outcome of the success of the transformation. Further, there are irregular maturity of agile processes and mindset across the development organization.

Transformation is an uneasy endeavour and there is naturally a resistance towards change where there are many legacy processes and structures firmly in place. There is a history in how things have been before and a transformation changes the rules of what works that affects peoples' way of thinking and collaborating. **Resistance towards change (C7)** in the organization through the transformation comes both from within the IT Unit and outside of it. Signs of resistance to change has been found in the organization and this is also expected according to Transformation Lead (I9). A reorganization cannot happen overnight and is an ongoing effort. The transformation of an organization is challenging and often there is resistance to change. We see signs of this as the funding issue discussed (also see Section 6.7) was already a topic during the proof of scale. A member of the tribe leadership (I3) in the focus tribe has shared the back and forth of the budget. A budget had already been promised to the tribe early in 2021 and that now it is said that it might come in 2022. This could be an indication that there is resistance in the financing part of the organization making the transformation of the funding of the IT Unit more difficult. The transformation itself is costly not only within the IT Unit but also in other parts of the organization. It affects motivation, and also trust within a company. One interviewee mentions it as "it is hard to trust what you don't understand". The other parts of the organization are continuing to work as they always have done and they experience uncertainty from the reorganization as the interaction with the IT Unit is done very differently and using a model that could be challenging to understand for an outsider. On the other hand, it is imperative for the IT Unit that surrounding entities are limiting the friction created by the different work models.

Immaturity (C8) regarding agile mindset and culture is expected at the beginning of a transformation however the current implementation facilitating the strive for maturity is challenged and could be more efficient. Transformation lead (I9) has motivated that one of the larger challenges the transformation faces is adapting the culture in the company into an agile one. The transformation is in its early stages and the agile mindset and culture in the IT Unit have much left to improve. The tribes are following agile processes however adopting the agile mindset is not yet the case with many of the tribes. The focus tribe have come further than others. Their IT Lead describes the journey: "We (focus tribe) have the experience, and we know the value of making it [agile] succeed and are on a good way towards it, even as we are in the beginning, to get there. Many other tribes only look at the operational level and are not really being agile in the sense of making it work moving towards the agile mindset and culture". The agile coaches provide the main support to the tribes in transitioning towards

an agile culture. However, many coaches lack experience and "read the book without getting their hands dirty with prior experience [in agile development]". It is in general very difficult to find experienced agile coaches and these are usually very costly, according to the IT Lead. Transformation lead (I9) adds that agile coaches were chosen based on their mindset over experience. Further, we observe the agile coaches' reach of having an impact on the transformation is limited. Interviewees (I4, I5) in the focus tribes have mentioned that most areas in the company are aware of how the tribes are transforming but that there is no visibility of the surrounding organization (support units, domain leaders, executive leadership team, stakeholders) doing the same. Agile Coach (I5) described a lack of transparency from the tribe leadership and that most of the effort is mainly spent on the agile coaches' own squads. The aim of the design is that coaches should have the ability to influence as much as possible in the IT Unit (I2) on the initiative of the agile coach. We observe signs of this not functioning as intended. The ability of agile coaches to nudge the organization into agile culture and mindset seems restricted and do not reach leadership, across tribes, or other organizational entities that may affect the development squad's agile journey.

Immaturity of the IT Unit leadership in leading an agile organization, facilitate transformation challenges (C9), by being in the middle of the agile-striving areas in transformation while at the same time leading other areas that are using the previous working model. The domain leads are the connection between the IT unit and higher management as well as other traditional business units. The leaders of the IT unit should ideally have full understanding of the needs of an agile organization and what it strives for. We find that this understanding may be very difficult to achieve for the domain leads. They are operating in an environment that does not support agile transformation. They, together with their leaders in the executive leadership team, are enrolled in bonus programs with harsh measurements that follow the traditional ways of how the company has operated before the transformation. The domain leads' decision may be highly influenced by the traditional way of running the company that still operates in most parts of the company, therefore they are in a position to facilitate or prevent the negative impact of challenges. The executive advisor (I8), for the IT domain Lead of the focus tribe, inform us that the agile domains of the tribes have leaders that are part-time dedicated to tribes in the IT unit and are splitting their time between decision making in the agile domain and other traditional business units. Domain leads are the leadership right above the tribe leadership and have generally worked in the old organization. The outline of the domain lead role and its divided responsibilities affect the effort being made for the transformation.

Coaching of domain leads is irregular compared to the coaching of the tribes. Agile Development supports the domain leads in calling out things that work against the strives of the model implementation and transformation. They have a formal channel with the domains once a week. Additional communication is done on a need basis. What has been shown in the interview is that there is no hands-on coaching of the Domain Leads. The reason for coaching not being done is that the domain leads are doing so much that they do not have time to develop and reflect. Transformation lead explains: "We have tried some deliberate coaching with some of them [the domain leads]. But we didn't get the effect we wanted out of it ... During the proof of scale we worked until 10-11 pm, and it was the same for domain leads. You schedule a half an hour session in a day that is back to back meetings. They cannot reflect. When do you get them to calm down? You need to know when to poke and when to be quiet and listen. We didn't see the outcome and value of scheduling a dedicated session".

We observe that the domain leads are very busy while dividing their time between an agile unit and a traditional unit. For this reason they have an executive advisor (I8) whose sole purpose is to "expand the time of a workday" for the domain lead. Even if the domain leads have the support and direction from higher management to lead and support agile tribes, the domain leads' ability to be in the state of mind to learn what the agile organization needs of its leadership is limited by the nature of their responsibilities.

Discussion. The transformation of the organization may extensively improve, both in the maturity of the "agile" IT unit and its leadership, as well as adding effort on transforming bordering traditional units' processes into something that supports the agile development and minimizing the creation of friction between ways of working. Resistance originating in the IT unit will need addressing over time however may be less cumbersome compared to resistance from bordering units and leadership in the company that do not yet dedicate efforts towards transformation and create friction in the collaboration with the tribes in the IT unit. Resistance to change in the organization will affect how effectively transformation support teams will be able to support and deliver organizational change. In turn, for as long as the working processes, of bordering organizational entities, are not aligned with the agile working model the deliveries in the IT Unit will be undermined.

The challenges of the transformation are many and require prioritization, since some are more urgent than others. Tribe transformation is quite clear, however, transformation outside of the tribe seems to lack clarity and communication. The company is heavily invested in the transformation and need it to urgently move forward to areas outside of the IT unit. Transformation of a company naturally takes time and the approach this company has taken is to transform all development areas at once with all effort dedicated towards the tribes. As a consequence bordering areas collaborating with the tribes are left behind. An example of this is the stakeholders working towards the development teams as they previously did in the project organization. Without understanding their supporting role in the IT unit's new ways of working they are unable to provide feedback efficiently or know how to communicate their needs to the tribes or requests through the governance process. Thus, affecting the possible impact and value for stakeholders and customers of the tribes' development efforts. From our observation, there are a lot of obstacles in the collaboration resulting in inefficiency and effort placed risking not bringing the intended value. When different ways of working in the company are conflicting and undermining collaboration this is an investment that might not create the impact intended. It becomes a race against time to put in place the transformation required for a scaled agile development organization to succeed. The longer the structure and process transformation take the more the organization will spend for issues (eg. collaboration) that stem from the reorganization not falling into place and the less likely the investment into the reorganization will pay off.

We have found indicators in the interviews on distances in understanding from people outside of the core transformation in the IT unit where understanding of the reality from the tribe perspective is lacking. This distance is an issue where actions from other areas indirectly influence the ability of the transformation and ways of working of the tribes. Those who are in a position to have this influence is leaders outside the tribes (domain leads and executive leadership team members), centres of excellence (Agile Execution, Agile Development among others), and other potential areas that influence the context of the IT unit operates in (eg. central finance office). If decisions are defined on processes or ways of working without the understanding it may lead to unforeseen consequences relating to the ability of transforma-

tion resulting in lost achievements of both the transformation and the deliveries of the tribe. To increase understanding and minimize distances a possible solution could be to utilize agile coaches more. They could act as a connector between the people doing the "floor" work and other areas. As a hands-on example, agile coaches could be included in future facilitation and development of processes done by Agile Execution and Agile Development. Coaches could also dedicate some of their time to coaching all levels of leadership. Improvement like these could remove distances between different parts of the organization, both horizontally as well as vertically. This would also encourage knowledge sharing across the organization and lead to increased understanding of the different perspectives that employees adhere to and rely on in their daily work. The organization is young and ongoing improvements is in need of increased transparency to empower transformation. Without improved clarity of consequences from decisions being made by leaders and supporting units the basis on what the transformation efforts are built upon may not have the intended effect due to a lack of understanding of the needs of the agile organization.

Leaders are too overworked to lead by example. It seems that the organization is aware of the issue of domain lead having little time on their hands as they have added executive advisors to support them. On top of it, domain leads' leadership is divided between two different areas where the IT unit's domains require a changed leadership style. We would like to question if adding an executive advisor solves the issue of domain leaders lacking time as the domain leaders also need room to develop their leadership style to fit the agile organization. It is an easy fix, adding a person to help the domain leads. However, perhaps a more effective change would be to dedicate the Domain Leads to one organization type so that they can focus on developing leadership that aligns with the work model. Another possibility would be to have more domain leads responsible for smaller domains/business units. This does however not solve the difficulty in acquiring agile leadership while leading an area with traditional ways of working beside the agile one. Both of the possible solutions will add more people to the domain level and perhaps is why there might be reluctance as this will affect the executive leadership team (ELT) that will have even more people to collaborate with and from there create a need for more ELT leaders as well.

The criteria that are used to measure performance of management leaders (domain leads and executive leadership team), is not performed with the IT Unit software context in mind but rather with overall company strategies and therefore may conflict with the efforts of creating an agile software development environment. The higher up in the hierarchy a leader is the harsher the expectations and measurement criteria. The leaders' ability to live up to the measurement criteria have a direct consequence on yearly bonuses and may affect their future career. As leaders follow this traditional measurement model not based on an agile approach this will clash with the transformations efforts in the tribes. This added top-down pressure from leaders, eager to reach their strategical targets, affects the objectives and directions within the tribe. By this way of approaching the issues, the domain leads are a bridge for frictional challenges in the tribes that comes from the hierarchical traditional ways of measuring leaders' performance. Further, the domain leads transformation into an agile leadership style is affected by the domain leads divided attention between tribes and entities following the previous work model. The friction in the domain is amplified from the hierarchical line organization and harsh measurement on leaders adding top-down pressure on agile tribes. We reflect that leadership set the intention of the organization and have a role to support the transformation. Without agile transformation of leadership the transformation of the

organization risk failing. The actions of the domain lead directly influence the tribe leadership and can determine whether the tribes may provide an environment supporting the agile culture and fully draw the benefits of an agile organization.

6.6 Governance Transformation

In a large-scale agile organization, there is a need for adapted governance to allow for steering of the organization as well as achieving the benefits of agile methodologies. The current state of the transformation is that agile governance is partially implemented (C10) and that there are several areas where traditional governance continues to work towards the tribes as done previously, creating friction between different organizational entities (C11).

The definition of agile governance and the boundaries on its scope is limited in the case company as **agile governance is not fully implemented (C10)** into the processes of the IT Unit. The tribes experience reporting expectations related to risk, compliance, assessments, etc, that is scattered across the organization and contain traditional ways of working conflicting with processes in the agile tribes. The governance that is facilitated by Agile Execution is in the company referred to as agile governance. The responsibility of Agile Execution is mainly developing processes and facilitating the ABR and the QBR that steers and follows up on the IT unit following the strategic direction of the organization. However, other governance processes (Risk, Compliance, Assessment, etc) are not included in the responsibilities of Agile Execution as they were not a focus area during the initial transformation (I9).

Governance processes, which are run by units outside of the initial agile transformation and the IT unit, follow traditional processes that lead to **friction with the IT unit (C11)** affecting the tribes' ability to deliver. The bordering areas to the IT unit are in a supporting role to the tribes. They are classified as Centers of Excellence and follow traditional processes. Some of these units are duplicates due to the previous line organization's separation between business and IT. The interviews (I4, I5, I9) show signs of the scattering of resources being confusing and incomprehensible for the tribes to know who to reach out to for support. The needed response differs depending on who is involved. An example of this is described by a product owner (I4): "The change process for getting applications approved [features and code changes related to products] is based on the old framework. The smallest changes takes a lot of time to get it approved". Another example of reporting expectation experiences by tribes is described by the product owner: "The compliance work is a black-box and it seems random. For some things in one country, I need to do the full package requirement and for another country, I don't need to do anything. Seems like the process is random, this makes people confused and there is not a clear answer on why?". The issues in reporting described concern support being provided from supporting units (Centers of Excellence) outside of the IT unit. These bordering units surface issues such as several units having different ideas on what is needed for efficient collaboration, and that their ways of working are not adapted to the agile work model (I9). It is also unclear who should be involved, as there exist several instances of Centers of Excellence (Risk, Compliance, Assessment, etc) that belong to different lines. There are cases where it is unclear what unit (business or IT line) should be contacted for support. The different instances are not aligned on efforts needed on tasks in the tribes due to different ways of working in the past (I9).

From our observations, we reflect that what is called agile governance similarly to agile

development may be viewed differently in the company compared to the field of research. Agile coach has mentioned (I5) that there is a difference between people reading the book, doing agile, and actually working agile with the mindset in focus. We argue that the same can be said for agile governance. The transformation is striving towards cultural change (I2, I9) and we argue that the commitment to agile and agile governance values need to be present not only in the tribes. As seen in 6.4 there are already signs of reporting being added opposite to the transformations efforts. We see a difference in company values between different areas that are striving in different directions.

Discussion. The purpose of agile governance is to govern the agile part of the organization in a way that adapts to agile ways of working moving away from traditional governance. We have found two areas that bring a challenge towards the transformation and implementation of agile methodologies. Firstly, the transformation of governance processes is partially complete across the organization and secondly, there are challenges in the area of agile governance that is implemented, see 6.2 and 6.3.

Agile governance is a defined field 12-year-old field of study and we by comparing the company's approach to agile governance, with that of the field (2.3) as defined in [21], find that there are discrepancies. Agile governance can be applied broadly in many areas and is a multidisciplinary area that with a holistic approach combines the application of agile capabilities with governance capabilities [21]. The implementation of agile governance through Agile Execution support is mainly related to the translation of strategies into tangible goals for the tribes, along with aligning the collaboration within the IT Unit and with its stakeholders. We find that traditional processes, that are shown to be a challenge for the agile implementation in the tribes, mentioned in C11, could be replaced. The agile governance implementation could be expanded to include processes for risk management, compliance, and assessments [21].

ID	(A) Agile Governance	(B) Conventional Governance
1	It is more about behavior and practice ... than...	... process and procedures .
2	It is more about achieve sustainability and competitiveness ... than...	... be audited and be compliant .
3	It is more about transparency and people's engagement to the business... than...	... monitoring and controlling .
4	It is much more about sense, adapt and respond ... than...	...follow a plan .

Figure 6.1: Meta-values of agile governance. Source: [19]

The current implementation of agile governance that is implemented in the case company can improve from building on the agile governance mindset, similar to efforts made in tribes towards an agile mindset. In comparing with our observations of the IT Unit, we find that much effort is put within the tribes in regards to agile traits, these are very similar to the agile governance traits, presented in Figure 6.1. When it comes to areas outside the tribes it is often unclear if and how agile traits are encouraged in practice. Communication of what goes on is unclear from the tribe point of view. Further, agile practices seem not to be the focus the same way as in the tribes. As we have seen several examples of friction we assume that the latter is perhaps commonly occurring as this can be seen in the execution of the steering as well, see Section 6.4. Agile values not being a focus in supporting areas have a direct effect on the tribes and may affect the success of the transformation of both the agile culture and the agile governance. We suggest more focus on meta-values in regards to agile

governance over traditional governance, both in current and future implementations of agile governance.

We conclude by emphasizing the importance of how agile governance is implemented and while expanding agile governance processes a mindsets-shift to agile governance meta-values is beneficial from a leadership perspective. We here make a connection to the responsibilities of those managing others. It is shown that when management practices are in line with organization values this affect team performances positively [27], [15]. The organizational values in the organization are defined by the goals of transformation into an agile organization. Aiming to align the management may influence change and we include Agile Execution (including ABR and QBR facilitators) in this due to the authority given to them by the ELT team (I1). The nature of Agile Execution's collaboration with leaders through their expertise role may have a high impact. The guidance will likely not be questioned and they can guide in any direction. Therefore, it is of importance for the outcome of their guidance to take into account the values over processes and reporting. This is on the basis that agile governance is the field of adapting governance to agile development, not adapting agile to traditional governance.

6.7 Funding and Cost-saving

The funding of the organization remains the same even as the transformation has changed how the IT unit function. Funding of the IT Unit currently follows the traditional line organization and is not adapted to agile ways of working (C12). The funding model affects the collaboration in the tribe and in combination with cost-saving measures risk the success of the transformation (C13). The funding model supports cost-saving from a top-down approach lacking the support of cost-saving in the lower segments of the organization (C14). The cost targets in the organization are contributing to the IT Units challenge in retaining skilled IT personnel (C15) due to industry employees expectation of a software development working environment.

The funding model is not adapted to the agile organization (C12). Therefore, the funding model in combination with extensive cost-saving measures may risk the success of the transformation in the case company (C13). The financial steering is working against the autonomy that is being strived towards in the tribes. Budgets are not transparent towards the tribes and all cost-related questions such as hiring and getting money for the team-building need to be escalated to domain leads. The funding model enforces the effects of the previous organizational line structure, over the agile organization's structure through tribes and squads. As the financial steering is not fully adapted to the new agile working model we have observed, from the discussions with interviewees (I3, I4, I5, I8, I9), how this creates issues from how the organization is distributing its finances. It affects efficiency and creates peculiar situations that from a perspective within the IT Unit seem illogical.

Related to the challenge is that currently, the IT unit consists of three different lines, in other words, people collaborating is formally in different parts of the organization. The tribes are provided with direction and funding from the business side and also the IT side. The two sides do not necessarily align and having two hierarchical leaders holding separate funding envelopes leaves room for unnecessary confusion. The previous working model was hierarchical. Further, as the IT Unit was created and started following the new agile ways of

working several parts of the larger organizational function have not been adapted to facilitate this organizational change. The challenge mentioned above is something that the transformation lead (I9) is aware of, the motivation for why this happens is that the reorganization needs to start somewhere and that preparing everything beforehand could be considered a dream scenario. "In reality, this way we can view these problems surfacing and then deal with them and make changes one at a time".

An interviewee comments on the funding challenge with "It is about finance people letting go of their process, trusting the process that we have installed in the ABR/QBR. So now we are having meetings on this to make sure that the finance people can let go". The financial central office has traditionally aimed to measure and strive to make sure that what the company invest in comes out at the other end as something tangible. They are supporting the entire organization with its funding and experience a sudden change in part of the organization that goes against their previous way of working. And even as the new governance model is intended to replace measurements this is not necessarily accepted and aligned with the funding area outside the IT unit that is working in accordance with other processes than agile. This misalignment in combination with friction with the funding model is a contributing factor to some of the issues in the IT unit mentioned by interviewees:

- Domain leads risk not aligning on capacity and delivery due to being part of different line organizations with separate funding even if they are working on the same "projects".
- Small costs, for example, team building need to go through several layers of leadership in different parts of the organization due to squads containing employees from both IT and business lines.
- Domain leads have separate leadership meetings on the IT line as well as the Business line. This recreates silos in the organization that the new model is trying to remove.
- Domain leads not aligning on capacity and delivery.
- Hiring is very difficult due to bureaucracy, rules and the need of running decisions through several layers of leadership.

Funding and cost-saving efforts are not supported in the lower segments of the organization (C14). Even as it, according to interviewee (I2), is to be the aim of the transformation to be cost-orientated in this sense it is not supported by the current processes and priorities. From our observation, we find that cost-saving efforts resemble a top-down approach aligned with the company's traditional ways of working. Cost-saving efforts are done on the domain level adding to the challenges of achieving autonomy in the tribes. The issues interviewees have mentioned reflects the top-down cost-saving efforts on a domain level with distance to lower segments missing out on cost-saving that potentially could be done across several areas. Domains are provided with envelopes and domain leads are given guidance on cost-saving and how this should be done. Domain leads are then measured on the cost-saving in the tribes (that may affect bonus). The financial decisions are in practice made outside of the IT Unit as the guidance translate to rules affecting how the tribes themselves runs. We reflect that the measurements were done top-down set a direction in itself, that perhaps is not aligned with the aim of achieving agility and adaptivity that is the goal of the transformation.

The current funding model and cost-saving efforts might lead to the company getting less value out of what they spend. Determining the price of the top-down cost-saving approach through a cost analysis would be of interest to determine the consequences of some of the challenges we have discussed in this section.

The cost targets in the organization are challenging on the IT Unit due to the nature of expectations on a software development environment (C15). The financial steering due to this friction with tribes' agile processes, tribes' ability to keep employees, rearrange capacity, and misalignment. The cost-saving measures are considered to be too harsh according to several of our interviewees in the IT unit. Tribes cannot always be flexible in whom they hire. "Rules" provided to domain leads as guidance dedicate how capacity should be split between countries and type (employee/ consultant). The cost-saving comes in where potential hires need to be rejected due to the company preferring to hire offshore instead of the Nordics. Quote from the focus tribe's IT Lead (I3): "I should be empowered to have a fixed resource so that I can use my resource in a way that I see fit. I could be given targets on workforce strategies on what to meet. If we mean to empower the tribes then we should really do so. In an IT market where it is difficult to get good resources then I don't have the luxury to not take those potential hires." Many companies attempt to attract people with favourable perks and development possibilities. These perks are very common and therefore expected by employees in the sector and cutting them may cost the company reputation within the sector. IT personnel is highly sought and in several of the countries, where the company operates, wages are rising fast. The IT Unit has issues in adapting to the changing environment and therefore risk losing employees while also having issues in hiring, resulting in the company losing employees fast, while not having the ability to hire or the ability to create an incentive for employees to stay. Cost targets are across the entire company however the IT-Unit is especially at risk due to the IT industry saturation. The decisions related to capacity (of employees) seem to be made by upper management with a focus on the perspective of head-count rather than taking into consideration the value of the IT personnel's system and business knowledge. Team building is another aspect that has been neglected due to the difficulty to get funding for team activities. The social budget is non-existing in practice and the involvement of layers of management and other units to approve the budget allegedly may be more costly than the initial cost itself. Determining the price of the top-down cost-saving approach through a cost analysis would be of interest to determine the consequences of lost lower segments opportunities along with employee effort spent navigating the current cost-saving approach through the funding model.

Chapter 7

Conclusions

Transforming into large-scale agile development is an uneasy endeavour[13]. Therefore, there is an interest in reviewing the impact it has on the organization. Our contribution aims to synthesize the state of the organization in this endeavour through the perspectives of the challenges presented in this work. This case study is timely in the sense that sufficient time has passed between the initial structures and processes related to the transformation went live, however with enough time to allow for the main disruptions and confusion around changes to settle. The transformation is still ongoing and hopefully, learnings from this work may guide future decisions and change implementations.

The main contributions of this work are our assemblage of different perspectives that allow us to map the organization and some of its challenges. The challenges are viewed in the light of how the development environment is affected by structures and processes put in place, in an organization with organizational legacies of traditional ways of working. We have analysed governance, funding, transformation and how these affect the software development delivery.

The drivers for the company to implement a scaled agile methodology (RQ1) were the previous ways of working, which created misalignment between different parts of the organization, and ambition to remove traditional processes slowing the coordination of the software development. In investigating the background of the transformation of the company we have found that the model being implemented was tested in a pilot project. It did however not fully contain the governance processes that the IT Unit today utilise and rely upon for alignment between tribes and steering of the IT Unit. We have further investigated the context, structure and governance process of the IT unit (RQ2). The IT Unit utilizing a large-scale agile working model experience friction with other organizational entities that continues to follow traditional processes. The company utilized an organizational matrix structure where the domains in the IT Unit are considered projects and the hierarchical leadership structures follow line-organization dividing between Business line and IT line among others. The design of the scaled agile model, inspired by the Spotify model, also reflect methodologies such as Scrum, Scrum@scale and Objective Key Results. The implementation clearly differs from

the intention of the model in that the tribe sizes are generally much larger than intended, adding the challenge of size to the efforts in the IT Unit.

In our investigation of collaboration across the IT Unit, we identified 15 challenges in the organization relating to several areas such as governance, transformation and funding. Two of these explore challenges that tribes are experiencing in living up to the transformation goal of autonomy and end-to-end delivery (RQ3). We have found that end-to-end responsibility, being a goal of the transformation, is a challenge in the tribes due to many cross-dependencies between tribes adding overhead-for around alignment. Other challenges found are related to and add up to the complexity of the challenges of dependency management and the enabling of end-to-end responsibilities.

Several of our found challenges relate to the IT unit's agile governance processes (RQ4). The governance process is considered a vast improvement in upper management, however, the governance in combination with the tools that tribes have been provided can be misinterpreted, the purpose of processes have not been proven to be fulfilled and future investigations could be beneficial. Further, there is friction between agile methodologies used in the tribes and the agile governance processes. Due to the agile governance not spanning all areas requiring governance, this leads to more interaction with units outside the tribes that follow traditional processes undermining the transformation efforts in the IT Unit.

Based on the results, answering the research questions, we recommend utilizing a more value-based approach guiding the direction of improvements in the implementation of agile governance, along with regard for the outcome of transformation changes affecting the IT Unit's efficiency and ability to drive their areas. The reason for this is to urge a culture change and improve cost-aspects of software development by striving for an organization supporting efficiency. Otherwise, the transformation is an investment lost if the outcome still ends up in misalignment due to dependencies or inefficiency from the rigidity of a traditional mindset and ways of working.

The strength and robustness of our conclusions rely on an accurate interpretation of the sample interviews. In the case study, we rely on 9 interviews to cover the transformation of the IT Unit of a large enterprise. The opinions of interviewees might introduce potential biases in the results and the sample size could further limit the potential scope of the investigation. We have relied on our interviewee selection to mitigate the concern of our sample interviews being limited. Further, the design of the sample collection aimed at covering various perspectives relevant to transformation, governance and software engineering. We aimed at validating the output iteratively from the perspectives of within tribes as well as external such as governance support, transformation support, finance, and senior leadership. We considered including another tribe in our interviews, however, chose to prioritize the external perspectives due to the holistic overview and understanding of organizational complexity these reflect. The focus tribe was more mature compared to others and several of our chosen interviewees had insight into other tribes in the IT Unit. Thus, we could hold comparative discussions including differences to model and challenges appearing across the tribe landscape, rather than only one tribe.

The company context may be generalized to larger companies with traditional ways of working, organizational complexity, co-located offices in several countries, to name a few. Our findings may be generalized in understanding challenges that appear when doing extensive efforts of transformation. The case company is in its current stage of transformation focusing on one part of the organization leaving other parts without change. We have anal-

ysed challenges discussing the effect on people, trust collaboration, and resistance to change to name a few areas affecting the soft factor of the transformation.

There are several aspects of future work that can be mentioned. The focus in this case study has been the effect of challenges found in the tribes and the IT Unit's current implementation of governance processes. We mainly apply the transformation environment and its results from an IT development perspective. However, the IT unit collaborates with other areas in the company and these could provide further perspective on the collaboration between the agile IT unit and other traditional units in this transition period. Further efforts of transforming adjoining areas might be affected by the perception of the transformation from a collaborators perspective and we, therefore, would find it interesting to investigate how the communication is flowing between the areas and in general the general attitude from observing the changes and how the transformation so far have affected stakeholders. This would further provide insight into how successful the transformation has been in terms of how the stakeholders have been impacted. Further investigations may look into the collaboration between the IT unit and other areas, in terms of friction, and in how the changes have been communicated outside of the IT unit. We suspect large distances in ways of thinking related to the structures of the organization and its shifts in mindsets along with strategic communicational efforts being limited to specific areas affecting overall company buy-in.

Furthermore, looking into the governance framework, we have found that there still requires reporting and large efforts in planning through the ABR. Investigations could quantify the cost of extra reporting and performing the extensive ABR process that we have shown in our analysis to not fully living up to intentions. The results of such investigations would help provide guidance for leadership in terms of comparing what is gained from the investment and provide an incentive to further slim the governance processes. To allow for this, a more mature measurement structure would support visualizing the directions and successes within the IT unit while benefiting the visibility also for other areas and leaders. Investigating the current measurements and adapting to relevant key performance indicators would be beneficial, however, also identifying improvement for how the measurement support accountability while making sure that one measure what matters [11]. Examples of measurement suggested by one of the interviewees are customer and user satisfaction.

Finally, when planning and reviewing the deliveries of the tribes, a key tool used is the objectives and key results (OKRs) [23]. How well this process works depends on how well the OKRs are written. From our interviews. we have gathered an understanding that it is a topic that seems to be misunderstood and/or experimented with excessively, possibly making learnings from industry [11] possibly non-applicable. A natural extension to our analysis would thus be a review of how OKRs are used in the case study's company compared to industry standards, and how they support or challenge the company's strive towards adopting agile methodologies.

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Appendices

Appendix A

Abbreviations

- **ABR (Annual Business Review):** annual governance process.
- **Confluence:** a corporate collaboration software. Confluence pages are structured into projects or topics and contains all kinds of documentation and information [6].
- **ELT (Executive Leadership Team):** consist of high ranking senior leaders that directly answers to the CEO.
- **Focus Tribe:** chosen to represent the tribe perspective in the IT unit. Focus tribe was one of the initial tribes in the Proof of Scale trial.
- **IT unit:** our defined scope of the development organization that aims to operate as a large-scaled agile organization. It contains all the tribes and the domains they belong to.
- **Jira:** a work management tool often used by development teams. It started as a bug and issue tracker however, has evolved into a tool for various uses such as agile software development along with requirements and test case management [7].
- **Proof Of Scale:** the initial trial, with only a few tribes, of the case company's large scale agile work model.
- **QBR (Quarterly Business Review):** quarterly governance process.
- **QBR Memo:** a document containing the priorities of the tribe for the coming Quarter.

EXAMENSARBETE Challenges of Large-Scale Agile

Transformation in a Financial Enterprise - A Case Study

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Brave and necessary, modernizing how we develop software

POPULÄRVETENSKAPLIG SAMMANFATTNING **Astrid Jansson**

Modernizing one's traditional organization to keep up with current evolutions and competition is necessary. However, letting go of your old ways of working and committing to modernize is a challenge, but one that is particularly relevant to tackle in the fast-evolving software and IT (information technology) context.

In today's world, the presence of IT products and tools are common, setting expectations to deliver IT products that solve problems for both private and commercial uses. The largest IT companies today have grown incredibly fast over the years, creating the need to scale the IT development fast and efficiently. Companies such as Google, Spotify and Facebook have been leading the development of these new ways of working, by embracing change not only in the development process itself but also in how the company works as a whole.

Agile methodologies have historically provided such a successful framework with small-scale software development collaborations. This has motivated adapting them to larger-scale, organization-level implementations. However, this process has proven challenging, particularly in the context of the case company of our study. We focus here on a large company whose business' model is focused

on financial products, and is currently implementing a large-scale agile re-organization of its IT department.

The goal of our research is to investigate how the financial case company's IT unit is affected by its organizational context. The IT unit is a large organization with thousands of employees and the company itself is another five times the size. The challenges of reorganization concern the size of the company and how effectively the company can adapt and organize itself. In the analysis, we find significant friction between the transformation's intended outcomes and its day-to-day implementation. Our results are related to issues either with discrepancies in the model itself, the implementation of it into the IT departments along with friction of the model in relation to the other organizational entities and their ways of working.