

Hybrid: best of both worlds or a necessary compromise?

*A case study on hybrid work in software
development teams post COVID-19*

Susanne Semsøy



Thesis submitted for the degree of
Master in Informatics: Programming and System
Architecture
60 credits

Department of Informatics
Faculty of mathematics and natural sciences

UNIVERSITY OF OSLO

Spring 2022

Hybrid: best of both worlds or a necessary compromise?

*A case study on hybrid work in software
development teams post COVID-19*

Susanne Semsøy

© 2022 Susanne Semsøy

Hybrid: best of both worlds or a necessary compromise?

<http://www.duo.uio.no/>

Printed: Reprosentralen, University of Oslo

Abstract

Background: The COVID-19 pandemic marked a critical turning point in how we organize work, with the software development industry being no exception. As restrictions are lifted in the wake of the pandemic, hybrid work has abruptly become the new standard of work in an increasing number of organizations. However, little is known about the benefits and challenges of hybrid work on software development teams and how to mitigate the potential challenges.

Objective: This study aims to gain an understanding of how hybrid work affects software development teams and individuals.

Method: The empirical research was a qualitative case study investigating two teams with different approaches to hybrid work. The teams were observed for a period of eight weeks, including meetings and communication on chatting software. Nine semi-structured interviews were conducted with these teams' developers, testers, and team leads.

Results: The study resulted in six themes representing the effects of hybrid work. The teams experienced impacts on team cohesion, co-location network effects for team members working co-located, and asymmetric participation in hybrid meetings. Individuals experienced changes in perceived individual productivity when working from home, well-being fostered by a better work-life balance, and team leads found it more challenging to support their teams.

Conclusion: The thesis proposes a new definition of hybrid work and hybrid teams. It discusses the benefits and challenges of the findings in light of relevant literature. For practitioners, the study offers recommendations to organizations and teams that are managing hybrid work or considering introducing hybrid work.

Acknowledgements

Writing my master thesis has been the largest and most comprehensive project of my life so far. Therefore, there are many I would like to thank for enabling me to produce this thesis. Firstly, my deepest gratitude goes towards my incredibly skilled supervisor Viktoria Stray for all her guidance and support. I would also like to thank Nils Brede Moe from SINTEF Digital for introducing me to the project and continuously inspiring me with his knowledge of the topic.

Further, I am incredibly grateful towards the two teams and others in the research organization that welcomed me with open arms. The insights and encouragement I gained were not only critical for my thesis, but also greatly inspiring. Without you, this thesis would not have been possible. A special thanks goes out to the interview participants for dedicating their valuable time to the data collection. To each and every one, thank you.

I would like to thank to my fellow students and colleagues for our helpful and fruitful discussions. Thanks to my incredibly supportive partner, for continuously motivating me even at the most stressful times. And lastly, to my family. Thank you for shaping me into the person I am and always supporting me at each step along my journey.

Contents

List of Figures	VI
List of Tables	VII
1 Introduction	1
1.1 Motivation	2
1.2 Research Context	2
1.3 Research Questions	3
1.4 Thesis structure	3
2 Related work	4
2.1 Hybrid work	4
2.1.1 Hybrid Meetings	7
2.2 Work from home during the COVID-19 pandemic	9
3 Research method	13
3.1 Research design	13
3.1.1 Case study	13
3.2 Data collection	14
3.2.1 Observation	15
3.2.2 Chatting software	17
3.2.3 Interviews	18
3.3 Data analysis	20
4 Research context	23
4.1 Team Fixed	23

4.2	Team Flex	24
4.3	The office	26
5	Results	27
5.1	Context of hybrid work	27
5.2	Team cohesion	29
5.3	Co-location network effects	32
5.3.1	Easier communication	33
5.3.2	Informal knowledge sharing	34
5.4	Asymmetric participation in hybrid meetings	35
5.4.1	Tech-driven asymmetries	36
5.4.2	Social-driven asymmetries	37
5.4.3	Factors contributing to asymmetries	42
5.5	Perceived productivity	44
5.6	Work-life balance and well-being	46
5.7	Challenges for team leads	49
6	Discussion	52
6.1	Defining hybrid work	53
6.2	Teamwork in hybrid teams	55
6.2.1	Team cohesion	55
6.2.2	Co-located network effects	56
6.3	Individuals in hybrid teams	57
6.3.1	Perceived productivity	57
6.3.2	Work-life balance and well-being	58
6.3.3	Challenges for team leads	58
6.4	Managing hybrid meetings	60
6.4.1	Implications of practice: best of both worlds or a necessary com- promise?	63
6.5	Limitations	64
6.5.1	Reliability	65
6.5.2	Internal Validity	65
6.5.3	External Validity	65
6.5.4	Construct Validity	65

7 Conclusion	66
Bibliography	68
A Seating area	76
B Interview guide	79

List of Figures

3.1	Timeline of data collection and analysis	15
3.2	Example of chat log and relevant codes	18
4.1	Replication of sign near Team Flex’s seating area	26
5.1	Themes of hybrid work	28
6.1	Hybrid work	55
6.2	Benefits and challenges of hybrid work	63
A.1	Team Fixed seating area	77
A.2	Team Flex Seating Area	78

List of Tables

2.1	Hybrid meetings findings (Saatci et al. 2019)	8
2.2	Idens et al. (2021)'s findings	11
3.1	My implementation of Yin's (2009) steps to case studies	14
3.2	Meetings observed	17
3.3	Overview of interviewees	19
3.4	Phases of thematic analysis (Nowell et al., 2017)	22

Chapter 1

Introduction

March 2020 will undoubtedly go down in history as a critical turning point in how we organize work. COVID-19 forced countries to shut down and drastically changed most people's day-to-day life. Companies quickly had to adapt to a chaotic situation, and the software development industry was no exception. Employees were abruptly sent to work from home for an unknown period of time. As the pandemic progressed, restrictions were at times lifted, meaning that teams could gradually return to the office. However, many organizations experienced that employees felt little rush to fully return to the workplace. While hybrid work in the software development industry certainly existed before, the pandemic has suddenly made hybrid work the new standard for many organizations.

An increasing number of organizations are now learning how to adapt to hybrid work. Therefore, having formalized methods and practices that are backed up by research is necessary in order to efficiently adapt. However, as the situation is quite new, there has been little research done on software development post COVID-19, especially with a focus on hybrid work. We therefore know little of how this should be conducted, both in practice and theory. This is of importance as there seems to be a general consensus in both industry and research that a hybrid work model is the future. There are also varying interpretations of how hybrid teams should be managed. Therefore, studying how teams combine virtual work and co-located work after COVID-19 help fill an important research gap and assist software development organizations in planning for both the present and the future.

1.1 Motivation

There are many aspects that drew my interest towards this topic. Firstly, before starting the thesis, I worked part-time as a research assistant. One of the research projects I was involved in studied the implications on work-from-home during the early stages of the pandemic. Hybrid work was frequently discussed throughout the project. I found this topic incredibly interesting and was amazed by how developers adapted to new ways of working. The insights I gained served as a great inspiration to pursue hybrid work as the topic of my thesis.

What further drew my interest towards the topic was that through my searches in academic literature, I found that studies on hybrid and virtual work before the pandemic were no longer descriptive of modern hybrid work and virtual work. Moreover, recent research contributions studying virtual work during the pandemic have been in combination with the stress caused by an unfamiliar and dramatic situation, potentially clouding the research.

I would also like to add that a large part of my time as a student has been significantly impacted by COVID-19 and its strict restrictions. Therefore, looking at the pandemic as an opportunity to learn and study something new seemed like an option to make something positive out of it, before finishing my time as a student. Lastly, having the entire world quickly change during my time as a master student seemed like a unique opportunity for me to react and reflect on.

1.2 Research Context

When working on my thesis, I was fortunate enough to work with representatives from SINTEF Digital and the University of Oslo. More specifically the Software Engineering Research Group under the Department of Informatics.

The aim of the research was to gain an understanding of hybrid work post COVID-19 and how development teams and individuals have been affected and adapted, as well as examining related challenges and benefits. I conducted a case study in a company developing software for Norwegian banks. The data collection was initiated by observing two development teams, including various meetings, chat logs and their daily life at the

office. Findings from the observations then served as a foundation for a series of interviews with members of the teams.

1.3 Research Questions

RQ1: What is hybrid work?

RQ2: What are the effects of hybrid work on an individual and team level?

RQ3: How can organizations manage hybrid meetings?

1.4 Thesis structure

The thesis will have the following structure:

Chapter 2: Related work goes through relevant topics within software engineering literature which is a prerequisite in order to sufficiently understand the results of the thesis.

Chapter 3: Research method presents the research methods used for the research design, data collection and data analysis, as well as an elaboration on why such methodology was chosen.

Chapter 4: Research context gives insight into the teams in which the data collection was conducted, in order to give the reader a more informed understanding of the results.

Chapter 5: Results presents the results and findings of my research.

Chapter 6: Discussion compares my research with other findings in relevant literature. The chapter aims to answer the research questions. Validity concerns and limitations will also be covered.

Chapter 7: Conclusion summarizes and concludes the thesis.

Chapter 2

Related work

This section aims to present a theoretical context and related research on hybrid work and hybrid meetings. Then, COVID-19’s impact on software engineering and work from home will be discussed.

2.1 Hybrid work

There are many definitions of hybrid. Ozkaya (2021) defines hybrid as a work model “where an engineer will have the flexibility to choose to work a number of days remotely and a number of days in the office with in-person communication”. This definition emphasizes flexibility of individuals, but does not necessarily address the team perspective. A definition that addresses this perspective is Santos and Ralph (2022)’s definition of hybrid teams: “In a hybrid team, on any given day, some team members may be working in a co-located office space while others are working remotely. Hybrid teams can result from some team members always working remotely, from all team members sometimes working remotely, or some combination thereof”. Digital platforms and tools bind team members together and enable collaboration and communication despite not necessarily having the option of in-person communication. Sporsem and Moe (2022) define a hybrid workplace as “office days mixed with work from home (WFH) days”. Microsoft Work Trend Index (2021) describes hybrid as a blended model that combines two work models; employees working from the workplace and others working from home. Hybrid work is also described as work-from-anywhere (WFX) (Sporsem & Moe, 2022), as employees can

work from either the office, home or another location.

In order to provide a definition that accommodates the research organization, it should be specified that there is a variety of hybrid work configurations. Some teams may have reduced flexibility with guidelines provided by the organization or by the team itself. Examples are fixed days where the whole team is to be co-located in the office (typically referred to as office-days). Others allow the team members to choose freely day to day.

Santos and Ralph (2022) points out that it is necessary to define the following work arrangements in order to fully understand how a hybrid team is different:

- In a *co-located team*, all team members work in the same physical space (e.g the same building) most or all of the time. A single team member might incidentally work remotely for a few days, but the default work arrangement is everyone in the same physical space.
- In a *distributed team*, team members are spread across two or more office spaces in different geographic locations (typically different cities; sometimes different countries). Team members may visit each other, but the default work arrangement is multiple offices in different locations.
- In a *virtual team*, the default work arrangement is for each team member to work in their own work space (e.g. a home-office, a coffee shop, a desk in a co-working space).

So, the main characteristic of hybrid is the flexibility given to both the team and each individual. For example, a distributed team will not simply choose to be co-located a day as easily as a hybrid team because of geographical distance. A potential critique of the term is that definitions provided on hybrid work can be considered too inclusive. In addition, the term is, in practice, used to describe a wide range of situations that significantly differ from one another.

Hybrid teams do not necessarily have to deal with challenges associated with distributed global software engineering related to time zones. However, Gratton (2020) points out that the working place is not the only dimension of hybrid work. Time has also become increasingly more flexible as employees can now tailor their working hours to their own

preferences to a greater degree. Recent research on work from home (WFH) has found that workdays tend to extend past the core working hours, like early mornings, evenings, and weekends (Miller, Rodeghero, Storey, Ford, & Zimmermann, 2021; DeFilippis, Impink, Singell, Polzer, & Sadun, 2020). For example, some engineers may prefer to start early in the morning and may accomplish this more easily when working from home.

A large amount of research studying WFH and hybrid work predicts that hybrid work is here to stay, and will likely be the default work arrangement for software engineering in the future (Ozkaya, 2021; Santos & Ralph, 2022; Smite et al., 2022). A growing number of organizations are also announcing hybrid work for the employees, including Google, Ford, Microsoft, and Spotify (Stoller, 2021). Further, Microsoft Work Trend Index (2021) announced that “The future of work is here and it’s hybrid”. The report also predicted that hybrid work is inevitable and will define the post-pandemic workplace. However, little literature has attempted to predict how hybrid should be conducted in practice. Moreover, the term hybrid is used for a wide range of working arrangements, and it can be difficult to find similarities between each end of the specter.

Studies investigating different aspects of hybrid work post COVID-19 are still to be conducted. However, many have predictions for the implications of hybrid work. Berntzen, Hoda, Moe, and Stray (2022) state that hybrid work resembles the setup of distributed teams. They further argue that coordination is more challenging in distributed teams than in co-located teams, implying that hybrid work may face the same challenges. Santos and Ralph (2022) studied the implications of coordination when co-located teams exclusively work from home. They found that the change significantly increased teams’ need for coordination, since group cohesion and communication were impaired by working from home. Santos and Ralph (2022) worry that these challenges will persist in hybrid work and that hybrid teams may undermine agile processes. Smite, Moe, Klotins, and Gonzalez-Huerta (2021) identified weakened socialization and informal communication, team cohesion, problem-solving, and knowledge sharing as challenges posed by WFH. They argue that ”office-home” mixes are likely to increase these challenges. It is further predicted that information is likely to circulate in the office without sufficiently reaching those who work from home (Smite, Moe, et al., 2021).

2.1.1 Hybrid Meetings

Hybrid work usually implies the use of hybrid meetings. Neumayr, Saatci, Rintel, Klokmose, and Augstein (2021) argue that the term ‘meeting’ can be described as “a gathering of two or more people for the purposes of interaction and focused communication”. Evolutions in teleconferencing technologies have however shifted the concept “gathering” from strictly gathering physically, to also include remote or hybrid gatherings. For this thesis, Saatçi, Rädle, Rintel, O’Hara, and Nylandsted Klokmose (2019)’s definition of hybrid meetings will be used: hybrid meetings are video- and audio-based meetings that include both co-located and remote participants. Saatçi et al. (2019) further argue that hybrid meetings as ubiquitous in modern multi-site workplaces. In addition, more recent developments in teleconferencing technology during the course of the pandemic has amplified the use of hybrid meetings. Microsoft Work Trend Index (2021) reports that the average time spent in Microsoft Teams (a popular video conferencing tool that facilitates hybrid and virtual meetings) has more than doubled globally from 2020-2021 and continues to increase. A related challenge is that participants feel tired and exhausted by virtual meetings, which is a new phenomenon described as videoconference fatigue (Bennett, Champion, Keeler, & Keener, 2021).

Saatçi et al. (2019) conducted a study on hybrid meetings in two global and distributed organizations. The findings are listed in Table 2.1 below and sectioned into technical infrastructure and social and cultural context of the meeting. Saatçi et al. (2019) conclude that hybrid meetings create asymmetries between co-located and remote participants. Remote participants feel isolated from the meeting and co-located participants dominate the interaction. The findings presented in table 2.1 are the contributors to this asymmetry. Making hybrid meetings inclusive and enabling all participants to participate to equal terms is named the main challenge of hybrid meetings.

This conclusion is further enriched by Eddy (2019) which studied computer-mediated communication and how it compares to face-to-face interaction. It was found that overall interpersonal communication skills in in-person environments is significantly better than in virtual environments. Examples provided include that it is almost impossible to look other participants in the eye in a virtual environment. Participants either have to look into their camera or in the other person’s eyes. It was further emphasized that non-verbal communication was much more effective when communicating face-to-face (Eddy,

Technical structure	infra-	Size and Functionality of Meeting Rooms	The meeting room limits the team's ability to participate in a shared, equal space. Examples include too small meeting rooms, lack of screens and delays caused by suboptimal meeting room equipment.
		Hardware and Software	Audio problems and suboptimal meeting room equipment
Social and cultural context of the meeting		Meeting task	Different tools worked better for different contexts and tasks.
		Language and Accent	Language related challenges, for example difficulties of understanding accents
		Cultural Behaviors	Cultural behavior resulting in some groups participating and interacting more or less
		Team Dynamic and Proximity	Awareness of others in the meeting is vital if the participants do not know each other well. Hierarchical relations shape the direction of the conversation.
		Personal habits	Difficulties in changing habits of participants, for example, remembering to speak louder when sitting far away from the microphone
		Digital Literacy	Not having sufficient knowledge regarding the technology used
		Stress	In relation to meeting task, hierarchical relations among the team members as well as the outsiders may affect the stress level of the participants, causing them not to make rational decisions when they need to fix an issue
		Inclusiveness of Remote Participants	Limited awareness of other participants in the physical room makes the interaction unequal and even unfair for remote participants

Table 2.1: Hybrid meetings findings (Saatci et al. 2019)

2019). Examples include expressions and body language, but also more complex social interactions like empathy.

As Saatçi et al. (2019)'s definition includes both video and audio-based meetings, comparing these are also of importance. Isaacs and Tang (1994) explored the importance of video in virtual meetings. Compared to audio-only, video improved participants' ability to show understanding, manage pauses and express attitudes. Nonverbal communication was as expected greatly reduced with audio-only. When further comparing video and audio-based meetings to face-to-face interactions, managing turn-taking, having side-conversations and manipulating real-world objects was found to be more difficult, and even described as impossible.

2.2 Work from home during the COVID-19 pandemic

In order to understand the post-pandemic state of the software development industry, it is necessary to examine how software development was affected by COVID-19. The outbreak of COVID-19 made companies enforce work-from-home policies and quickly establish effective remote collaboration and communication (Miller et al., 2021). WFH goes under several names including, but not limited to, remote work, teleworking or virtual work. WFH and virtual work will be used interchangeably throughout this thesis. The definition of virtual work provided by Santos and Ralph (2022) will be used.

Several studies investigated how working from home during a pandemic affected productivity. WFH had both positive and negative impacts on team productivity, depending on the metrics used (Bao et al., 2020). For example, developers in large projects were more negatively affected by WFH than those working in smaller projects. Team productivity roughly remained the same, but there were indications that the impact of WFH varies from person to person based on personal factors (Bao et al., 2020). Miller et al. (2021) found that most survey respondents reported that participants evaluated team productivity to have remained unchanged, while 20% reported higher team productivity and 23% lower team productivity. Smite et al. (2022)'s studied individuals' perceived productivity during the COVID-19 pandemic. Although the overall average productivity had not changed significantly, results vary from person to person. Positively impacted respondents reported better organization of work, increased flexibility and focus. Negatively impacted respond-

ents reported on challenges related to teamwork and collaboration caused by virtual work, as well as emotional issues, distractions and sub-optimal home office equipment. Further, it was found that perceived productivity while working from home were task dependent. Simple tasks were best solved at home due to less interruptions, while more complex issues that required collaboration took more time. Smite et al. (2022) concludes that WFH are not for everyone and future work policies should respect the needs of different individuals and groups.

Miller et al. (2021) argued that communication was described as a cornerstone challenge for virtual teams. It was, however, not a lack of communication that caused issues, but rather the quality of the communication. Respondents reported a large increase in the frequency of meetings, but these meetings were less valuable. Having less awareness of what colleagues were working on and a reduced ability to brainstorm with colleagues were also commonly reported. Both these implications had a further negative impact on team productivity. Interestingly, Miller et al. (2021) described what they call an alarming finding; 68% of individuals felt less socially connected to their team than before the pandemic. This is of particular relevance since research has highlighted that a sense of team belonging is an important factor for team productivity (Wagner & Ruhe, 2018) and effective teamwork (Strode, Dingsøyr, & Lindsjorn, 2022).

Several other studies have focused on developers well-being during the pandemic. Russo, Hanel, and van Berkel (2021) found that for each developer that reported a decrease in well-being, roughly two reported an increase. Moreover, the well-being gradually increased over a period just above one year, suggesting that developers adapted to working from home and their newfound situation. Factors contributing to decreased well-being were largely tied to the implications of the pandemic itself and not necessary to working from home. Of these factors, stress accounted for the most significant harm when working for home. Russo et al. (2021) further found that there were no differences between women and men in how they were impacted by the WFH mode. This finding stands in contrast to other research (Ralph et al., 2020; Butler & Jaffe, 2021), which found that women were disproportionately negatively affected. Ralph et al. (2020) presented in their early study on the effects of the pandemic that productivity have declined. It is further argued that well-being and productivity are closely related and a decline in well-being will negatively affect productivity. Stress related to the implications of the pandemic is again highlighted

Central principles of efficient agile teams	Impact of virtual on agile teams
Face-to-face communication	More written communication
Informal relations	More formal relations
Frequent interactions	Less frequent interactions
Working software over comprehensive documentation	More documentation

Table 2.2: Idens et al. (2021)’s findings

as a damaging factor, for example isolation and fear of losing employment. To mitigate this Ojo, Fawehinmi, and Yusliza (2021) found that spending time with friends and family could help enhance employees’ ability to cope with pandemic associated stress. Organizations should therefore provide developers with the flexibility to spend quality time with their loved ones (Ojo et al., 2021).

Collaboration had also been impacted by working from home. The use of pair-programming has overall decreased, with some participants having completely stopped doing it (Smite, Mikalsen, Moe, Stray, & Klotins, 2021). It is further suggested that remote collaboration is not as natural as collaboration in the office. Also, the success of remote collaboration is highly dependent on the existing social connections. Seeing this finding in combination with team members feeling less socially connected to their team (Miller et al., 2021), remote pair programming may decrease further in the future.

Iden, Stendal, Elston, and Rostrup (2021) explored how teams transitioned to working from home during the pandemic and how the implications compromised agile principles. Iden et al. (2021) concludes that it should be questioned whether virtual teams can be considered to be agile. The conclusion is based on the finding that the four central values presented in the Agile Manifesto are largely compromised in virtual work. The findings are summarized in table 2.2. These compromises are further resulting in implications for the team lead, as they have to compensate for the negative impacts caused by virtual work. In addition, it has become more challenging for team leads to play a supportive role when teams are no longer co-located. This compromises the agile principle number five; “Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.” Team leads had to actively facilitate communication between team members, both in and outside meetings. This includes both work related and social communication. It was further shown that team leads experienced

an increased difficulty in mapping team members need for support, as they were no longer being able to observe the teams in the office. More informal relations caused by virtual work made the situation for team leads even more challenging (Iden et al., 2021).

Chapter 3

Research method

This chapter present the research methods used for the thesis and the reasoning behind the choice. First, the research design will be introduced. Then, an overview of the process of collecting data and how the data was analysed.

3.1 Research design

I conducted a case study in a large-scale Norwegian software development organization. The company develops software for a group of Norwegian banks and will hereby be referred to as BankDev. The organization employs roughly 650 people, including both in-house employees and consultants. BankDev has 24 development teams and caters to both the consumer and professional market.

3.1.1 Case study

There are many ways to conduct research. Which one to choose are dependent on what kind of data should be collected, the purpose of the data, as well as the researchers preferred style. A case study approach was chosen because I wanted to gain an in-depth understanding of hybrid work within a real-life context. Case studies are useful when the researcher wants to understand *what is going on* and *how things work* (Stol & Fitzgerald, 2018). Case studies are also a frequently used approach for qualitative research. Qualitative research methods focus on discovering and understanding the experiences, perspectives, and thoughts of participants (Harwell, 2011). As exploring the concept of hybrid work

include a human aspect, I consider qualitative research as highly relevant.

Yin (2009) presents four steps to conduct high-quality case studies:

1. Defining and selecting the case(s) for a case study.
2. Using multiple cases as part of the same case study.
3. Strengthening the evidence used in a case study.
4. Analyzing case study evidence.

Table 3.1 summarizes how I followed these steps to strengthen the quality of the case study.

Yin's recommendations	My implementation
1) Select a case on the basis of availability, quality or relevance of study data	The case was selected due to high availability. The teams volunteered to the study and was willing to spend time and resources on contributing to the data collection. Both teams were agile development teams practicing hybrid work and therefore highly relevant to the research question.
2) Base the study on two or more cases	Data collection was conducted in an embedded single-case, providing multiple units of analysis (Yin, 2018).
3) Use multiple sources of evidence	Observation, interviews and chatting-software logs were used as sources of evidence
4) Apply analytic strategies	Thematic analysis were used to analyze the data

Table 3.1: My implementation of Yin's (2009) steps to case studies

3.2 Data collection

The thesis is based on data collected through observation and semi-structured interviews. The data collection lasted from autumn 2021 to the winter 2022. Figure 3.1 provides an overview of the phases of data collection and analysis, as well as the phases of work post

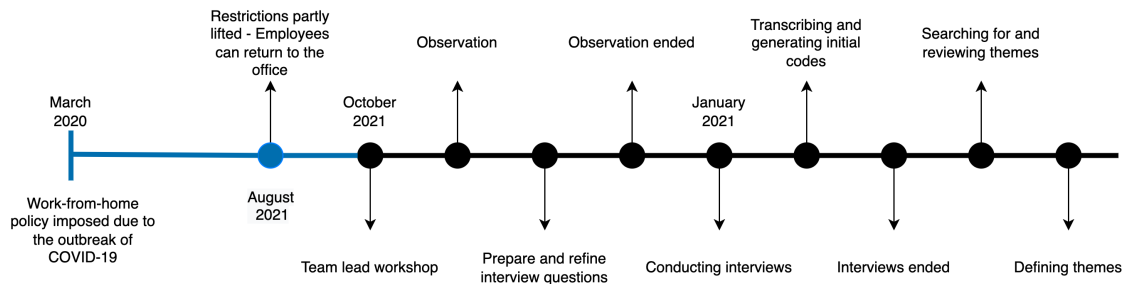


Figure 3.1: Timeline of data collection and analysis

COVID-19 in BankDev. I came in contact with BankDev through SINTEF Digital, which had a research partnership with BankDev.

An application was submitted and accepted by the Norwegian Center for Research Data before initiating the data collection. The application covered the topic of the thesis, what types of data would be necessary to gather and which participants would be affected by the data collection. Informed consent laid the basis for involving participants in the data collection. Interviewees were further presented with a form of consent which, among other things, requested permission to record and temporarily store video files of the interviews.

3.2.1 Observation

The initial method used for collecting data for the thesis was observing the teams in their natural setting. Sharp, Rogers, and Preece (2019) defines two types of observation in the field: passive observer and participant observer. Passive observer is defined as not taking part of the study environment. This is done in order to not influence the results and keep the observation as representative as possible. Participant observer is defined as attempting to become a member of the group being studied. Advantages may be that the observer is able to experience the situations studied first-hand. Because of the limited time frame and my lacking experience in conducting observations, passive observation was chosen. Advantages of observations are that it is easy to implement, give fast results, and require no special equipment (Lethbridge, Sim, & Singer, 2005).

The observation was initiated by a workshop with the team leads in late October. An expert from SINTEF Digital was also present during the one hour long workshop. The

teams' approaches to working from home and hybrid work was discussed, as well as potential points of interest for the thesis. This session sparked inspiration for further observation and provided fundamental knowledge about BankDev. Detailed notes were taken and a refined version of these was later sent back to the team leads.

I was able to observe the two teams in a total of eight weeks. Six weeks were physically in the office before new COVID-restrictions required employees to work from home. I was provided with desk space in the office area where the teams worked, and was therefore able to follow the teams closely. Further, which desk I was given varied each day depending on what was available. This meant that I had the opportunity to sit next to different people each day, getting to know more of the team members, but also observing many of the informants closely, not just the same few each day.

I noted down as much as I could the first couple of days, and these initial notes included a wide spectrum of observations. As I spent more time observing and getting an understanding of the organization, I started narrowing down the scope and focusing on specific aspects. Each time I observed something of interest, I tried to confirm or refute my following theories. Doing this for eight weeks eventually gave me a solid foundation to initiate the interviewing phase of my data collection.

During my time with the teams I also had a meeting with one of the team leaders where I was informed about the background of the team and how the team had dealt with alternating between hybrid and virtual during the pandemic. The conversation was noted down in real time, including interesting quotes.

I went into the observation wishing to interfere as little as possible with the team's daily routines in an effort to minimize potential bias caused by my presence. I spent the days observing and taking observation notes. However, I found the social settings to be a great opportunity to gather thoughts and inspiration, without me causing unnecessary disturbance. I ate lunch with the teams, took part in coffee breaks and joined in on social activities both during and after working hours. I quickly discovered that my thesis question was very engaging and many candidates had a lot of opinions, experiences and reflections that they eagerly wanted to share. To my surprise, many of these conversations even occurred without my involvement. Each time, I would take a mental note of all the points that came up during the conversations and write down as many details as I could

Type of meetings	Number of meetings
Sync meetings	5
Retrospectives	4
Friday-wins	3
Delivery meeting	2
Show-and-tell	2
Team meetings / check-in	2
Presentations	2
Stand-up in subteam	1
Post mortem meeting	1
Team lead hybrid-workshop	1
Total	23

Table 3.2: Meetings observed

remember in my observation notes as soon as I could. If I had my computer available, I transcribed the conversations to the best of my ability in real time. The observation notes document eventually ended up filling more than 50 pages (font size 11, line spacing 1,15).

After 6 weeks of observation, I held a feedback meeting with each of the individual team leads where I presented my findings so far. Each of the meetings lasted for approximately one hour and the team leads had the opportunity to add clarifying comments or ask questions. We further discussed the findings and what should be the focus for the upcoming weeks of observation.

Observed meetings

In total, 23 meetings were observed. Three of them can be described as fully virtual, the rest were hybrid. I wanted to attend the meetings both physically and virtually myself in order to observe the meetings from both perspectives. I therefore observed 16 of the meetings physically co-located, and 7 virtually using Microsoft Teams. Table 3.2 summarizes the meetings observed.

3.2.2 Chatting software

The teams' communication channels were also observed as an additional data source. The company uses Slack, a well-known collaborating tool that allows chatting and video calls. Slack was the main tool facilitating communication within the organization, especially within and between teams. Slack was on one occasion described as a business-critical

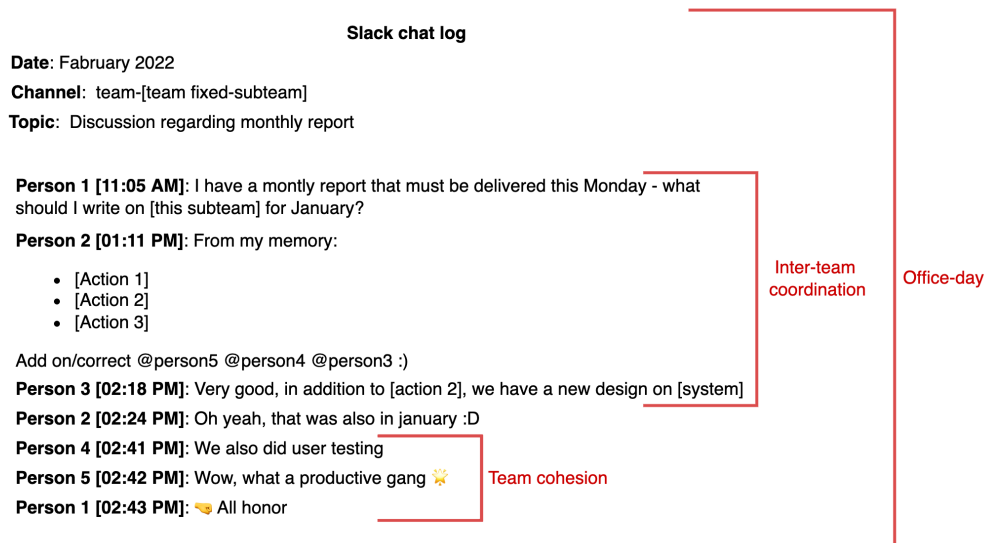


Figure 3.2: Example of chat log and relevant codes

system as the platform facilitates such a large amount of internal communication. To gain access, I first had to be declared trustworthy by the department handling privacy and security concerns. This process took about two weeks.

I was given access to a total of 34 Slack channels from both teams. The channels included more general channels for the entire team, sub-team-specific channels, topic-specific channels, and social channels. These were closely observed during the observation phase in order to supplement this period of the data collection. I also occasionally observed Slack in the following months, especially during the interview phase. Data from the different periods were marked according to when it was gathered. Relevant logs were further treated and documented, similar to other data. Therefore, screenshots were added to the observation notes and later saved in NVivo 12 for analysis. Figure 3.2 exemplifies the chat logs and how they were coded. I also used Slack myself to communicate with team members when I was not present in their office, for example, for questions or reaching out to potential interviewees.

3.2.3 Interviews

In the second phase of the the data collection, following the observations, interviews was conducted. The interviews focused on gaining further insights into what was found during observations, as well as exploring topics the interviewees considered relevant to cover.

Team	Informant ID	Role	Experience in years	Total commute times
Fixed	1	Team lead	Over 10 years	1 hour 20 minutes
Fixed	2	Developer	Over 10 years	3 hours
Fixed	3	Developer	Under 2 years	30 minutes
Fixed	4	Developer	2-5 years	2 hours
Fixed	5	Tester	5-10 years	2 hours
Flex	6	Team lead	Over 10 years	1 hour 40 minutes
Flex	7	Developer	Under 2 years	1 hour
Flex	8	Developer	5-10 years	1 hour 30 minutes
Flex	9	Developer	Under 2 years	30 minutes

Table 3.3: Overview of interviewees

In total, nine interviews were conducted split between the two research teams. The interviews lasted between 35 minutes to 86 minutes. All interviews were recorded and transcribed. Table 3.3 shows an overview of the interviewees roles, level of experience each had in their role and total daily commute time to the office.

Semi-structured interviews with open-ended questions were chosen in order to cover certain predefined topics, but also allow for exploration of topics as they emerged. Further, the research questions are highly reliant on the interviewees' own reflections and experiences, and having the flexibility to explore these was highly valued. I wanted the interviews to be somewhat comparable, and there were specific topics that it was essential to cover. Advantages of interviews is that data collection participants are familiar with answering questions and therefore tend to be comfortable with this method (Lethbridge et al., 2005).

An interview guide was used for all the interviews. The interview guide went through small incremental changes with each interview conducted while focusing on keeping the interviews comparable. The questions were sorted into categories and in a prioritized order. I chose to do a prioritized order to get answers to my most important questions in case I would run short on time.

A separate interview guide was designed for the team leads as they have quite different responsibilities than the roles of the other interviewees. The interview guide drew great inspiration from the normal interview guide and therefore covered the same topics, however with a focus on the team management perspective.

Detailed notes were taken during each interview. I also wrote down my thoughts on the interview and the answers that were given immediately after. This method helped me

process the information and remember key elements from each interviews, but also to improve my interview skills and interview guide prior to the next interview. It also proved useful afterwards because I identified interesting aspects in my notes that I did not recall when I was transcribing and reading through the transcriptions later.

A similar method was used when transcribing interviews. Whenever I found interesting quotes, I would clearly mark them and write them down in a separate document. I also noted down own my thoughts and reflections as soon as I finished transcribing.

3.3 Data analysis

The data collected was analysed using thematic analysis. Thematic analysis is a qualitative research method that can be widely used across a range of research questions (Nowell, Norris, White, & Moules, 2017). The method is used to systematically identify, analyze, organize, describe, and report themes found within a data set (Braun & Clarke, 2006). "A theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006). It is important the the research consider what counts as a theme when analysing the data set.

Thematic analysis was chosen due to the strengths it offered the thesis. The method is highly flexible and can be modified for a wide range of studies (Braun & Clarke, 2006). Furthermore, thematic analysis is also useful for examining different perspectives by highlighting similarities and differences (Nowell et al., 2017), which is highly relevant to answering this thesis research questions. It is often more comfortable to use than other qualitative analytical methods and, therefore, more accessible to researchers with little experience.

According to Braun and Clarke (2006), there are two primary ways of identifying themes in thematic analysis: inductive or deductive way. The inductive is a bottom-up, data-driven approach where the researcher codes the data without trying to fit it into a preexisting coding frame. In this approach, the themes identified may have little relation to the questions asked to the participants during interviews. The research question(s) can therefore evolve through the coding process. A deductive way tends to be more analyst-driven, and the researcher codes for a specific research question. I chose an inductive approach

as little research had been conducted on hybrid work post COVID-19 when I started the data collection and analysis. The initial scope of the study was also relatively open, and I wanted to be too inclusive rather than too exclusive. It is easier to disregard data deemed irrelevant at later stages than go back in time and gather data in case something important was left out.

I used the qualitative data analysis software NVivo 12. The tool enabled me to code the data into specific nodes and categorize the data accordingly. I also used the software MindNode to make a comprehensive mind map of all my findings with relating examples, quotes and potential implications. The mind map was started after the initial workshop with the team leads and expanded continuously throughout the whole data collection.

Thematic analysis are performed in six phases (Braun & Clarke, 2006; Nowell et al., 2017). Table 3.4 presents these phases and show how I moved through them. Note that the entire process was iterative, and I often went back and forth between phases.

Phases	How the phases was conducted in my study
1. Familiarizing Yourself With Your Data	Notes, reflections, and ideas were noted down throughout the entire data collection period. I also took notes during each interview and transcribed the interviews myself. I read through the entire data set once before coding.
2. Generating Initial Codes	I generated codes gradually throughout the data collection. The initial coding helped me simplify and focus on specific characteristics of the data. The mind map described and figure 3.2 are examples. I focused on being inclusive with the data, and included rather too much than too little. The initial codes was reviewed iteratively. From this, 34 nodes was created.
3. Searching for Themes	In order to identify themes, the nodes were reviewed. I focused on finding similarities or overarching aspects. The mind map proved helpful during this process. From this, the 34 previous nodes was gathered to 16 top-level nodes.
4. Reviewing Themes	During this phase, coded data was reviewed with a more critical perspective. I focused on clear and identifiable distinctions between themes and considered whether they revealed meaningful patterns.
5. Defining and Naming Themes	Definitions and names were created for each theme. I wanted to have informative names that would give the reader a sense of the contents of the theme. Therefore, I consulted colleagues and other students and settled on the names that others also deemed preferable.
6. Producing the Report	When producing the report, I aimed to build credibility by providing literature that supported my findings. I also included quotes from interviews since King (2004) recommends using direct quotes in order to demonstrate to the reader how the data is relevant to the themes.

Table 3.4: Phases of thematic analysis (Nowell et al., 2017)

Chapter 4

Research context

As the results of this study is based on a case study, it is important to be aware of the research context in which the data was collected. This chapter presents the context of the case study.

It should be emphasized that the two teams had very different approaches to hybrid work. This was an incredible opportunity because it enabled me to study widely different approaches. However, a challenge was that it proved demanding to compare the two teams and find similarities. The two teams are hereby referred to as Team Fixed and Team Flex.

4.1 Team Fixed

Team Fixed consists of 14 persons and is divided into two smaller sub-teams with different responsibilities. The team has an agile approach to software development, using a model similar to Kanban, but customized to the team's needs. They do, for example, use a task board (kanban board) to visualize task flow, but do not focus on limiting the number of tasks on the board (work-in-progress). Instead, the team aims to limit their overall workload to a sustainable level. This is more fitting for the team as they work with maintenance and continuously receive incidents through different channels. Further, Team Fixed is a self-organizing autonomous team, but operates within the frames given by the organization by working towards set goals. Team Fixed consists of one team lead, one product owner, one interaction designer, two testers, and nine developers.

All team members sat closely together in an office landscape. There were also several meeting rooms around the seating area, fitting 2-15 people. A replication of Team Fixed’s seating area can be found in the appendices.

The two sub-teams had a common team meeting on Mondays which can be compared to an extended stand-up meeting where the goals and tasks of the weeks are reported. They did not practice daily stand-up meetings and frequent retrospectives.

When Team Fixed returned to the office in early autumn after the lockdown of 2021, they had a team wide discussion regarding how to best approach hybrid work. An emphasis was laid on accommodating everyone’s wishes, both those who wanted to work mainly from home and those who preferred the office. Some of the team members had missed being co-located and therefore wanted to have fixed office days where the whole team could be gathered. They agreed on an arrangement where everyone is to work from home on Mondays. Tuesday and Wednesday are fixed office days where everyone should be present in the office. Therefore, the name ”Team Fixed”. Thursdays and Fridays were flexible so each member could choose their working place. These days were described as ”flex-days”, but in practice, it was rare for team members to come to the office on these days. The goal with the initiative was to have everyone gathered at the same “place” (co-located or virtual), minimizing the amount the team had to work in a hybrid way. Workshops and meetings were often placed on Tuesday or Wednesday, while Mondays were mainly reserved for concentrated work.

Team Fixed was already somewhat accustomed to hybrid work before COVID-19. The team had several team members with long commute times to BankDev’s office or are consultants who sometimes work from local offices provided by their consultant firm. Therefore, the team had been practicing hybrid work for years already, just on a smaller scale. As a result, the team expressed that they were more prepared than others for the initial work-from-home injunction. For example, they were familiar with using video conferencing tools.

4.2 Team Flex

Team Flex consists of 22 persons. The team is divided into three sub-teams working on different platforms. As team Flex is such a large team with many different responsibilities,

it is often referred to as an area. Similar to Team Fixed, an agile approach is used and the team can be described as self-organizing. Because of the many different responsibilities, the team aims to work cross-functional. Allowing all roles to be included in all stages of the development process was therefore emphasized. For example, testers were included testers already in the early design phase. The team uses elements from Kanban, but only what is appropriate with the needs of the team. Similarly to Team Fixed, they do not practice stand up meetings or frequent retrospectives. The most similar meetings they have to stand ups are weekly check-in meetings where they check up on current week goals. Some sub-teams did however occasionally have stand-ups, but not on a daily basis. Team Flex consists of one area lead, one product owner, four designers, three testers, 12 developers, and one security expert.

Team Flex also sat in an office landscape that was larger than Team Fixed's space. A path went through their seating area, so many passed by during the day. There were fewer meeting rooms on this floor, but they were generally larger, fitting 10-20 participants. A replication of Team Fixed's seating area can be found in the appendices.

Team Flex was described as one of the teams that had managed to get a large part of team members to return to the office after restrictions were lifted. This was despite that the team was one of the few with no mandatory office days. Their approach was that each individual had the freedom to choose where they wanted to work each day, similar to Team Fixed's flex-days. Therefore, the team will be referred to as Team Flex. Approximately half of the team was present in the office each day during the observation, but the number varied depending on the weekday or if there were any special activities happening. In general, some of the team members were present at the office almost every day, while others would come in less frequently, about two times a week. There was also a part of the team members that did not come to the office during the entire observation period.

Team Flex had a Slack channel dedicated to greeting the rest of the team members in the morning and saying farewell when leaving work. Most team members also shared whether they would be working from the office or home that day.

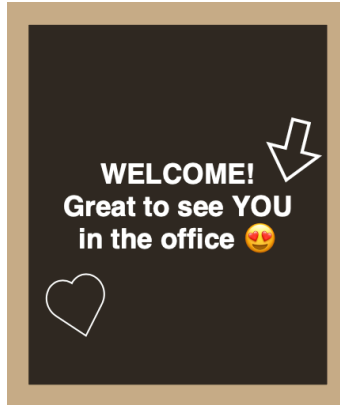


Figure 4.1: Replication of sign near Team Flex’s seating area

4.3 The office

When the observations started, BankDev had recently moved into a new office building, and was in the process of renovating it. The building is located centrally in Norway’s capital Oslo close to diverse public transport services. The first floor of the office had been entirely refurbished and was dedicated to social spaces, collaboration, and meeting rooms of varying sizes. All these meeting rooms were facilitated with modern conferencing equipment. The remaining floors were not as modern, and the quality of the conferencing tools in the meeting rooms varied. Social spaces were available to the employees throughout the office, for example, sofa areas with coffee machines. Many of these spaces also had games, like ping pong tables, shuffleboards, or chessboards. As mentioned earlier, most employees had only recently returned to the office after a fully virtual phase. Friendly messages welcoming employees back to the office could be found on signs and whiteboards throughout the office. A sign close to the seating area of Team Flex has been replicated in figure 4.1.

Social events and activities happened frequently. For example, a fitness instructor went from team to team and arranged short optional 10-minute stretching classes two times a week. In addition, employees could join different types of free fitness classes after work in BankDev’s own gym area. Occasionally, celebrations that included the entire organization also took place on the first floor, usually including cake and other snacks.

Chapter 5

Results

This chapter presents the results of the data collection and analysis. First, the context of hybrid work are detailed, as the context is important to understand the reported findings. Then, the findings derived from the data analysis will be presented. Several phenomena were identified and further grouped into six themes. The themes include phenomena that have an impact on a team level: (1) team cohesion, (2) co-location network effects, and (3) asymmetric participation in hybrid meetings. On an individual level: (4) perceived productivity, (5) work-life balance and well-being and (6) challenges for team leads.

Note that outcomes with an individual-level impact may further have a team-level impact. Still, the themes mainly apply to individuals and are therefore categorized accordingly. Also, team-level themes impact the team as a whole, and can therefore affect the individuals within that team.

5.1 Context of hybrid work

“Office days” is an initiative that aims to have the team co-located to maximize people’s alignment. When starting my observations, I was informed that the management of Bank-Dev strongly encouraged teams to introduce office days, with three days a week being the general recommendation. As mentioned in section 4.1 and 4.2, Team Fixed practiced office days (two days a week) during observation, Team Flex did not.

Teams that had many team members in the office were often described as “good at being

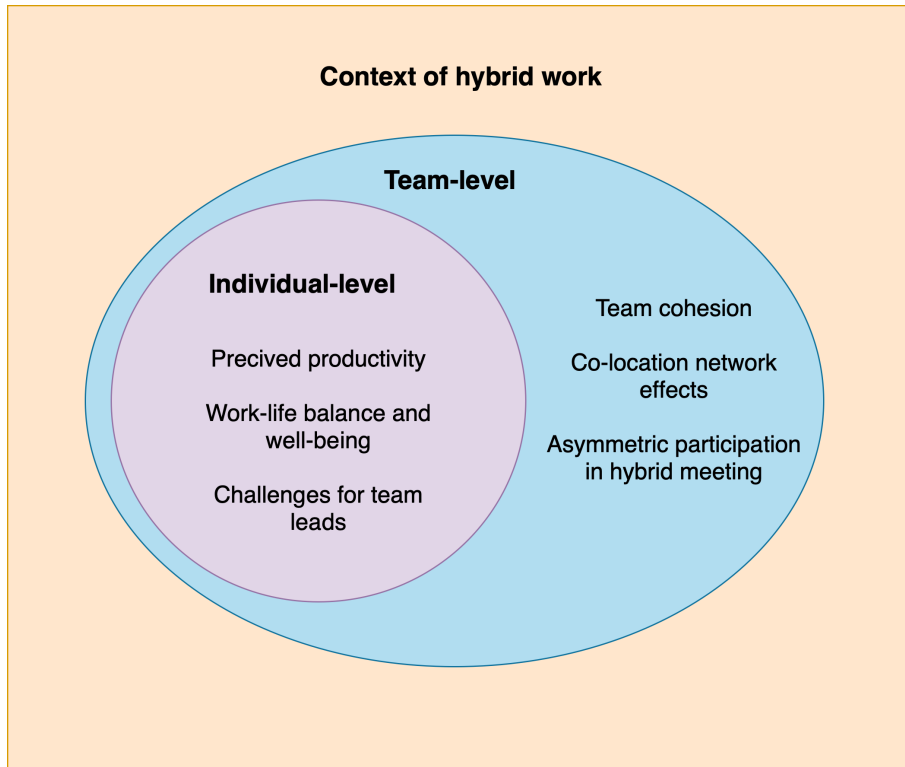


Figure 5.1: Themes of hybrid work

in the office.” I noticed that being many in the office was described as an achievement that teams should strive to earn. Also, teams with a lower presence in the office were often addressed more negatively. An informant explained to me that the management of BankDev was lightly pressuring the teams to return to the office.

From Team Fixed, four out of five reported that they were optimistic about having office days and wanted to continue having them in the future. Three out of four interviewees from Team Flex reported wanting to test office days, although the interviewees mentioned different configurations, such as agreeing on office days within the sub-teams. Judging from these answers, office days could be a welcomed measure to manage hybrid work. Most informants expressed that one or two days a week was preferable. Two days a week is the average number of days when including all the answers from each end of the spectrum (zero days a week and four days a week).

When implementing office days, having them on specific weekdays is important to consider. Tuesday and Wednesdays were generally the superior choices for office days among the employees. Mondays and Fridays were the least popular days for being in the office. As I

was sitting in a large open office area when observing both teams, I could observe when other teams gathered in the office. Tuesday was usually the most crowded day, with Wednesday being a close second. Several team members also expressed appreciation for being able to work from home on Mondays. Being tired from the weekend was mentioned as a reason. Mondays and Fridays should therefore be kept optional if possible.

Team Fixed could choose where they wanted to work Thursdays and Fridays. Interestingly, it was very rare for team members to come to the office on these flex days. I was also informed that there was no reason to come to the office to do observations these days - as everyone worked from home. It could therefore be discussed whether a potential consequence of office days is that employees stop coming to the office when it is not required.

Several informants from Team Fixed informed me during observations that tasks requiring collaboration would usually be postponed to office days. For example, if a developer asked a team member for help on a complex task on a Monday, they would sometimes agree to rather look at it together the next day when both were in the office.

Team Flex had flex-days every day. Several informants explained during observations that a disadvantage of not having office days was they did not know which of their team members would be in the office each day, which could be an important factor in if they themselves wanted to go to the office that day. It could be disappointing to travel to the office and not meet the colleague that you needed to collaborate with that day, or just a close friend.

However, neither team was ever fully co-located during six weeks of physical observations in BankDev's office. Both teams had some team members working from home, regardless of office days. When investigating this absence during interviews, several interviewees explained that it was not necessary for the entire team to be co-located. It was fine as long as those you work closely with or you like to socialize with were present.

5.2 Team cohesion

Several informants emphasized that team cohesion was affected by hybrid work. Being co-located promoted team cohesion within the teams, while working virtual over extended

periods weakened team cohesion. A developer from Team Flex explained:

We are now coming out of a period where everyone has been working from home. And I can really notice that we don't have the same dynamics as we used to. [When virtual], we only talk together in the context of work, but we can talk about all kinds of things when we are at the office. (Interviewee 7)

Strengthened team cohesion while co-located was explained to be a result of social interactions. Examples of social interactions occurring in the office are; eating lunch together, getting coffee, doing in-office activities like playing games, or simply having informal social conversations with colleagues. These social interactions helped team members form closer social connections that were harder to establish when mainly working virtually. A developer explained how co-location promoted more informal social conversations:

We need that personal talk. [...] Maybe someone experienced something sad that's affecting them. No one ever talks about stuff like that in a virtual meeting. So all the personal things that's important for us in order to work together as a team disappears when we are only working form home. (Interviewee 2)

Another developer explained how knowing ones team members was important:

I was quite new when we were sent to work from home and I think it was a bit tough because I never got to know the people that I work together with. Which I think is very important when working close together. (Interviewee 9)

Another developer exemplified what several other interviewees described, that being in the office was linked to feeling a strengthened team belonging:

When I'm in the office, I kind of feel like I'm actually part of the team. (Interviewee 4)

Social interactions contributing to team cohesion mainly occurred when co-located because face-to-face communication was described to be more natural. Further, team members in the office spent more time together without actively working, for example, when walking to a meeting room. Initiating informal social conversations in these moments felt natural. In contrast, sending someone a virtual message before a meeting and asking them about their day seemed weird and suspicious. To summarize, the office served as an arena enabling

frequent social interactions on a personal level, strengthening team cohesion.

Additionally, being at the office helped team members form social connections with others they would typically not communicate with within a work setting. As both teams can be considered quite large, the sub-teams had little domain overlap, meaning that they rarely had to interact when working from home. It was therefore not uncommon for the sub-teams to resemble social silos. Informant 7 explained how being co-located helped break down these silos:

I got much better contact with those working in [sub-team a] and [sub-team b], which I normally don't have much to do with. [...] that has been very nice, because now I feel like I know them at least as well as those I work with daily.

(Interviewee 7)

There were also activities in the office that was intended to promote social relationships. For example, Team Flex often included coffee breaks in or after their meetings. Co-located team members would then disconnect from the meeting, sit together in a sofa area, and enjoy coffee or tea together. The sessions I observed lasted from 20-40 minutes. Virtual participants were encouraged to take a break themselves but were not included in these co-located sessions. Further, the virtual participants also disconnected from the meeting, meaning that virtual participants did not take these breaks together with other virtual participants. During observation, informants explained that these co-located coffee breaks functioned as an incentive to encourage team members to come to the office. To summarize, virtual participants were not included in activities promoting social connections.

Just as social interactions in the office strengthened team cohesion, the lack of social interactions weakened team cohesion. Team members that continuously worked from home for extended periods of time were more likely to report feeling a weak team cohesion, especially if they were not onboarded to the team before the outbreak of COVID-19. When working from home, team members were included or participated in significantly less personal social interactions. These team members could not join social activities happening at the office, for example, cake celebrations. Furthermore, both teams reported that they had arranged virtual or hybrid social events in the past, such as virtual coffee breaks. However, these did not feel as natural and low effort as those in the office, and they could become awkward. An interviewee that rarely visited the office exemplified how

not having casual social interactions weakened team cohesion:

You loose all that small talk about what is happening in life. Casually chatting is kind of hard on Slack or Teams, so we don't really do it. [...] I worked with these people for [a long time] and I know next to nothing about them. That's a bit weird. That's not feeling a strong team belonging. [...] So the relation gets a bit formal. That how the tone is when you don't know the people you are talking to. (Interviewee 8)

Further, co-located team members experienced less team cohesion towards mainly virtual colleagues. During my observations, several informants stated that there were team members that they had never met in-person, which has resulted in a more formal and impersonal relation. As a results, the threshold of asking these team members questions was perceived as higher.

5.3 Co-location network effects

Being co-located in the office resulted in network effects for the teams. The office in itself offered little value to the team members. What motivated team members to come to the office were social interactions with their team, especially those they worked the closest with, or had strong social relationships with. The results were a network domino-effect. The more colleagues co-located in the office, the more likely others were to follow. Factors like working equipment, better working place or atmosphere had practically no value in comparison. On the contrary, several informants actually had just as good or better equipment in their home office. Therefore, if relevant colleagues were not in the office, it was better to stay at home, not equally as good. A developer described that meeting other team members was a prerequisite for going to the office:

We know that most people are not going to show up if we don't have fixed office days. And what's the point of going to the office if you are not going to meet anyone? (Interviewee 4)

Another developer explained how it was better to work from home if a close team member did not come to the office without having informed about it:

It has occasionally happened that someone from my sub-team are [not in the

office] because of different reasons [on office-days]. When that happens, that's a real let-down. That's something that's nice to know in advance. Especially when I've spent two hours commuting. Then I might as well have stayed home.
(Interviewee 2)

5.3.1 Easier communication

Several informants reported that being co-located in the office allowed for easier communication with colleagues. This was most apparent when team members asked questions. Many of these questions were often short and simple, and could usually be answered by most colleagues in the team, for example the time of an upcoming meeting. However, instead of involving the entire team on Slack, simply asking the closest colleague was perceived as much easier. An interviewee explained that there's a lower threshold to ask questions to other team members when working co-located:

It's just easier to turn around and tap someone on their back and ask them a question. [...] Its kind of a barrier when you have to write it down on Slack or call people. (Interviewee 3)

In contrast, another interviewee described that there is a higher threshold to ask question to team members working from home:

Sometimes I feel like I have to really think though my questions before I ask them because I have to formulate them into a message. So I kind of end up asking less questions. (Interviewee 7)

Being able to ask close-by colleagues enabled effective clarifications, as people would receive an answer almost instantly, whereas getting an answer on Slack could take much longer time. Also, effective clarifications through questions further saved developers the time of searching for the answer by themselves.

Furthermore, more informal communication in the office made team members more open to perceiving criticism as well-intended. This finding should be seen in relation to strengthened team cohesion when co-located. Some informants explained that it was usually a sociable atmosphere in the office. Having a friendly conversation with another team member and then getting a comment of criticism was perceived as much more well-intended than if

that person were to send it directly on a message. Interviewee 7 explained that before and after meetings, social conversations influenced openness to criticism:

[In the office] I talk to people before and after the meeting. So we already have a bit of group dynamics on the way to the meeting room. [...] Then I'm much more open to someone giving me critical feedback, because I've already had a very nice conversation with them so I know everything is good. While when on [Microsoft] Teams, the only interaction you have with this person is them giving you critical feedback, which can feel very rude. And you don't see them again either! You don't get that social lubricant if that makes sense.

Several interviewees also explained that more accessible and informal communication resulted in more decisions being discussed and made in the office. For example, someone casually complaining about something during lunch could lead to the co-located team discussing a solution and making a decision. They further saw this as a challenge because those working from home would not be sufficiently included. An interviewee exemplified this:

You miss those informal conversations where people are just complaining or praising something. If you are several people in the office talking about something, you have to involve [team members working from home] and properly inform them so they feel like a decision was made without them. (Interviewee 9)

5.3.2 Informal knowledge sharing

One of the network effects caused by being co-located with the team was more frequent informal knowledge sharing. A lower threshold to ask questions resulted in co-located team members sharing more knowledge as they collaborated on solving problems. When observing, developers would often sit together and have work-related discussions or pair program. These discussions rarely seemed like a planned meeting, but rather spontaneous conversations triggered by a question. Furthermore, when working from the office, some informants explained that they were included in discussions that they would normally not be a part of. Interviewee 7 described this as random knowledge sharing:

Personally, I feel like I have to ask concrete questions to persons digitally, while

in the office, casual discussion happens more often. [...] If I'm in the office and the guy next to me are working on something completely different and then he start talking to another colleague about a problem, then is very likely that I get pulled into it and get to hear things that are useful for me. But I would not necessary be included if it weren't for the fact that they were randomly sitting next to me.

5.4 Asymmetric participation in hybrid meetings

Hybrid meetings was the main arena where co-located team members and virtual team members could be observed interacting with each other. Of the hybrid meetings observed, only two were with Team Fixed, and one was an organization-wide presentation. The remaining hybrid meetings were with Team Flex. Informants from Team Fixed explained that they generally tried to avoid having hybrid meetings, but still had some experience with it. Interviewees from both teams were asked about hybrid meetings during interviews. Although the following findings were found in both teams, they were primarily observed for Team Flex's approach to hybrid work as most of their meetings had a hybrid format.

Hybrid meetings repeatedly seemed to include some degree of asymmetric participation. It never seemed like asymmetries were intentional; they just happened unconsciously due to the nature of hybrid meetings. As discussed in section 2.1.1, hybrid meetings consist of two distinct groups; participants attending the meeting from a co-located space, usually sitting together in a meeting room, and those attending from another location via digital conference tools. I found that the ones attending virtually consistently contributed less, engaged less, and were sometimes unable to even attend the meeting. The asymmetric participation have been categorized into tech-driven asymmetries and social-driven asymmetries.

During interviews, the interviewees were specifically asked to reflect on the benefits of virtual, co-located, and hybrid meetings. Whereas interviewees could effortlessly name several benefits of co-located and virtual meetings, all interviewees struggled to name a single benefit of hybrid meetings. However, most informants could elaborate on several disadvantages of hybrid meetings. This finding is especially interesting considering hybrid meetings were the most common type of meeting in Team Flex. The following quote

exemplifies this:

[On benefits of hybrid meetings] That's hard to say, right now I can only think of disadvantages. (Interviewee 4)

Interviewee 8 was one of many that struggled to name any benefits of hybrid meetings. When asked why hybrid meetings were the most common type of meetings, the response was:

"It's because some prefer being in the office and some prefer to not be there. I think it's more of a necessity. [...] I don't think they have special benefits".

5.4.1 Tech-driven asymmetries

Tech-driven asymmetries consist of situations where there is a technical issue or suboptimal solution, which causes a significant disadvantage for one group or person. The most obvious example of this was when those co-located in the meeting room were unable to connect to the virtual meeting. They repeatedly decided that they would have to start without connecting. This created situations where the meeting could last several minutes before those attending virtual were finally connected. The co-located group would give a short summary of what had been discussed, which seemed to help the situation. Still, having to provide summaries caused disruptions to the meeting. If the co-located team persisted in trying to solve the technical issues, the meeting would often get delayed. The most prolonged delay I observed was eight minutes. Eight minutes can feel like a long time for virtual participants sitting alone just waiting.

Perhaps the most compromising situation was the performance of the microphone in the meeting room. Although these worked great when only one person was talking, as soon there were discussions, people started interrupting or commenting, or the microphones caught other noise, it became difficult to hear for those attending virtually. Interviewee 7 summarized this:

Conversations where there are many on the same microphone... it doesn't work that well. [...] for example if there are discussions and many people are talking over each other, then it becomes impossible to separate what is said and by who. [...] But when you are in the meeting room, your ears are kind of able

to do it.

Similarly, it was typical for noises like coffee mugs being placed on tables, rustling with paper, or coughs and sneezes to override the microphone. Participants attending virtually could therefore miss a lot of the conversations, varying from a couple of seconds here and there to not being able to properly hear what was being said for minutes. In addition, several informants explained that since those in the meeting room do not experience the same issues, it is difficult for them to be aware of and mitigate the problem:

When you're attending from the office, it's easy to get so engaged in the conversation. It's not like you're constantly thinking 'oh you have to remember those [attending] digitally' unless they eventually shout out 'halo, we can't actually hear anything of what's happening right now'. (Interviewee 7).

Those attending virtually notified those co-located from time to time. However, the threshold of doing so was perceived as relatively high. When I was personally attended virtually, there were times when I experienced the same issues and was often not able to perceive more than half of what was said.

Of the two teams, only Team Flex informants reported suboptimal conferencing equipment being an issue. Interviewee 6 (from Team Flex) explained that the conferencing equipment on their floor was not good enough, limiting them from doing workshops and other meetings where discussions were required. I did not observe this kind of issue in Team Fixed, nor did any informants report having these issues. On the contrary, Interviewee 5 (from Team Fixed) mentioned that they had lately received new conferencing equipment (microphones, cameras, and screens) in their meeting rooms and were therefore not limited. This finding emphasizes the importance of organizations providing equipment that enables employees to do their work efficiently.

5.4.2 Social-driven asymmetries

Social-driven asymmetries consist of situations where a group or person was disadvantaged due to how people interact. There were mainly four recurring examples of this.

The first example is perhaps the most complex one. When observing hybrid meetings, it became apparent that the participants attending virtually generally engaged and con-

tributed considerably less than those co-located. I found that it happened consistently regardless of team, sub-team, or who was attending virtually that specific day. The most extreme example was a meeting where six were attending co-located, and two were attending virtually. The meeting lasted just over one hour. 56 minutes passed before one of those attending virtually spoke up without prompt. The other was muted during the entire meeting. It was generally not uncommon for virtual participants to wait until everyone from the meeting room had said something before eventually engaging themselves. I noted down the time from the meeting started to when the first virtual participant said something in four other meetings; in average, it took about eight minutes. Often, periods of silence almost even seemed like a prerequisite for the virtual participants to engage.

When sitting in the same meeting room, participants would often casually add small comments when others were speaking. These small comments served as transitions in the conversation, allowing new participants to take the word easily or comment on other comments. They also frequently used body language to engage in the conversation. This resulted in conversations that flowed organically. Active participation was more frequent, and the word was more often passed between the co-located participants. Moreover, this engaged conversation in the meeting room raised the threshold for virtual participants to participate. A developer exemplified this:

I think if there is a critical mass in the office, and you are sitting at home, then it kind of feels like stepping onto a stage when you want to say something. Because they had such a good flow in the conversation, and suddenly you interrupt them from [Microsoft] Teams. You get scared that you might ruin that flow. (Interviewee 9).

Another interviewee explained why it was perceived as easier to talk to others in the meeting room during meetings:

I think it's because it is easier to talk face-to-face. It is easier to have a chat. Easier to whisper to the person next to you. [...] When you are digital, there's a distance there. (Interviewee 1).

Another interviewee reported that they experienced a barrier to speak up when attending virtually:

[When co-located] adding a quick comment doesn't interrupt anyone. Virtually it can and that's a really nasty feeling if you suddenly interrupt someone's flow just because you wanted to add a little keyword. There's less natural flow. You have to wait for one person to finish and the next and the next. You really have to wait for your turn. (Interviewee 7)

As a result, several informants reported only speaking up when they felt it was imperative and warranted what they saw as an interruption. However, they could spontaneously speak in the meeting room whenever a thought popped up in their head. In order to summarize and clarify, co-located participants are not actively excluding virtual participants. Rather, the characteristics of hybrid meetings create a barrier between the two groups. For one group, it is easier to engage. For the other, it is more difficult.

The second example is that co-located participants sometimes turned to the person sitting close to them and initiated small conversations. Not only were the virtual participants unable to hear these conversations, but people ended up facing away from the meeting room camera. This example also contributed to establishing an invisible barrier between the two groups. At times, the rest of the co-located participants overheard these conversations and further commented on them, especially if it was a question. As a result, the meeting could change topic without virtual participants hearing the initial trigger. If no one repeated the question to the virtual participants, I found that they engaged considerably less while discussing that particular topic. This asymmetry was especially apparent when funny remarks or jokes were whispered between co-located participants. The whole meeting room could start laughing, while the virtual participants often looked quite confused. Although the joke was often repeated so that everyone could hear, virtual participants missed out on the initial fun.

It was mentioned that being able to whisper questions to the person next to you was a significant benefit for co-located participants. Especially recently onboarded team members reported this, as they could get answers to questions without interrupting the meeting or appearing naive. This was important because they often felt that their questions were obvious to the rest of the team and did not want to "waste everyone's time."

The third example of social-driven asymmetries was that virtual participants were excluded from the talk after the meetings. The meetings often informally continued after it officially

ended, when virtual participants were disconnected. Usually, this was mainly small-talk about what had been discussed in the meeting, for example, “*This is really exciting*” or “*Good job on that feature!*”.

These conversations would usually also continue while walking back from the meeting room. Although the conversations and feedback were not critical for the virtual participant to miss, it served as a positive and uplifting end to the meetings. However, there were occasions where these after-meeting talks were essentially a continuation of the meeting, with exclusively the co-located group present. Unofficial sessions like these could last several minutes. It never seemed like this was intentional, but rather spontaneously happened. For the most part, meeting notes were not taken when this happened, so as far as I am aware, the virtual participants were excluded from this information in the instances I observed. On a few occasions, co-located participants sat down at their desks and further discussed the topics of the meeting. Whenever this happened, the discussions usually lasted between 5-15 minutes. One of the team leads (interviewee 1) explained that this was a significant challenge to be aware of:

As a team leader, you have to make sure that the information is not lost for those attending digitally. So either you have to say ‘the meeting is over, we won’t talk anymore about this’ or ‘if you continue, okay, but if so you have to make sure that those who aren’t here get that same information’.

I also noticed that recently onboarded team members tended to stay in the meeting room after the meetings to ask clarifying questions. I informally asked an individual about this during observation, to which they answered: “*When joining via Microsoft Teams, I usually have just as many questions, but I don’t really want to spam my colleagues with messages. But when we’re in the same room, you can ask these questions while finishing your coffee after the meeting.*” To summarize, being able to continue the conversation after the meeting seemed beneficial for the group that was involved.

The fourth and last example is primarily relevant for meetings with a presentation format. The relevant meetings included many more participants than those from the research teams. For example, presentation meetings could include more than one hundred participants. Participants would mainly be muted during these meetings regardless of being co-located or virtual. During the observations, I noticed that co-located participants had

an awareness of others attending, but virtual participants did not have that. For example, the co-located group would comment on or ask questions about the presentation to the others in the room. Occasionally, discussions would also emerge, which seemed clarifying to the participants. If an individual from the same team attended the meeting virtually, they would not be included in these conversations.

In addition, several interviewees argued that virtual participants are in a way excluding themselves if they have turned off their camera and stay muted, creating further asymmetries. Not seeing who was in the meeting implied that these people were talked to less. A developer exemplifies this finding:

It's difficult to include them. Especially if they have turned off the camera and microphone, then you don't know. Have they fallen asleep or left the computer? [...] Then it's very easy to forget them. (Interviewee 2).

Another interviewee explained how other participants are more likely to perceive not-visible virtual participants as not active in the meeting:

Those who have turned off the camera, they get gathered into '3 more in the meeting' [on Microsoft Teams]. And you don't see that person, so it's easy to perceive the person as not involved. [...] So I think it's easy to forget those people. We have all been working from home now and know that if your video is off, then it's maybe because you're doing something else [laughing]. (Interviewee 1)

I also observed that the participants that had their camera turned off generally contributed less than those with camera on. A team lead also explained that it was important for virtual participants to say something early in the meeting. If not, they were more likely to stay silent for the rest of the meeting:

[Virtual participants] can't just sit back and drink coffee. It is important to say hey. Normal courtesy. Have you video turned on when you enter the meeting. Join in on the initial small talk. If you don't want to have your camera turned on, at least tell us. Things like that help". (Interviewee 1)

Informants emphasized that if everyone attended the meeting in the same way, a group

of participants were less likely to feel isolated. For example, if everyone attending the meeting, even co-located participants, had a laptop camera turned on, it felt like everyone was virtual participants. The team lead of Team Fixed explained that this was one of the main reasons why they had virtual days and office days.

5.4.3 Factors contributing to asymmetries

The number of participants and the type of meeting was an important factor in the degree of asymmetric participation. The types of meetings that included discussion, or did not have a clear agenda or speaking order, performed the worst in a hybrid meeting setting. Examples are different types of workshops and planning meetings. When observing, I found that a lack of a clear speaking order resulted in the co-located participants speaking up significantly more frequently than virtual participants. As previously mentioned, virtual participants often experienced a higher threshold for conversation engagement. Therefore, if all participants were free to take the word when they wished, the balance dramatically shifted towards those attending co-located.

One of the most apparent examples of this pattern was in a Friday Wins meeting with Team Flex. In Friday Wins meetings, each team members could highlight what they had achieved that week, which was referred to as a win. They would also praise others for their wins. I noted it down whenever a participant said something, whether that person was co-located or virtual, and roughly what they said. The conversation was exclusively dominated by co-located participants for roughly ten minutes. In addition, several co-located participants started their sentence with "Well, its not really a win, but I guess I can mention ...", implying that their win was not necessarily that important for the rest of the team to know. There were also a few pauses of silence where the participants was waiting for someone to take the word. When most of the co-located participants had said something, the first virtual participant spoke up. I was also surprised that this individual presented a win that the team seemed to consider much more impressive than what had been presented earlier. After the first virtual participant spoke up, another followed immediately. However, of the five attending the meeting virtually, only two contributed. In contrast, everyone sitting in the meeting room said something.

The number of participants in each group was also a significant factor. If there were, in general, few participants, the balance in the number of participants was described as

being less important. The degree of asymmetries significantly decreased or was completely absent. Interviewee 8 exemplifies this:

When you are a smaller group and some are digital and some are physical, then the percentage distribution of those who sit at home is probably a little higher. If we are five and two sit at home, then we are almost half. Also, when there are slightly smaller groups you are generally more interested in hearing what everyone has to say.

Furthermore, the balance of virtual and co-located attendees moderates the impact of social-driven asymmetries. For meetings with five or more participants, having a balanced number from each group was more significant. The closer the meetings were to an equal distribution between the groups, the less the previous findings regarding social-driven asymmetric participation applied. When asking about the distribution in interviews, several interviewees pointed to $\geq 80\%$ co-located and $\leq 20\%$ virtual being the worst distribution. Moreover, I found that the fewer participants attending virtually, the less these participants contributed to the meeting in general. Several informants also explained that it is easier to forget the virtual participants the fewer they are, which further strengthens the finding.

It's very easy to forget them. The fewer they are, the worse it is. If there are one-two people at home and 10 in the room, then it's useless. Then you can pretty much forget about the entire thing. (Interviewee 7)

I observed one meeting with Team Fixed where the entire team was co-located in a meeting room, except for one individual that worked from home that day. This participant did not say anything during the entire one-hour-long meeting, except for "goodbye" at the very end. It was clear that the co-located participants had entirely forgotten about that individual as several reacted with surprise and statements like, "Oh! That's right, [name] is here. Goodbye!"

I did not observe any hybrid meeting with more participants virtually than co-located during observations. The exceptions were presentations, however, these did not include discussion and had a clear speaking order and agenda. I can therefore not comment on whether this imbalance only negatively affected virtual participants or if co-located

participants were equally negatively affected when becoming the minority. However, Interviewee 6 explained that the imbalance goes both ways:

As soon as there are more people in the meeting room than at home, then you get the feeling of being a fly on the wall. But if you are alone in the meeting room while others are digital, then you get the opposite feeling. [...] You kind of feel like an outsider. That you are alone.

Based on this, it is possible that both groups can be equally disadvantaged when there is a significant imbalance.

5.5 Perceived productivity

Several informants reported experiencing changes in individual productivity depending on if they were working from home or at the office. This finding should be seen in relation to more social interactions and co-located network effects, as interactions could also be distractions that may interrupt developers' concentration.

When working from home, informants reported having periods of dedicated focused time to work on their tasks. Especially developers were likely to specify this as one of their main motivations for working from home, as periods of dedicated focused time were described as necessary to "get in the zone" when working on development tasks. An interruption could potentially be enough to take them out of their needed concentration - a concentration that could be challenging to regain. These periods of focused time usually lasted one-four hours, which was enough time to get into deep concentration. Working uninterrupted was especially efficient when the tasks were not too complex, and collaboration with other team members was not necessary. Also, some informants reported that working from home allowed them to work through breakfast or lunch breaks. This was described as a benefit that allowed them to be more productive. A tester that had to communicate a lot with others stated:

When I'm at the office, maybe someone wants to grab a coffee with me, so I always get dragged away from my PC somehow. At home I get to answer everyone at the same time. I actually get to work on what I'm supposed to. I don't have these interruptions breaking up my day. (Interviewee 4)

A developer stated that being able to work uninterrupted promoted better code quality:

I think that the quality of my code is a bit better because I get more time for concentration. I don't have to divide up my day as much. (Interviewee 8)

Another developer explained that it was easier to get distracted in the office:

“It's more difficult to work concentrated over time [in the office] because there are in general more distractions, like drinking more coffee than one should or playing shuffleboard for too long. (Interviewee 2)

Work-related questions and discussions with colleagues could also act as interruptions or distractions. When someone got a question from a colleague, they usually stopped what they were currently working on to assist the person. They would often move away from their own desk, making it very apparent during observation that they had stopped working on their own task. Sometimes several team members were gradually involved in these discussions as well, for example, if a developer needed assistance on some complex problem.

Furthermore, helping team members with problems implied some degree of context switching. As the team members worked on entirely different things, colleagues that came to help often had to familiarize themselves with new topics, problems, and even technology. For example, I observed that team members working on entirely different platforms would gather around someone who needed help, even if the issue was about a different platform.

In addition, several other interruptions would often emerge in the office. It was surprisingly common for the fire alarm to go off during working hours. Also, noise from construction work seemed at times to be the standard as BankDev was renovating their office building. There were also more pleasant interruptions, like cakes being served when there was some kind of celebration or short stretching sessions. Although most team members seemed to appreciate things like this, team members frequently had to gather their thoughts and remind themselves what they were doing before the interruption. To summarize, while the interruption was of positive nature, they were interruptions to team members' workflow nevertheless.

Increased perceived productivity is categorized to be on an individual level as many in-

formants doubted whether the team overall was more productive, despite feeling more productive themselves. A developer exemplified how a lack of discussion in the office could potentially impact team productivity:

I get to do so much more coding and development when I'm sitting at home. So in that sense, I'm more productive. But at the same time, that talk and discussion, it becomes less of it. So if it's good for the whole team, I don't know. (Interviewee 2)

Another interviewee described how awareness of the team may impact the productivity of the team:

At home you get to focus. You know what to do because you are selecting your own tasks and can sit down and really think about how you should best solve them. [...] But I think it is more difficult to prioritize what is most important for the team. To see the whole picture. (Interviewee 9)

All interviewees were asked about their home-office equipment and ergonomics, and everyone reported that their home-office setup was just as good or better than in the office. Many interviewees also explained that they had room (with a closable door) dedicated to being an home-office. No interviewees reported that there were artifacts in the office that they missed either. They therefore had everything they needed to solve their tasks at home.

5.6 Work-life balance and well-being

Working hybrid allowed individuals more flexibility, which was reported to promote an improved work-life balance and well-being for individuals. This finding was more likely to apply if the individuals had families with young children. Working from home made it easier to handle family logistics, for example, if a child had fallen ill or needed transportation that day. It was also common for team members to work from home when being visited by, for example, an electrician or anticipating a package delivery. A parent exemplified this:

I have much more freedom to help my children with their homework and it's easier to follow up on when they are headed to football and [all their other

activities]. So its much easier for me to work from home. (Interviewee 4).

Another parent talked about the stress avoided when working from home:

There's so much logistics when I'm going to the office. Now, once I have followed [my children to school] I can simply go home, eat breakfast and then start work. [...] But if I'm going to the office, then too much time passes if I go home again and then to the office. So everything had to be prepared and finished before leaving. The stress-level each morning used to be enormous. I remember hating it and dreaming about being able to work from home. (Interviewee 1)

Having loved-ones around was also explained to promote well-being:

[About working from home] It is quite pleasant for me that have a partner currently on parental leave. It's nice to head downstairs and talk to her for a few minutes and then just head back up to my office. Then I don't feel like I'm missing out on anything. (Interviewee 8)

Not having to spend time commuting was also a significant contributor to improved work-life balance. Several informants described commuting as a waste of time that significantly heightened the day's threshold to go to the office. Especially interviewees with over one hour each way in commuting reported that the option to work from home was important to them.

Having the flexibility to work from home was actually seen as a perk itself. A team lead explained that one of the reasons the team was given so much flexibility was to avoid unnecessary employee turnover. The team had developers with deep knowledge of vulnerable, high-risk systems. Losing them because of unnecessary rules like requiring them to be in office was therefore not a viable option. This concern was confirmed by some interviewees, stating that losing the possibility to work from home was like losing a valuable perk which may result in them looking for other jobs.

Although employees were allowed to work from home before the pandemic, it was described to generally be more frowned upon by others in the organization, especially managers. Some informants mentioned that before the pandemic, some would refer to "home-office" as "hide-office" as a joke, implying that employees hid from their responsibility when

working from home. Suddenly having all employees work from home and still solving their tasks promoted increased mutual trust. Further, it has also become more accessible for team members to work from home. The pandemic accelerated the development and introduction of virtual collaboration tools and video conferencing tools, which enabled accessible communication without having to be co-located. Not only did these tools become better, but the teams also got used to utilize them. Before, using video conferencing tools was seen as troublesome because the teams did not have the proper tools, or were inexperienced in utilizing them, which resulted in many struggling to use them efficiently. It took a long time to set up meetings, but many were not used to communicating virtually. Now, video conferencing tools were described as second nature and team members would frequently utilize them. Interviewees from Team Fixed that used to work hybrid before the COVID-19 described this change. A developer explained:

The threshold to use videochat with other team members have become very low. If I need to talk about something I'll simply call them for a videochat. We pretty much never did that before. (Interviewee 2)

Another interviewee exemplified how the team used to handle hybrid meetings before having the proper tools and experience:

Before COVID-19 when we had meetings, we would just bring a laptop and then pass it around when someone wanted to speak. We weren't set up to be as digital as we needed to be. (Interviewee 4)

Team members from team Fixed explained that it is better to work from home now than before COVID-19, as the team is now more aware of including both co-located and virtual team members. Making information available on digital platforms was highlighted by an interviewee as an example:

Information that everyone should know is now written on Slack. 'Oh sorry, that information was given in the office' doesn't help for those that are not physically there. People have gotten a lot better at writing it down [on shared communication platforms]. It also makes it easier to go back to look at that information in case you forgot something. (Interviewee 4)

5.7 Challenges for team leads

One of the main responsibilities team leads considered essential to their role was supporting team members and facilitating well-being within their team. However, hybrid and virtual work imposed challenges that made the team leads perceive it as more complicated to fulfill this responsibility.

When shifting to virtual work, team leads experienced increased difficulty providing support for individuals on their team. The team leads reported that this had continued to the hybrid work phase, primarily when team members mainly worked from home. When co-located, team leads could observe their peers in their daily work, which enabled them to pick up worrying signals. With virtual team members, team leads would have to confront them more directly by asking them how they were doing. A team lead exemplified this finding:

When meeting people face-to-face at the office you can overhear conversations that may make you wonder if a person is for example having a difficult situation at home. [...] It is much easier [to follow up peers] in the office because when I feel it is time to do a check-up and have a chat with someone, or I noticed that someone seemed stressed or annoyed, I would just walk to the coffee machine whenever they did. Then it was very informal and easy to start a conversation. [...] That part is extremely difficult when working from home. (Interviewee 6)

Another team lead explained the challenges of not being able to observe team members:

Personally, I just feel like a satellite when working from home. I am kind of an outsider. I don't know what is going on, and I don't get to know [my team] either. I don't get to follow up on people's well-being. (Interviewee 1)

What further made it more challenging to fulfill their responsibility was that it was more difficult to get team members to open up when communicating through virtual means. Team leads explained that many could find it uncomfortable to be asked directly in a message about how they were doing. The answer would usually be short and positive, regardless of how the person was actually doing. Therefore, they would have to start a conversation about other things and sneak it in whenever appropriate. Moreover, it was rare for peers to bring up difficult situations through virtual channels even though there

may be problems that the team lead should have knowledge of. Team leads therefore found it challenging to get past superficial conversations. However, personal conversations were reported to happen more frequently with less effort when face-to-face. An interviewee explains:

I know that when I have said that I will be going to the office next week, then several others also come because they want to talk to me about things that they have struggled to tell me through virtual channels. And then it's usually about how they are doing. Maybe things feel heavy when working from home or they struggle to motivate themselves. Things that are difficult to talk about on [Microsoft] Teams, but that they are brave enough to address with me when we are together in the office. (Interviewee 6)

Another challenge reported was that the team leads have to a large extent, been given the responsibility of having their teams return to the office after the fully-virtual phase. This was described as challenging for several reasons. Firstly, individuals on their teams had different situations, for example, long commute times, young children, or health issues. Therefore, team leads experienced it as uncomfortable to "force" everyone into the office without considering each individual's circumstances. Secondly, the management and some members that preferred to be co-located expected the team leads to promote being together in the office. A team lead explained why this was challenging for them:

We have some in our team that expect me to mean that we should be more in the office. Personally, I don't think so, but I've have kept my opinion to myself. I am a team leader so I have to speak on the behalf of my employer. Some of them felt that no one showed up so they asked me to put pressure on the rest of the team. [...] But we also have those who don't feel the need to be at the office. So we have very divided opinions on that. (Interviewee 1)

Another team lead explained that it was challenging to accommodate contradicting wishes:

I think it is very important to not exclude those that do not necessarily have the opportunity to be at the office to a large degree, considering there are different underlying reasons. At the same time, it is so important for us to be able to meet, and allow those that wish to be co-located to do that. So I have to

accommodate for both as much as possible at the same time. (Interviewee 6)

Lastly, team lead emphasized trust in their teams to be more crucial than ever before, and a success criteria for managing hybrid work. As team leads were no longer able to observe peers on a daily basis, they now had to trust that their team was working. As it was more challenging to get team members to open up, they had to trust that their team members would reach out if in need of help. One of the team leads stated that they have trust in the team:

I have absolute trust in my team members and I trust that they will tell me if they need help, that they take responsibility for that. And I trust that other team members can tell me if things aren't working. (Interviewee 6)

Interviewee 6 described how virtual and hybrid challenged leaders to trust their team:

I have always trusted my team. I really believe in that. [...] I think many [leaders] were initially challenged on trusting their team. I know some leaders that still really struggles with allowing work from home, because they can't know if the team are actually doing their tasks.

Chapter 6

Discussion

In this thesis, I have examined how development teams and individuals have been affected by hybrid work post COVID-19. This chapter discusses the results that was presented and aims to answer the research question proposed in section 1.3. I also discuss how the findings of the thesis relate to existing research.

First, we revisit the research questions:

RQ1: What is hybrid work?

RQ2: What are the effects of hybrid work on an individual and team level?

RQ3: How can organizations manage hybrid meetings?

Firstly, I attempt to provide a definition of hybrid work and hybrid teams in order to answer RQ1. Then, my findings on how teams are affected by hybrid work and the effects of hybrid work on individuals are discussed to answer RQ2. I then answer RQ3 by providing insights into how to manage hybrid meetings. I follow up with implications of practice that are directed toward organizations managing hybrid work or thinking of implementing it in the future. Finally, the limitations of the thesis are presented. My findings will be discussed together with existing research to provide a more informed answer to the research questions and establish how my contribution fits into existing research.

6.1 Defining hybrid work

RQ1: What is hybrid work?

An early challenge of writing this thesis was that few studies on hybrid work had been published. Hence, a lack of definitions that sufficiently explained what hybrid work meant, resulting in the first research questions. As I collected data for the thesis and worked on early drafts, research on hybrid work was gradually published. Still, the definitions described Team Flex’s approach to hybrid work, but not necessarily Team Fixed. Consequently, I doubted whether Team Fixed could be considered a hybrid team. Recall the definitions provided in section 2.1:

Hybrid work model: where an engineer will have the flexibility to choose to work a number of days remotely and a number of days in the office with in-person communication (Ozkaya, 2021).

Hybrid teams: In a hybrid team, on any given day, some team members may be working in a co-located office space while others are working remotely (Santos & Ralph, 2022).

Hybrid workplace: office days mixed with WFH days (Sporsen & Moe, 2022).

Team Fixed has virtual days on Monday, where all team members should work from home by default. Santos and Ralph (2022)’s definition is therefore not fully applicable since all team members are working remotely. Further, (Ozkaya, 2021)’s definition emphasized individual flexibility. Team Fixed members have that flexibility on Thursdays and Fridays, but not the rest of the week. A counterargument to this is that Team Fixed agreed on this arrangement, meaning that they *chose to work a number of days remotely and a number of days in the office*. However, that is not necessarily fulfilling *individual* flexibility. Further, Team Fixed also practices flex days, which is not included in the definition of hybrid workplace (Sporsen & Moe, 2022). Participants of Team Fixed considered themselves to be a hybrid team. They were also faced with all the challenges and benefits of hybrid work described in the results.

The definition of hybrid teams and a hybrid work model is descriptive of Team Flex, as individuals have the flexibility to choose any given day. However, Team Flex does not

practice office days or WFH days. The definition of a hybrid workplace is therefore not fitting.

Both teams were affected by the implications of working hybrid, and were faced with both challenges and benefits related to hybrid work. Both teams also considered themselves to be hybrid teams. I propose a definition of hybrid work and hybrid teams myself by drawing inspiration from the existing definitions and the research teams. I argue that hybrid in this context are influenced by two aspects: location and collaboration. Therefore, I propose two definitions that include these aspects:

Hybrid teams: A hybrid team is a team which does not, by choice, work from a default workplace.

Hybrid work: Collaboration between a co-located group and a virtual group or individual.

These definitions include all the definitions provided above (hybrid work model, hybrid teams and hybrid workplace), as well as Team Flex's and Team Fixed's approach to hybrid. I conclude that both Team Fixed and Team Flex are hybrid teams, but with different configurations. For example, a team can choose to work hybrid one day and work co-located the next day. If the team aims to be co-located by default, then it is a co-located team. Team Fixed and Team Flex do not have a default workplace, and are therefore hybrid.

According to the definition of hybrid work, collaboration is necessary for work to be hybrid. This implies that individuals cannot work hybrid. Also, if two teams work separately on different products, one co-located and one virtual, it is not included in the definition. However, if those two teams work together on a project, I argue that it is hybrid work. Table 6.1 illustrate the definition of hybrid work.

Note that the difference between a distributed team and a hybrid team is that hybrid teams do not have a default workplace by choice. Hybrid teams have the option of being fully co-located, but choose to be hybrid. Distributed teams are much more limited in this regard because of geographical distance.

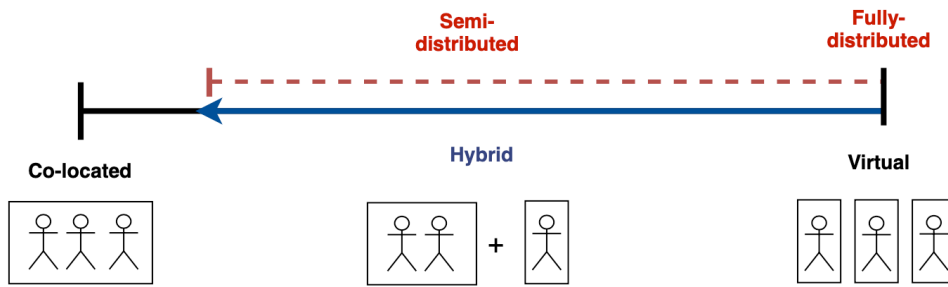


Figure 6.1: Hybrid work

6.2 Teamwork in hybrid teams

RQ2: What are the effects of hybrid work on an individual and team level?

Since several of the findings have a team-level impact, I examine how teams practicing hybrid work fit into existing team models for co-located teams and the following implications. Strode et al. (2022) proposed a teamwork effectiveness model (ATEM) for agile co-located teams. The model presents five core components of team effectiveness, including shared leadership, peer feedback, redundancy, adaptability, and team orientation. Three coordination mechanisms coordinate the components: shared mental models, mutual trust, and communication. Only the components and mechanisms affected by hybrid work will be discussed in the following sections. Note that asymmetric participation in hybrid meetings had a team level impact, but are discussed together with RQ3.

6.2.1 Team cohesion

My findings show that team members experienced strengthened team cohesion when co-located and weakened team cohesion when working from home for extended periods. This change occurred because co-location fostered informal conversations, which helped them form social connections. In contrast, communication when virtual was limited to work-related impersonal topics. Furthermore, co-located team members felt less team cohesion towards team members that mainly stayed at home. Similarly, Miller et al. (2021) found that most team members felt less socially connected to their team after introducing exclusively virtual work, which was described as alarming.

In the ATEM, team cohesion is listed as the main sub-component of team orientation.

Further, *co-location* and knowing the team was listed by Strode et al. (2022) to foster team orientation, which my findings support. My results show that team members have limited social relationships when not co-located, resulting in more impersonal relations. The difference in team cohesion among co-located and virtual team members further contributed to separating the teams into two groups. This contradicts a behavior marker of team orientation described by Strode et al. (2022); *the team sticks together and remains united*.

Team cohesion is vital for the quality of teamwork as it mediates task interdependence, makes team members more committed to their teams and contributes to the team's well-being (Kuthyola, Liu, & Klein, 2017). Other teamwork studies have also identified team cohesion as a factor that improves performance (Dingsøy, Rolland, Moe, & Seim, 2017), and effectiveness of teams (Kozlowski & Ilgen, 2006). In addition, a sense of team spirit is necessary for intensive collaboration and, therefore, a prerequisite for teamwork (Hoegl & Gemuenden, 2001).

To conclude, hybrid teams are more challenged than co-located teams regarding team orientation, which is a core component of team effectiveness. Having all team members co-located in the office occasionally, preferably at least once a week, can help strengthen team cohesion.

6.2.2 Co-located network effects

Informants reported that being co-located resulted in several co-location network effects for the teams. Mainly, co-location promotes informal communication such as asking questions to peers and informal knowledge sharing. Several other studies support this finding. Nyrud and Stray (2017) found that informal unscheduled communication is best ensured when team members are sitting together in the same office. Ford et al. (2022) found that close proximity in-person provides opportunities for unplanned interactions in the office, which build trust. In contrast, interactions in remote settings must be intentional, so there is a need for more devoted time, resources, communication channels, and events to foster relationships (Ford et al., 2022). In addition, Miller et al. (2021) argued that communication was described as a cornerstone challenge for teams that are not co-located.

Communication is well established as an important factor in teamwork. Further, several

teamwork models name communication as important for teamwork (Salas, Sims, & Burke, 2005; Brannick, Salas, & Prince, 1997; Kuthyola et al., 2017), including the ATEM. The importance of informal knowledge sharing should also be emphasized. Sharing knowledge helps to ensure that the product has the right features and a sufficient level of quality (Dingsoyr & Smite, 2014). Dingsoyr and Smite (2014) further argue that shared knowledge improves team effectiveness because it helps teams avoid costly misunderstandings. Effective knowledge sharing is also necessary to overcome the challenges of coordinating work across distributed spaces (Ghobadi, 2015), which is also applicable to hybrid teams.

My findings and other studies on virtual work suggest that team members consistently working from home have less informal communication. Similarly, Strode et al. (2022) highlights a strong link between being co-located and communication and that being physically placed together fostered team effectiveness. The authors further describe that co-location supported communication for achieving understanding and problem-solving. Consequently, to what degree hybrid teams are fulfilling the coordination mechanism communication described in the ATEM should be questioned. Considering this thesis's findings, hybrid teams do not facilitate informal communication as much as co-located teams. Therefore, they are not achieving the same level of coordination, which may weaken team effectiveness. Not to mention, Sporseem and Moe (2022) state that effective coordination is the key to successful agile teams.

6.3 Individuals in hybrid teams

When discussing individuals in hybrid teams, it is less relevant to compare my findings with teamwork models. Therefore, I discuss how my findings on individuals in hybrid teams contribute to existing research on post COVID-19 software development and the implications.

6.3.1 Perceived productivity

Developers reported that one of their primary motivations for working from home was that they would escape the interruptions and distractions from the office, which resulted in them perceiving their productivity as higher. It was essential to get into deep concentration when solving development tasks, which was easier to achieve when not being interrupted. Complex tasks requiring collaboration were better done at the office. Work from home

provides team members with the autonomy over when to engage and disengage with colleagues, which can provide unique opportunities for deeper concentrated work (Ford, Milewicz, & Serebrenik, 2019).

Other studies have also found that productivity when working from home is task-dependent. Tasks that do not require collaboration or clarifications are best solved at home (Sporseem & Moe, 2022). Similarly, Smite et al. (2022) found that complex tasks requiring collaboration took longer time to complete when working from home than when co-located. Therefore, teams should prioritize collaboration on complex or vague tasks when co-located and individual tasks requiring focus for virtual work.

6.3.2 Work-life balance and well-being

Several informants explained that working from home promoted a better work-life balance for individuals. This finding applied in particular to individuals with young children. My findings are similar to Ford et al. (2022), which reports that not having to spend time commuting and having a more flexible schedule contributed to a better work-life balance. Other contributions also found a better work-life balance to be one of the most common benefits of working from home (Smite et al., 2022; Bao et al., 2020; Grant, Wallace, & Spurgeon, 2013).

Promoting work-life balance has several benefits for both individuals and organizations. Better work-life balance is linked to an increase in perceived productivity (Smite et al., 2022), while a lacking balance was linked to stress and burn-out (Anderson, 2002). In addition, enabling better work-life balance among employees is often associated with improved organizational performance (Beauregard & Henry, 2009). Beauregard and Henry (2009) also argues that providing employees with work-life balance practices serves as a competitive advantage in the recruitment and retention of employees.

6.3.3 Challenges for team leads

Team leads explained that they were presented with four new challenges in the face of virtual and hybrid work:

1. They could no longer observe their team members in their daily work, making it more challenging to pick up worrying signals.

2. It was more difficult to get team members to open up when communicating through virtual channels, even if team members had problems that the team lead should have been aware of.
3. Team leads found it challenging to be handed the responsibility to get their teams to return to the office without considering individual's circumstances. Team members would often have contradicting wishes, which the team lead had to accommodate at the same time.
4. The informants explained that team leads now had to trust their teams more than ever, which was necessary for the success factor of hybrid work.

My first two findings are similar to those of Iden et al. (2021), which state that team leads have to compensate for the negative impact caused by virtual work. Specifically, the team lead has to take a more active part in facilitating communication. It has also become more difficult for team leads to map team members' needs for support. Iden et al. (2021) define that team lead's main responsibility is to motivate and support the team members in their work. Consequently, they conclude that virtual work's implications on team leads stand in contrast with agile principles.

It should therefore be discussed to what extent Iden et al. (2021)'s conclusion applies to hybrid teams. Similar to Iden et al. (2021), I argue that the challenges presented in the thesis make it more challenging for the team lead to fulfill the agile ideal. However, these challenges were primarily present when team members worked from home for extended periods. Therefore, team leads for hybrid teams are not as challenged as team leads of virtual teams in regards to supporting their team according to agile principles. Iden et al. (2021) study was conducted in the early stages of COVID-19, when teams had newly started exclusively working from home. In my study, team leads reported that they continuously developed strategies and practices to mitigate these challenges throughout the pandemic. On this basis, I argue that motivated team leads can overcome the challenges of hybrid with time. However, more research is needed on this topic, especially on this shift's effects on individuals.

6.4 Managing hybrid meetings

RQ3: How can organizations manage hybrid meetings?

The results revealed that hybrid meetings were likely to have an unbalanced distribution in participation, described as asymmetric participation in hybrid meetings. In particular, virtual participants contributed significantly less to the meeting than those sitting together in the same meeting room. My findings are similar to Saatçi et al. (2019), which found that the interaction in hybrid meetings was unequal and even unfair for virtual participants. Remote participants feel isolated from the meeting, while co-located participants dominate the interaction (Saatçi et al., 2019). In addition, Stray and Moe (2020) found that virtual participants lacked the trust to contribute to discussions and ask questions in hybrid meetings.

I argue that asymmetric participation affect all of the three coordinating mechanisms in the ATEM. Firstly, as established in section 2.1.1, the purpose of meetings is to facilitate communication. Therefore, when one part of the team consistently dominates the meeting, there is an imbalance in the team's overall communication. Strode et al. (2022) highlight that openness foster team effectiveness in co-located teams. Virtual participants lacking the trust to raise concerns can hinder open communication in meetings.

Secondly, asymmetric participation in hybrid meetings can affect mutual trust. Strode et al. (2022) highlights a willingness to admit mistakes and accept feedback as necessary for mutual trust. Several informants explained that their willingness to accept feedback depended on whether they were co-located or working from home. When co-located, team members would have friendly conversations before and after going to the meeting room. As a result, they were more open to perceive criticism from other co-located members as well-intended. Consequently, when individuals have no or little social contact with team members that criticize them, they are more likely to feel disliked by that particular member. This scenario was more likely to occur when virtual.

Thirdly, shared mental models could be compromised by asymmetric participation in hybrid meetings. Shared mental models are fostered by having a common understanding of goals, tasks, and processes. Agreeing on these goals are further highlighted as important (Strode et al., 2022). Observations revealed that virtual participants were less likely to

show interest in meetings and were often working on other things while in the meeting. Not paying sufficient attention can compromise virtual participants' understanding of what is discussed, like goals, tasks, and processes. Also, if virtual participants consistently refrain from raising concerns, it can undermine having a shared agreement on goals.

To summarize, exclusion in hybrid meetings negatively impacts all three coordination mechanisms of the ATEM. Considering that coordination is essential for development teams (Nyrud & Stray, 2017; Dingsøy et al., 2017; Berntzen et al., 2022), being aware of how to manage hybrid meetings is of great importance.

Saatçi et al. (2019) argues that making meetings more inclusive for everyone is one of the main challenges of hybrid. Consequently, I present my findings on how organizations can achieve this, combined with existing research.

Some hybrid meetings were more likely to include asymmetric participation than others. Therefore, identifying the factors contributing to potential exclusion is the first step to mitigate the problem. Consider what the aim of the hybrid meetings is. Will discussion be required to find a solution collectively, or will there be a reporting structure? Is there a predefined agenda or speaking order for this meeting? Also, consider how many will be attending the meeting virtually. Are they fewer than those sitting together in the meeting room? If the meeting at hand;

- Include five or more participants
- Include discussion, planning, or collaboration
- Lacks a predefined speaking order
- There is an imbalance in the number of co-located participants and virtual participants (for example, 80% co-located and 20% virtual)

Then, the asymmetries in virtual participation is more likely to happen. However, several measures can be taken to mitigate this problem.

Firstly, be aware of actions that create barriers that separate the two groups (co-located and virtual participants). Avoid having conversations with nearby participants without including the rest of those attending the meeting. These conversations are challenging

to hear for virtual participants and can also be caught up as noise in the microphone, potentially overriding what is essential to hear. They may also distract other co-located participants trying to focus on the meeting. Instead, write down questions or comments and address them after the meeting. Another option is sending the relevant person a message so that they can quickly answer without disrupting the meeting. This measure only applies if the individual considers this irrelevant to all other participants. If not, consider including all the meeting participants. Also, co-located participants should avoid turning their back to the meeting room camera as this can contribute to distancing themselves from virtual participants. Further, actions like speaking over each other are already challenging to listen to when sitting in the same room. However, it can be impossible to differentiate who is saying what for those listening virtually.

The importance of seeing the face of others attending the meeting should not be underestimated. Therefore, all participants should be visible to a camera, preferably during the entire meeting duration. For virtual participants, it could be confusing having to remember who is in the meeting room if they are not visible to the camera (Saatçi et al., 2019). For co-located participants, it was challenging to include those they could not see, and they risked forgetting them entirely. Using video during calls helps participants, and especially onboarding team members, understand the dynamics of the team and form connections with their peers (Rodeghero, Zimmermann, Houck, & Ford, 2021). When attending hybrid meetings, co-located participants can also consider joining the call and using their laptop cameras. Several informants explained that doing this makes it feel like the meeting is virtual, and everyone was equal virtual participants. (Sporsem & Moe, 2022) also highlighted how virtual meetings led to higher inclusion as everyone always got to participate.

Further, informants explained that greeting other participants and participating with initial small-talk helps promote inclusion. Greeting others is a common courtesy in co-located meetings, but is often skipped when attending virtually. Such an imbalance in social interaction further contributes to the separation of the two groups. Reminding participants of the importance of asking questions is also effective when facilitating hybrid meetings (Stray & Moe, 2020)

When meetings included many participants, several informants had good experiences di-

	Virtual	Hybrid	Co-located	
	<p>Increased productivity on individual tasks</p> <p>Well being because of better work-life balance</p>		<p>Co-location network effects</p> <p>Strengthened team cohesion</p>	Benefits
	<p>Weakened team cohesion</p> <p>Challenges for team leads</p> <p>Not taking part in co-location network effects</p>	<p>Asymmetric participation in hybrid meetings</p>	<p>Interruptions and distractions in the office hindering concentration</p>	Challenges
	<p>■ Team-level</p> <p>■ Individual level</p>			

Figure 6.2: Benefits and challenges of hybrid work

viding up the participants into smaller groups for a part of the meeting. These groups should consist of three to five people. In these groups, co-located participants should be working together with other co-located and vice versa. Collaborating with others "in the same situation" helped break down barriers. Then, having a joint discussion where all groups gather and present their views. Such discussions establish a speaking order, which promotes inclusiveness when having hybrid meetings.

6.4.1 Implications of practice: best of both worlds or a necessary compromise?

Hybrid work was found to introduce both benefits and challenges to hybrid teams. I found that these benefits and challenges were tied to whether team members were co-located, working from home, or practicing hybrid work. Figure 6.2 summarizes the challenges and benefits.

These challenges and benefits represent the trade-offs of hybrid work. Should organizations prioritize the benefits of strengthened team cohesion when in the office or more concen-

trated individual work at home? Are co-located network effects more or less valuable than increased individual well-being? Hybrid meetings create asymmetries in participation, but at least both co-located and virtual participants can attend the meeting? These trade-offs are important to consider when practicing hybrid work.

There is not one solution that fits all teams within all organizations. Therefore, it is important to have an open dialog and experiment together with the team. Most informants were optimistic about having office days twice a week. Avoid having fixed office days on Mondays and Fridays, as employees preferred to work from home these days. Introducing office days will enable the benefits of co-location while still giving team members the flexibility to work from home if they prefer. Further, it is vital to be aware of asymmetries in participation and potentially exclusion in hybrid meetings.

6.5 Limitations

There are some limitations to the study, given its qualitative nature. The quality of data gathered from interviews is highly dependent on the researcher and the interviewees. As I had no previous experience constructing and conducting interviews, it is possible that the quality of the answers may have been negatively influenced. I tried to my best ability to construct as concrete questions as possible. Still, as the interviews were semi-structured, not all questions were predefined. It is also possible that interview data was affected by my own bias. Therefore, neutral non-leading questions were highly prioritized. I also refined the interview guide iteratively and improved it whenever I identified weaknesses. The interview guide was discussed with supervisors and tested on my developer colleagues. Also, data gathered from interviews are likely influenced by interviewees' interpretations and opinions. Therefore, several interviewees reporting similar experiences was a prerequisite for including it in the thesis.

Another potential limitation is that I only observed co-located team members in the office, meaning I only observed one of two sides of the situation. Therefore, I prioritized including informants that primarily worked from home in the interviews so that I would gain insights into both perspectives.

I would also like to add that all the quotes included have been translated from Norwegian by me. I tried to keep the original meaning of the quote intact as much as possible.

However, I learned that translating informal oral Norwegian to English is much more challenging than initially anticipated.

6.5.1 Reliability

To strengthen the replicability of the results, multiple sources of evidence were used. All of the results presented were first identified through observation of the teams and their communication channels and then confirmed through interviews. Quotes from the interviews back up all significant claims. The results were also presented back to the organization.

6.5.2 Internal Validity

Internal validity describes to what extent the research can be confident that other factors cannot explain the relationship established in the study. I argue that the study on hybrid work includes varying personal factors, team-specific factors, organization-specific factors and geographical-specific factors. Therefore, stating absolute confidence would be presumptuous. Accordingly, I took particular caution to use multiple sources of evidence before claiming a finding, such as observation notes, communication channel notes, meeting notes, and interview transcripts, to maximize internal validity.

6.5.3 External Validity

External validity is to what degree the study's findings are generalizable and can be applied to a broader context. This type of validity was supported by studying two teams with widely different approaches to hybrid and different responsibilities. Further, the study is not limited to using different types of agile frameworks, such as Scrum. Conducting the research across multiple organizations would have significantly supported the external validity. However, time restrictions proved to be limiting.

6.5.4 Construct Validity

Construct validity was supported by using different methods for data collection, which are widely used in the software engineering field. I also gave data gathered from the interviews a higher priority than observation data, as my bias could unconsciously influence observation notes. Also, if data from interviews could be interpreted differently or ambiguous, I refrained from using it to limit bias further.

Chapter 7

Conclusion

I conducted a case study of two software development teams during the period between October 2021 and February 2022. The scope of the thesis was to understand hybrid work in the setting of development teams post COVID-19, including how teams and individuals have been affected by hybrid work. I have presented relevant work to the objective of the thesis, followed by an overview of the research methods used. I used thematic analysis to derive six themes from the data analysis. The themes were then categorized into team-level themes and individual-level themes. The findings were discussed in light of relevant literature. Lastly, implications of practice were presented and a reflection of the validity and limitations of the study.

The first research question was to understand what hybrid work is. A new definition of hybrid work and hybrid teams was provided, hybrid work being related to collaboration and hybrid teams being related to location. The new definitions include definitions derived from other studies, while also being descriptive of how Team Fixed and Team Flex manage hybrid work.

The second research question was answered by presenting and discussing findings on how hybrid work impacts the teams. Team cohesion was strengthened by being co-located, which supported team orientation. Further, several co-location network effects were identified. The more team members that worked from the office, the more others followed. This enabled more frequent informal communication. Informants found it easier to ask questions, form social connections, receive criticism, make decisions, and informally share

knowledge sharing. This affected the coordination mechanism communication positively. The primary challenge of hybrid work was asymmetric participation in hybrid meetings. Virtual participants contributed significantly less in hybrid meetings, while co-located participants dominated the meeting. The asymmetries were found to be tech-driven and social-driven. This finding negatively affected all coordination mechanisms of teamwork effectiveness. For individuals, developers were likely to perceive themselves as more productive when working from home. This productivity was task-dependent; individual tasks that developers could solve by themselves were best to do at home, where deep concentration could be achieved. In contrast, it was challenging to concentrate in the office as one would likely be distracted. Further, working from home supported individual well-being as it was easier to achieve a better work-life balance. A challenge found was that the introduction of hybrid and virtual work challenged team leads in fulfilling their responsibility of supporting their team. Being responsible for making all team members return to the office was also described as challenging.

Lastly, I provide recommendations on how teams and organizations can manage hybrid meetings in order to answer the third research question. Several factors contributing to asymmetric participation were identified. Being aware of these, as well as social and technical factors that create barriers to participation, can help limit asymmetries.

I conclude that hybrid work is neither a best of both world solution nor a necessary compromise, but rather a set of trade-offs. Being aware of these trade-offs is essential for teams and organizations managing hybrid work. Ignoring the challenges can result in disadvantages that make hybrid work seem like a compromise. Likewise, finding a combination that works for your respective teams and the individuals can promote several benefits, allowing teams to take advantage of both worlds. Much is still to be learned about post COVID-19 ways of working, and more research on hybrid work is needed to sufficiently understand the different aspects in different context.

Bibliography

Anderson, S. (2002, December). Formal Organizational Initiatives and Informal Workplace Practices: Links to Work–Family Conflict and Job-Related Outcomes. *Journal of Management*, 28(6), 787–810. Retrieved 2022-05-17, from <http://linkinghub.elsevier.com/retrieve/pii/S0149206302001903> doi: 10.1016/S0149-2063(02)00190-3

Bao, L., Li, T., Xia, X., Zhu, K., Li, H., & Yang, X. (2020). How does Working from Home Affect Developer Productivity? – A Case Study of Baidu During COVID-19 Pandemic.. Retrieved 2022-04-15, from <https://arxiv.org/abs/2005.13167> (Publisher: arXiv Version Number: 3) doi: 10.48550/ARXIV.2005.13167

Beauregard, T. A., & Henry, L. C. (2009, March). Making the link between work-life balance practices and organizational performance. *Human Resource Management Review*, 19(1), 9–22. Retrieved 2022-05-16, from <https://linkinghub.elsevier.com/retrieve/pii/S105348220800065X> doi: 10.1016/j.hrmr.2008.09.001

Bennett, A. A., Champion, E. D., Keeler, K. R., & Keener, S. K. (2021, March). Videoconference fatigue? Exploring changes in fatigue after videoconference meetings during COVID-19. *Journal of Applied Psychology*, 106(3), 330–344. Retrieved 2022-05-24, from <http://doi.apa.org/getdoi.cfm?doi=10.1037/apl0000906> doi: 10.1037/apl0000906

Berntzen, M., Hoda, R., Moe, N. B., & Stray, V. (2022). A Taxonomy of Inter-Team Coordination Mechanisms in Large-Scale Agile. *IEEE Transactions on Software Engineering*, 1–1. Retrieved 2022-05-22, from <https://ieeexplore.ieee.org/document/9739868/> doi: 10.1109/TSE.2022.3160873

Brannick, M. T., Salas, E., & Prince, C. (Eds.). (1997). *Team performance assessment and measurement: theory, methods, and applications*. Mahwah, N.J: Lawrence Erlbaum Associates.

Braun, V., & Clarke, V. (2006, January). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. Retrieved 2022-05-21, from <http://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa> doi: 10.1191/1478088706qp063oa

Butler, J., & Jaffe, S. (2021, May). Challenges and Gratitude: A Diary Study of Software Engineers Working From Home During Covid-19 Pandemic. In *2021 IEEE/ACM 43rd International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP)* (pp. 362–363). Madrid, ES: IEEE. Retrieved 2022-01-18, from <https://ieeexplore.ieee.org/document/9402021/> doi: 10.1109/ICSE-SEIP52600.2021.00047

DeFilippis, E., Impink, S. M., Singell, M., Polzer, J., & Sadun, R. (2020, July). *Collaborating During Coronavirus: The Impact of COVID-19 on the Nature of Work* (Tech. Rep. No. w27612). Cambridge, MA: National Bureau of Economic Research. Retrieved 2022-03-29, from <http://www.nber.org/papers/w27612.pdf> doi: 10.3386/w27612

Dingsøyr, T., & Smite, D. (2014, January). Managing Knowledge in Global Software Development Projects. *IT Professional*, 16(1), 22–29. Retrieved 2021-05-19, from <http://ieeexplore.ieee.org/document/6471710/> doi: 10.1109/MITP.2013.19

Dingsøyr, T., Rolland, K., Moe, N. B., & Seim, E. A. (2017). Coordination in multi-team programmes: An investigation of the group mode in large-scale agile software development. *Procedia Computer Science*, 121, 123–128. Retrieved 2022-05-14, from <https://linkinghub.elsevier.com/retrieve/pii/S1877050917322081> doi: 10.1016/j.procs.2017.11.017

Eddy, A. (2019, September). Is Technology Killing Human Emotion?: How Computer-Mediated Communication Compares to Face-to-Face Interactions. In *Proceedings of Mensch und Computer 2019* (pp. 527–530). Hamburg Germany: ACM. Retrieved 2022-04-13, from <https://dl.acm.org/doi/10.1145/3340764.3344451> doi: 10.1145/3340764.3344451

Ford, D., Milewicz, R., & Serebrenik, A. (2019, May). How Remote Work Can Foster a More Inclusive Environment for Transgender Developers. In *2019 IEEE/ACM 2nd International Workshop on Gender Equality in Software Engineering (GE)* (pp. 9–12). Montreal, QC, Canada: IEEE. Retrieved 2022-05-18, from <https://ieeexplore.ieee.org/document/8819552/> doi: 10.1109/GE.2019.00011

Ford, D., Storey, M.-A., Zimmermann, T., Bird, C., Jaffe, S., Maddila, C., ... Nagappan, N. (2022, April). A Tale of Two Cities: Software Developers Working from Home during the COVID-19 Pandemic. *ACM Transactions on Software Engineering and Methodology*, *31*(2), 1–37. Retrieved 2022-05-16, from <https://dl.acm.org/doi/10.1145/3487567> doi: 10.1145/3487567

Ghobadi, S. (2015, January). What drives knowledge sharing in software development teams: A literature review and classification framework. *Information & Management*, *52*(1), 82–97. Retrieved 2022-05-15, from <https://linkinghub.elsevier.com/retrieve/pii/S0378720614001323> doi: 10.1016/j.im.2014.10.008

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013, August). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, *35*(5), 527–546. Retrieved 2022-05-16, from <https://www.emerald.com/insight/content/doi/10.1108/ER-08-2012-0059/full/html> doi: 10.1108/ER-08-2012-0059

Gratton, L. (2020). *Four Principles to Ensure Hybrid Work Is Productive Work*. MITSloan Management Review. Retrieved from <https://sloanreview.mit.edu/article/four-principles-to-ensure-hybrid-work-is-productive-work/>

Harwell, M. (2011). Research Design in Qualitative/Quantitative/Mixed Methods. In *The SAGE Handbook for Research in Education: Pursuing Ideas as the Keystone of Exemplary Inquiry* (pp. 147–164). 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc. Retrieved 2022-05-21, from <https://methods.sagepub.com/book/the-sage-handbook-for-research-in-education-2e/n11.xml> doi: 10.4135/9781483351377.n11

Hoegl, M., & Gemuenden, H. G. (2001, August). Teamwork Quality and the Success of Innovative Projects: A Theoretical Concept and Empirical Evidence. *Organization*

Science, 12(4), 435–449. Retrieved 2022-05-16, from <http://pubsonline.informs.org/doi/abs/10.1287/orsc.12.4.435.10635> doi: 10.1287/orsc.12.4.435.10635

Iden, J., Stendal, K., Elston, D., & Rostrup, H. M. (2021). Hva skjer når etablerte, samlokaliserte agile team må arbeide og samarbeide fra hjemmekontor? *Open Journal Systems*. Retrieved from <https://ojs.bibsys.no/index.php/NIK/article/view/945>

Isaacs, E. A., & Tang, J. C. (1994, August). What video can and cannot do for collaboration: A case study. *Multimedia Systems*, 2(2), 63–73. Retrieved 2022-04-13, from <http://link.springer.com/10.1007/BF01274181> doi: 10.1007/BF01274181

King, N. (2004). Using Templates in the Thematic Analysis of Text. In *Essential Guide to Qualitative Methods in Organizational Research* (pp. 256–270). 1 Oliver’s Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd. Retrieved 2022-05-22, from <https://sk.sagepub.com/books/essential-guide-to-qualitative-methods-in-organizational-research/n21.xml> doi: 10.4135/9781446280119.n21

Kozlowski, S. W., & Ilgen, D. R. (2006, December). Enhancing the Effectiveness of Work Groups and Teams. *Psychological Science in the Public Interest*, 7(3), 77–124. Retrieved 2022-05-15, from <http://journals.sagepub.com/doi/10.1111/j.1529-1006.2006.00030.x> doi: 10.1111/j.1529-1006.2006.00030.x

Kuthyola, K. F., Liu, J. Y.-C., & Klein, G. (2017). Influence of Task Interdependence on Teamwork Quality and Project Performance. In W. Abramowicz (Ed.), *Business Information Systems* (Vol. 288, pp. 135–148). Cham: Springer International Publishing. Retrieved 2022-05-14, from http://link.springer.com/10.1007/978-3-319-59336-4_10 (Series Title: Lecture Notes in Business Information Processing) doi: 10.1007/978-3-319-59336-4_10

Lethbridge, T. C., Sim, S. E., & Singer, J. (2005, July). Studying Software Engineers: Data Collection Techniques for Software Field Studies. *Empirical Software Engineering*, 10(3), 311–341. Retrieved 2022-05-21, from <http://link.springer.com/10.1007/s10664-005-1290-x> doi: 10.1007/s10664-005-1290-x

Microsoft. (2021). *2021 Work Trend Index: Annual Report The Next Great Disruption Is Hybrid Work – Are We Ready?* (Tech. Rep.). Re-

trieved from https://ms-worklab.azureedge.net/files/reports/hybridWork/pdf/2021_Microsoft_WTI_Report_March.pdf

Miller, C., Rodeghero, P., Storey, M.-A., Ford, D., & Zimmermann, T. (2021, May). "How Was Your Weekend?" Software Development Teams Working From Home During COVID-19. In *2021 IEEE/ACM 43rd International Conference on Software Engineering (ICSE)* (pp. 624–636). Madrid, ES: IEEE. Retrieved 2022-03-29, from <https://ieeexplore.ieee.org/document/9401956/> doi: 10.1109/ICSE43902.2021.00064

Neumayr, T., Saatci, B., Rintel, S., Klokmoose, C. N., & Augstein, M. (2021). What was Hybrid? A Systematic Review of Hybrid Collaboration and Meetings Research.. Retrieved 2022-04-13, from <https://arxiv.org/abs/2111.06172> (Publisher: arXiv Version Number: 1) doi: 10.48550/ARXIV.2111.06172

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017, December). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16(1), 160940691773384. Retrieved 2022-05-21, from <http://journals.sagepub.com/doi/10.1177/1609406917733847> doi: 10.1177/1609406917733847

Nyrud, H., & Stray, V. (2017, May). Inter-team coordination mechanisms in large-scale agile. In *Proceedings of the XP2017 Scientific Workshops* (pp. 1–6). Cologne Germany: ACM. Retrieved 2022-05-15, from <https://dl.acm.org/doi/10.1145/3120459.3120476> doi: 10.1145/3120459.3120476

Ojo, A. O., Fawehinmi, O., & Yusliza, M. Y. (2021, March). Examining the Predictors of Resilience and Work Engagement during the COVID-19 Pandemic. *Sustainability*, 13(5), 2902. Retrieved 2022-04-15, from <https://www.mdpi.com/2071-1050/13/5/2902> doi: 10.3390/su13052902

Ozkaya, I. (2021, September). The Future of Software Engineering Work. *IEEE Software*, 38(5), 3–6. Retrieved 2022-04-08, from <https://ieeexplore.ieee.org/document/9520331/> doi: 10.1109/MS.2021.3089729

Ralph, P., Baltés, S., Adisaputri, G., Torkar, R., Kovalenko, V., Kalinowski, M., ... Alkadhi, R. (2020, November). Pandemic programming: How COVID-19 affects software developers and how their organizations can help. *Empirical Software Engineering*, 25(6),

4927–4961. Retrieved 2022-04-15, from <https://link.springer.com/10.1007/s10664-020-09875-y> doi: 10.1007/s10664-020-09875-y

Rodeghero, P., Zimmermann, T., Houck, B., & Ford, D. (2021, May). Please Turn Your Cameras on: Remote Onboarding of Software Developers During a Pandemic. In *2021 IEEE/ACM 43rd International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP)* (pp. 41–50). Madrid, ES: IEEE. Retrieved 2022-05-02, from <https://ieeexplore.ieee.org/document/9402105/> doi: 10.1109/ICSE-SEIP52600.2021.00013

Russo, D., Hanel, P. H. P., & van Berkel, N. (2021). Understanding Developers Well-Being and Productivity: A Longitudinal Analysis of the COVID-19 Pandemic.. Retrieved 2022-04-15, from <https://arxiv.org/abs/2111.10349> (Publisher: arXiv Version Number: 1) doi: 10.48550/ARXIV.2111.10349

Saatçi, B., Rädle, R., Rintel, S., O’Hara, K., & Nylandsted Klokmose, C. (2019). Hybrid Meetings in the Modern Workplace: Stories of Success and Failure. In H. Nakanishi, H. Egi, I.-A. Chounta, H. Takada, S. Ichimura, & U. Hoppe (Eds.), *Collaboration Technologies and Social Computing* (Vol. 11677, pp. 45–61). Cham: Springer International Publishing. Retrieved 2022-04-08, from http://link.springer.com/10.1007/978-3-030-28011-6_4 (Series Title: Lecture Notes in Computer Science) doi: 10.1007/978-3-030-28011-6_4

Salas, E., Sims, D. E., & Burke, C. S. (2005, October). Is there a “Big Five” in Teamwork? *Small Group Research*, *36*(5), 555–599. Retrieved 2022-05-14, from <http://journals.sagepub.com/doi/10.1177/1046496405277134> doi: 10.1177/1046496405277134

Santos, R. E. d. S., & Ralph, P. (2022). A Grounded Theory of Coordination in Remote-First and Hybrid Software Teams.. Retrieved 2022-04-08, from <https://arxiv.org/abs/2202.10445> (Publisher: arXiv Version Number: 2) doi: 10.48550/ARXIV.2202.10445

Sharp, H., Rogers, Y., & Preece, J. (2019). *Interaction Design. Beyond human-computer interaction* (5th ed.). Wiley.

Smite, D., Mikalsen, M., Moe, N. B., Stray, V., & Klotins, E. (2021). From Collaboration to Solitude and Back: Remote Pair Programming During COVID-19. In

P. Gregory, C. Lassenius, X. Wang, & P. Kruchten (Eds.), *Agile Processes in Software Engineering and Extreme Programming* (Vol. 419, pp. 3–18). Cham: Springer International Publishing. Retrieved 2022-05-23, from https://link.springer.com/10.1007/978-3-030-78098-2_1 (Series Title: Lecture Notes in Business Information Processing) doi: 10.1007/978-3-030-78098-2_1

Smite, D., Moe, N. B., Klotins, E., & Gonzalez-Huerta, J. (2021). From Forced Working-From-Home to Working-From-Anywhere: Two Revolutions in Telework.. Retrieved 2022-05-22, from <https://arxiv.org/abs/2101.08315> (Publisher: arXiv Version Number: 2) doi: 10.48550/ARXIV.2101.08315

Smite, D., Tkalich, A., Moe, N. B., Papatheocharous, E., Klotins, E., & Buvik, M. P. (2022, April). Changes in perceived productivity of software engineers during COVID-19 pandemic: The voice of evidence. *Journal of Systems and Software*, 186, 111197. Retrieved 2022-04-08, from <https://linkinghub.elsevier.com/retrieve/pii/S0164121221002715> doi: 10.1016/j.jss.2021.111197

Sporsem, T., & Moe, N. B. (2022). Coordination Strategies When Working from Anywhere: A Case Study of Two Agile Teams.. Retrieved 2022-05-15, from <https://arxiv.org/abs/2204.03978> (Publisher: arXiv Version Number: 1) doi: 10.48550/ARXIV.2204.03978

Stol, K.-J., & Fitzgerald, B. (2018, July). The ABC of Software Engineering Research. *ACM Transactions on Software Engineering and Methodology*, 27(3), 1–51. Retrieved 2022-05-21, from <https://dl.acm.org/doi/10.1145/3241743> doi: 10.1145/3241743

Stoller. (2021, January). *Never Want To Go Back To The Office? Here's Where You Should Work*. Retrieved 2022-05-22, from <https://www.forbes.com/sites/kristinstoller/2021/01/31/never-want-to-go-back-to-the-office-heres-where-you-should-work/>

Stray, V., & Moe, N. B. (2020, December). Understanding coordination in global software engineering: A mixed-methods study on the use of meetings and Slack. *Journal of Systems and Software*, 170, 110717. Retrieved 2022-04-28, from <https://linkinghub.elsevier.com/retrieve/pii/S0164121220301564> doi: 10.1016/j.jss.2020.110717

Strode, D., Dingsøy, T., & Lindsjorn, Y. (2022, March). A teamwork effectiveness model for agile software development. *Empirical Software Engineering*, 27(2), 56. Retrieved 2022-04-18, from <https://link.springer.com/10.1007/s10664-021-10115-0> doi: 10.1007/s10664-021-10115-0

Wagner, S., & Ruhe, M. (2018). A Systematic Review of Productivity Factors in Software Development.. Retrieved 2022-04-18, from <https://arxiv.org/abs/1801.06475> (Publisher: arXiv Version Number: 1) doi: 10.48550/ARXIV.1801.06475

Yin, R. K. (2018). *Case study research and applications: design and methods* (Sixth edition ed.). Los Angeles: SAGE.

Appendix A

Seating area

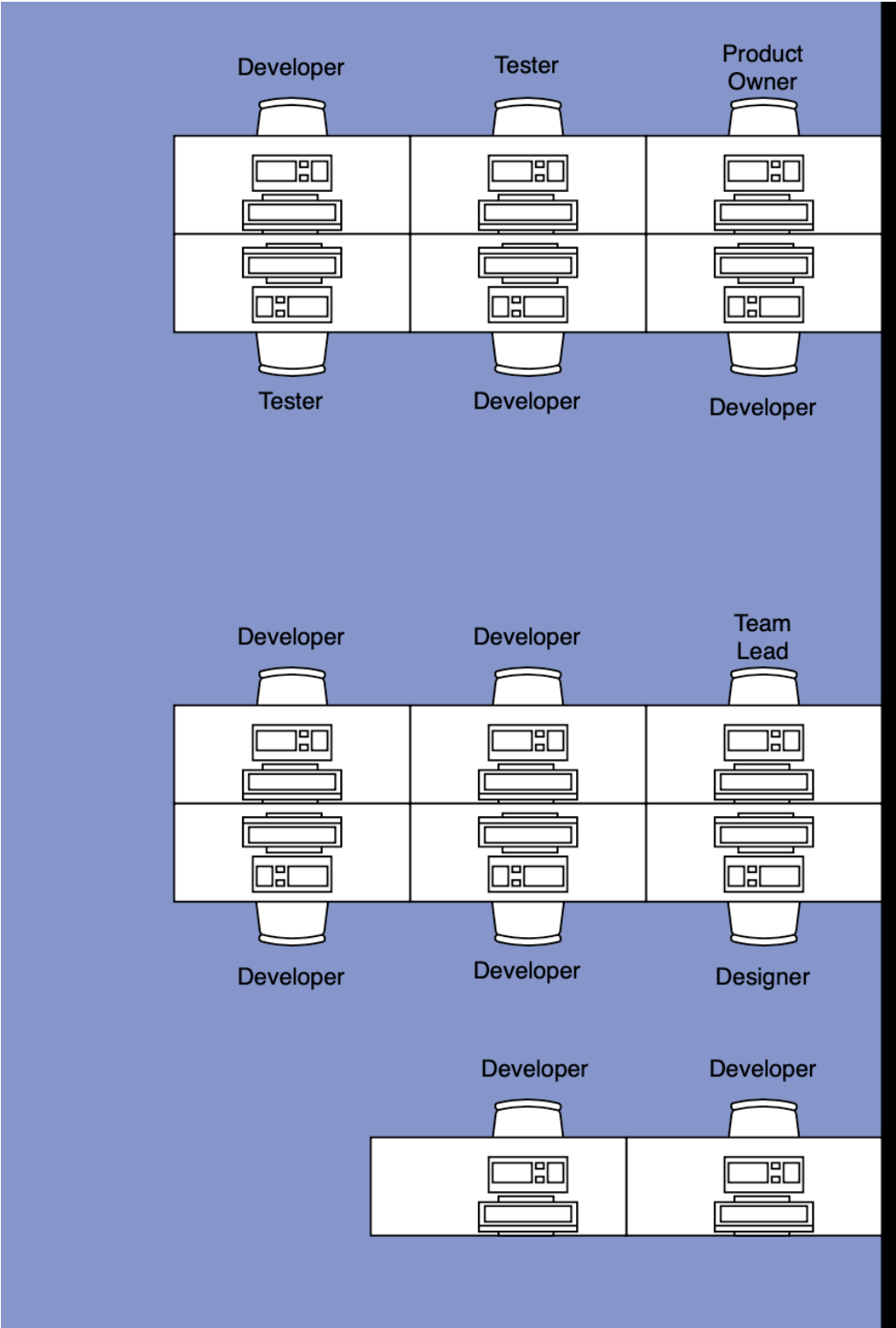


Figure A.1: Team Fixed seating area

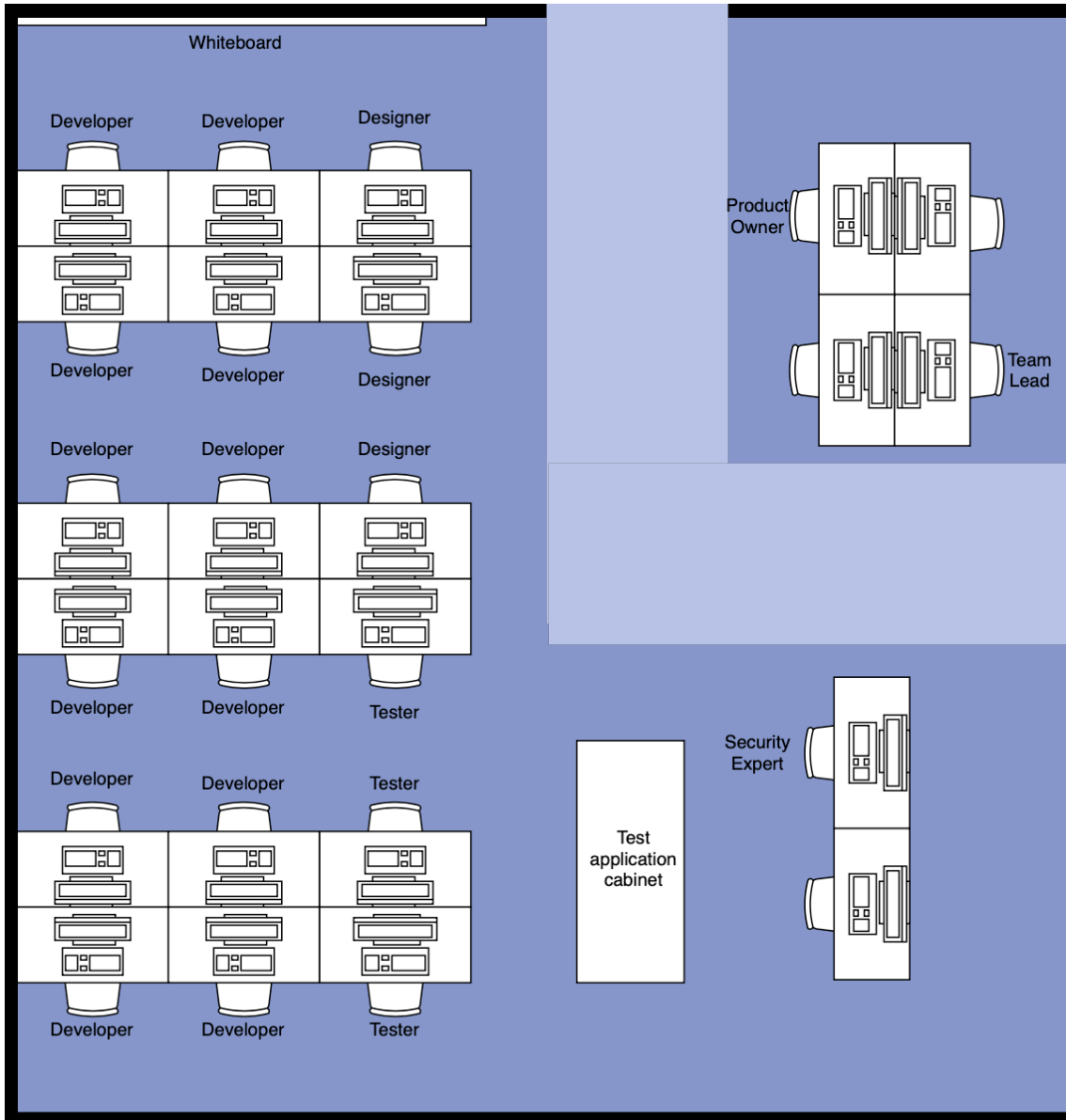


Figure A.2: Team Flex Seating Area

Appendix B

Interview guide

Interview guide

Introduction

- Thank you for participating
- Introduction of myself (name, background, goals for the interview)
- Estimated length of the interview
- Inform about voluntary participation and anonymity
- Get confirmation that it's okay to record

Background:

Can you start by introducing yourself and the work you do at BankDev?

- What is your position and role in the team
- How long have you worked in the company?
- How many years of experience do you have in your role?
- How long have you been a member of this team?

What does a typical work day look like for you?

- Is the day any different if you work from home / office?

When I say hybrid workday - what do you associate with those words?

Home office vs office:

How many days are you in the office on average during a week?

- What is the reason for this. How often do you want to be in the office and at home. Do you think you can do it the way you want? Why / why not.
- Does the type of task matter?

What kind of tasks do you prefer to work on at the office vs at home?

How much time do you spend traveling to and from the office?

What do you consider to be the advantages of being in the office compared to at home office?

- What are the disadvantages?
- Are there any artifacts in the office that you rely on to do your work?

Hybrid:

Can you explain how the work has changed from before Covid-19, to the period you had to work from home, to now when you can be back at the office?

- To newly hired: Do you feel that your work changes from when you have to work digitally to when you can be hybrid.

(What works well now in the team?

- What does not work in the team?)

What are your thoughts on "office days"? Can you elaborate?

- Does it work as intended?
- Are you all present?
- Are office days a success factor for hybrid? Elaborate.
- Task-dependent?
- Remember to make sure the interviewees give examples.

How do you experience the team's productivity **now** compared to during the home office period? Is hybrid more effective than digital?

- How about your productivity?

How does knowledge sharing work when you are hybrid?

- Easier / harder than physical / digital?
- Skewed or balanced distribution?
- Culture building

(How do you and the team work to achieve this?)

What do you think about offering incentives for people to come to the office?

Hvordan fungerer kommunikasjonen i teamet nå?

- Skille mellom de som er på kontoret og de hjemme?
- Er det f.eks. vanskeligere å få tak i folk som er på kontoret hvis man er hjemme?
- Lettere eller vanskeligere? Hyppigere/sjeldnere?
- Er det noen det er enklere å ta tak i nå og motsatt?

Hvordan er relasjonene i teamene nå som dere er hybride?

- Blir man inkludert i teamet på lik linje hvis man hovedsakelig deltar digitalt?

Meetings:

How many hours do you spend in meetings during a week?

- Could you send me a typical meeting calendar after the interview is finished.

What differences do you experience in meetings that are physical, hybrid and digital?

- Your own and others' participation, flow in conversation, etc.
- Which meetings do you think are easiest to actively participate in? Explain. (Digital / Hybrid / Physical)
- Why do you think so?
- Is it easier to do other distracting tasks when you participate digitally, while you pay more attention in physical meetings?

Do you ever experience being partially forgotten when you participate digitally in hybrid meetings?

- Exclusion (direct and indirect)
- Perhaps you exclude yourself?
- Equipment

What benefits do you see in hybrid meetings that digital and physical meetings do not have?

Which meetings do you think function **best** as hybrid? Number of meetings or specific types of meetings.

When I observed, it seemed to me that in digital meetings, many future and recurring meetings got scheduled. At physical meetings, on the other hand, new meetings were rarely planned; on the contrary, it was agreed to drop scheduled meetings.

- Is this familiar to you?
- What are your thoughts on this? Why do you think this is so?

Coordination:

Do you find that key people in the team and their attitude towards office / home office impact the rest of the team? Do the rest of the team "adapt" their attitude?

What is your experience when collaborating on a task with a colleague working from home when you are in the office or vice versa?

To what extent do you feel a sense of belonging to your team?

- Has this changed compared to before Covid, the home office period, and now?

Other:

What advantages do you think a hybrid team has?

What does the future look like to you?

- **What does the optimal workplace and balance look like for you?**

Which meetings are the most important to attend physically?

- 2-3 participants
- 4-10 participants
- 10+
- 25+
- Present the theory that physical participation is best for mainly physical and hybrid meetings. Fully digital meetings work best when everyone is digital. Exceptions: small meetings (2-3) and large meetings (25+). Do you experience the same thing?

Additional questions:

How do you keep track of what the others on your team are working on?

What works well between teams?

- What does not work between teams?
- Has the communication / coordination between teams changed?

Are you dependent on others to complete your tasks?

- What kind of tasks?
- Do you find it helpful to collaborate with others on more general matters?

End:

Is there anything we have yet to discuss that you would like to address?

Do you have any additional questions?

Who do you recommend I interview further?

[Thank you very much for the interview]

Interview guide - Team lead

Introduction

- Thank you for participating
- Introduction of myself (name, background, goals for the interview)
- Estimated length of the interview
- Inform about voluntary participation and anonymity
- Get confirmation that it's okay to record

Background:

Can you start by introducing yourself and the work you do at BankDev?

- What is your position and role in the team
- How long have you worked in the company?
- How many years of experience do you have in your role?
- How long have you been a member of this team?

What does a typical work day look like for you?

- Is the day any different if you work from home / office?

How do you keep track of what the others on your team are working on?

How would you describe their methodology? Self-organized agile?

Home office vs office:

How many days are you in the office on average during a week?

- What is the reason for this. How often do you want to be in the office and at home. Do you think you can do it the way you want? Why / why not.
- Does the type of task matter?

What kind of tasks do you prefer to work on at the office vs at home?

How much time do you spend traveling to and from the office?

What do you consider to be the advantages of being in the office compared to at home office?

- What are the disadvantages?
- Are there any artifacts in the office that you rely on to do your work?

Changes (functional):

Can you explain how the work has changed from before Covid-19, to the period you had to work from home, to now when you can be back at the office?

- To newly hired: Do you feel that your work changes from when you have to work digitally to when you can be hybrid.

(What works well now in the team?

- What does not work in the team?)

Meetings:

How many hours do you spend in meetings during a week?

- Could you send me a typical meeting calendar after the interview is finished.

What differences do you experience in meetings that are physical, hybrid and digital?

- Your own and others' participation, flow in conversation, etc.
- Which meetings do you think are easiest to actively participate in? Explain. (Digital / Hybrid / Physical)
- Why do you think so?
- Is it easier to do other distracting tasks when you participate digitally, while you pay more attention in physical meetings?

Do you ever experience being partially forgotten when you participate digitally in hybrid meetings?

- Exclusion (direct and indirect)
- Perhaps you exclude yourself?
- Equipment

What benefits do you see in hybrid meetings that digital and physical meetings do not have?

When I observed, it seemed to me that in digital meetings, many future and recurring meetings got scheduled. At physical meetings, on the other hand, new meetings were rarely planned; on the contrary, it was agreed to drop scheduled meetings.

- Is this familiar to you?
- What are your thoughts on this? Why do you think this is so?

From the Leader's perspective:

What are your thoughts on "office days"? Can you elaborate?

- Remember to make sure the interviewees give examples.
- Does it work as intended?
- Are you all present?
- Are office days a success factor for hybrid? Elaborate.

How does knowledge sharing work when you are hybrid?

- Easier / harder than physical / digital?
- Skewed or balanced distribution?
- How do you think a balanced distribution can be facilitated? Or should knowledge sharing be an incentive to come to the office?

How do you work to facilitate culture building?

- Are you able to include those who mainly sit at home?

To what extent do you feel a sense of belonging to your team?

- Has this changed compared to before Covid, the home office period, and now?

What do you hope your team's future looks like in terms of the workplace?

- How do you and the team work to achieve this?
- Do you see any obstacles?

How do you experience the team's productivity now compared to during the home office period?

- How about your productivity?

What advantages do you think a hybrid team has that other teams do not have?

Coordination:

Do you find that key people in the team and their attitude towards office / home office impact the rest of the team? Do the rest of the team "adapt" their attitude?

What is your experience when collaborating on a task with a colleague working from home when you are in the office or vice versa?

Other:

Which meetings are the most important to attend physically?

- 2-3 participants
- 4-10 participants
- 10+
- 25+
- Present the theory that physical participation is best for mainly physical and hybrid meetings. Fully digital meetings work best when everyone is digital. Exceptions: small meetings (2-3) and large meetings (25+). Do you experience the same thing?

Additional questions:

Have you noticed any differences in communication within the team?

- Easier or harder? More frequent / rarer?
- Is there anyone who is easier to contact now and vice versa?

How do you keep track of what other teams are working on?

- Is this easier or harder in the office?

What works well between teams?

- What does not work between teams?
- Has the communication / coordination between teams changed?

End:

Is there anything we have yet to discuss that you would like to address?

Do you have any additional questions?

Who do you recommend I interview further?

[Thank you very much for the interview]