One Size Does Not Fit All: How To Organize Hybrid Work In Agile Software Development?

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***Abstract*—*Background*: Hybrid work, which combines remote and office work, has become common after the Covid-19 pandemic. While many software companies embrace hybrid work to retain talent, this shift challenges agile software development, which values in-person collaboration. However, adaptation is central to agility, so agile companies are adjusting to their evolving needs, including the rise of hybrid work. *Aims*: This study explores how different types of companies organize hybrid work in agile software development to fit their unique organizational contexts. *Method*: We conducted a comparative multiple case study based on 39 semi-structured interviews with developers, product owners, specialists, and managers from two companies. We studied two agile software development units at the Finnish R&D site of Ericsson, a mature global telecommunications company, and one unit at Kempower, a young Finnish industrial company. *Results*: The study found that hybrid work guidelines, infrastructures, events, and communities in agile software development varied significantly across the units, yet employees in each unit generally reported satisfaction with their arrangements. The approaches were shaped by multiple factors, e.g., how team members were dispersed geographically, whether collaboration was mainly internal or included external partners, and the company's maturity. *Conclusions*: Our findings suggest that there is no one-size-fits-all approach for agile software development in a hybrid work environment. Instead, the successful adoption of hybrid work requires context awareness.**

***Index Terms*—agile software development, hybrid work, comparative multiple case study.**

I. Introduction

Hybrid work, a setting where *"some team members work mostly or completely from home, others mostly or completely from the traditional office, and others in some combination of the two"* [1], is not a new concept, but has gained popularity after Covid-19. Post-pandemic, many employees favor hybrid models for their flexibility, influencing job retention [2], [3]. To retain talent, many software companies seek to balance office work and remote work [4], [5], and according to several studies (e.g., [6]–[8]), hybrid work will become the long-term norm for software development.

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In agile software development (ASD), face-to-face communication is emphasized as the most effective means of conveying information [9]. Agile practices like sprint planning and retrospectives rely on frequent interaction and collaboration, traditionally supported by teams working together in the office, but hybrid work challenges this, requiring a balance between agility and flexibility [10], [11]. However, adaptation is central to agility, and agile companies must adapt to evolving needs, including the rise of hybrid work [12]. Companies can explore better ways to support ASD, for example, by developing new tools, using existing tools to enhance events and practices, or by introducing new practices that improve efficiency in hybrid work environments [11]. To support this experimentation, more research is needed to identify effective approaches for adapting ASD to hybrid work environments.

In this multiple case study, we compare the guidelines, infrastructures, events, and communities of two agile companies — the Finnish R&D site of Ericsson, a mature global telecommunications company, and Kempower, a young Finnish industrial company — to understand how they adapt to hybrid work in the current post-pandemic era, based on their unique settings and contexts. By comparing a mature global corporation and a young industrial firm, we aim to highlight how the organizational context influences hybrid work, and provide actionable recommendations for companies navigating or considering hybrid work adoption in ASD. We collected data through semi-structured interviews with 39 participants from the two companies to investigate our research question: *"How do different companies organize their guidelines, infrastructures, events, and communities for hybrid work within agile software development environments, considering their unique settings and contexts?"*.

The structure of this paper is as follows. In Section II, we review related work, while Section III outlines our research design. We present our findings in Section IV, discuss their implications in Section V, and address the study limitations in Section VI. Finally, Section VII provides concluding remarks and suggestions for future research.

II. Related Work

As highlighted in many studies, including [1], [5], [13]–[15], reliable research is essential for guiding companies as

they adapt their policies and practices to better accommodate hybrid work. Studies that explore the adaptation of ASD to hybrid work environments often provide high-level approaches and recommendations. We identified several key themes in prior literature on the topic, i.e., tools, meetings, policy flexibility, in-person events, location-based work, and office redesign, which are further described in Table I.

While the need for adaptation in hybrid work environments is emphasized in several of the themes described in Table I, as well as in other studies which discuss hybrid work in software development, such as [1], [4], [11], [16], few studies fully account for the importance of considering the unique organizational context and specific settings when selecting approaches for hybrid work in ASD. In addition, while the research interest in the intersectional area of hybrid work and ASD has grown after the Covid-19 pandemic, the number of studies remains limited, as discussed by Khanna et al. [17]. We aimed to address this gap, by conducting a comparative multiple case study in two companies, to examine how each company implements hybrid work approaches differently, based on their distinct characteristics and organizational contexts.

TABLE I
THEMES IDENTIFIED IN RELATED STUDIES

Theme	Description and references
Tools	Collaborative tools can facilitate effective communication, enhance collaboration, support task management, promote transparency, and keep teams aligned in hybrid work [10], [14], [20]–[24].
Meetings	How meetings can be organized for better efficiency in hybrid work [10], [14], [22], [23], [25], [26].
Policy flexibility	By allowing employees to choose remote or office work, and their own work hours, work-life balance can be improved and diverse needs accommodated [14], [15], [20]–[22].
In-person events	Holding regular in-person events like workshops and team-building activities can strengthen relationships and enhance collaboration in hybrid work [14], [15], [20]–[22].
Location-based work	Assigning remote days for focused tasks, and office days for collaboration can enhance productivity [10], [13], [15], [20], [21].
Office redesign	The importance of creating more functional spaces that support focus and collaboration in hybrid work environments, and equipping the office workspace appropriately [14], [15], [24].

III. Research Design

To examine how companies organize their guidelines, infrastructures, events, and communities for hybrid work in ASD, we conducted a comparative multiple case study, following the guidelines of Yin [18] and Runeson and Höst [19].

A. Description of Cases

We investigated two cases, the Finnish R&D site of Ericsson, a mature global telecommunications company, and Kempower, a young Finnish industrial company, both of which implement agile methodologies and have adopted hybrid work. As outlined by Yin [18], careful case selection is crucial in comparative multiple case studies, as the cases should produce contrasting outcomes for anticipatable reasons. Two different companies with distinct organizational contexts were therefore selected, allowing for a comparative analysis. An overview of the case description is provided in Table II.

The Finnish R&D site of Ericsson (hereafter referred to as Ericsson), employs about 700 professionals [27], adopted agile in 2009, and uses a Large-Scale Scrum (LeSS) inspired agile framework. Kempower, a Finnish industrial company also has around 700 employees [28], and adopted a Disciplined Agile Delivery (DAD) inspired framework in 2019. Globally, Ericsson requires employees to work from the office two days per week. The implementation of this requirement will be further discussed in the results (Section IV). Ericsson is a well-established and long-standing site in the company, whereas Kempower is a younger, fast-growing company, that began expanding rapidly during the pandemic. While the cases differ in maturity, growth pace, and use of agile frameworks, both employ hybrid work models.

In our investigation, we examined two units in Ericsson, referred to as Unit E1 and Unit E2, with 65 and 70 employees respectively, and one unit in Kempower with 43 employees, referred to as Unit K. Unit E1 consists of six agile teams, which mostly range from six to nine members, with one larger team of 13. Unit E2 has nine agile teams with four to seven members each. Unit K consists of five agile teams with six to eight members. All teams in Unit E1 use an adapted Scrum approach, while the teams in Unit E2 blend Scrum and Kanban, and both units run synchronized sprints. Similarly, three teams in Unit K use adapted Scrum, and two teams are transitioning from Kanban to Scrum. All teams within the three units follow a product owner (PO) led leadership model, with some closely collaborating teams sharing a PO. In Ericsson, a strategic decision was made to operate without dedicated Scrum masters. However, Unit E2 adopts a rotational coaching model, with developers taking turns as coaches every two weeks. In Unit K, two of the developers also work as part-time agile coaches for the teams.

Regarding communication and collaboration tools, both cases use Jira for task management, Confluence for documentation, and Microsoft (MS) Teams for synchronous and asynchronous communication. Kempower additionally uses Slack to facilitate informal, spontaneous interactions, while MS Teams is the primary tool for formal meetings and scheduling, due to its calendar integration.

Ericsson operates from a single main office in Finland, where both units are based, and most of its employees reside in the surrounding area. In Unit E1, half of the employees have more than 10 years of experience in the company, and the other half has less than five years. The software project in Unit E1 has been about two years under development. In Unit E2, most employees have been with the company for over 10 years, and the product development started over 20 years ago, evolving throughout the timeframe. In addition, the teams in Unit E2 collaborate closely with other sites of the global company, in

TABLE II
DESCRIPTION OF CASES

	Ericsson	Kempower
Founded	1918	2017
No. of employees	Around 700	Around 700
Industry	Product and network security, cloud, 5G and 6G research	Electric vehicle charging solutions
Agile adoption	2009	2019
Large-scale agile	Inspiration from LeSS	Inspiration from DAD
Special characteristic	Well established and long-standing	Young and fast-growing
Work model	Hybrid	Hybrid
No. of units studied	2 units: Unit E1 & Unit E2	1 unit: Unit K
No. of employees in unit	Unit E1: 65 Unit E2: 70	Unit K: 43
No. of teams in unit	Unit E1: 6 Unit E2: 9	Unit K: 5
Agile framework used by teams	Unit E1: Scrum Unit E2: Scrumban	Unit K: Scrum and Kanban
Agile roles	Unit E1: PO Unit E2: PO and rotating team coach role	Unit K: PO and part-time coaching by developers
Tools	Jira, Confluence, MS Teams	Jira, Confluence, MS Teams, Slack
Company distribution	One office in Finland, collaborates globally	Four offices in Finland (different cities)
Tenure at company	Mostly over 10 years	Mostly under 3 years

other countries. In contrast to Ericsson, Kempower operates multiple offices across four cities in Finland, with no team based entirely in one office. During the pandemic, Kempower expanded nationwide to attract top software talent, so most employees in Unit K have less than three years of tenure.

B. Data Collection

This study adopts a qualitative approach, using semi-structured interviews to gather data. A total of 39 employees participated voluntarily, all of whom provided written informed consent. This included 10 employees from Unit E1, 17 from Unit E2, and 12 from Unit K. The participants included developers, POs, specialists, and managers. The selection of participants was carried out in collaboration with case representatives to ensure diversity in roles, experience, and team affiliation. An overview of the roles and experience of the participants is provided in Table III, which highlights that Ericsson employees, particularly in Unit E2, generally had longer tenures than those in Unit K. Owing to confidentiality agreements with the cases, we are not permitted to disclose more detailed demographic information and are unable to publish the interview transcripts.

The interviews were conducted between November 2023 and February 2024, using our interview guide[1], which was developed with the help of case representatives. The semi-structured questions covered participants' backgrounds, roles, and experiences with ASD, as well as their perspectives on hybrid work. The key topics included daily routines, collaboration tools, knowledge-sharing, social interactions, and workspace infrastructure. All interviews were conducted remotely via MS Teams, except for one in-person interview at Kempower. Each session, which lasted about 60 minutes, involved one to three interviewers and was conducted in English. Participants were first briefed on the study's objectives, data usage, and confidentiality measures as per the consent form. With verbal permission, the interviews were then recorded and transcribed via MS Teams. Additionally, we visited both companies' premises to observe their office workspaces, providing valuable context for the interviews.

TABLE III
PARTICIPANT DEMOGRAPHICS

Unit	Role	No.	Tenure at company
Unit E1 (10)	Developer	6	4 months–16 years
	Product owner	1	2 years
	Specialist	2	4–21 years
	Manager	1	10 years
Unit E2 (17)	Developer	10	7–34 years
	Product owner	2	14–23 years
	Specialist	1	26 years
	Manager	4	13–38 years
Unit K (12)	Developer	6	10 months–3 years
	Product owner	2	4 months
	Specialist	2	1 year
	Manager	2	5 months–2 years

The interview data from Ericsson was utilized in [29], which focuses on organizing recurring meetings in hybrid work in a large-scale agile environment. Any similarities between the two studies are due to the shared data source.

C. Data Analysis

To analyze the data, codebook thematic analysis was employed, following the guidelines of Braun and Clarke [30]. The MS Teams generated transcriptions were first manually edited for accuracy. The analysis process began with a read-through of the interview transcripts by the first author to become familiar with the content. An initial codebook was then created in an Excel sheet, based on the study objective and the interview guide, which consisted of 45 primary codes. The codes were aligned with the research question and focused on the guidelines, infrastructures, events, and communities used in the three units. The following analysis was conducted iteratively by the first two authors using NVivo 14, with new codes being created and themes identified. The codebook was collaboratively reviewed and refined throughout the analysis by the first two authors, to ensure the reliability of the process. An example of the data coding is provided in the

[1]Supplementary materials: https://doi.org/10.6084/m9.figshare.28874573.v1

supplementary materials[1]. By the end of the analysis process, the final codebook contained 76 codes and 12 themes, which is also made available online[1]. The participant quotes used in this paper were cleaned, anonymized, and labeled with an ID (e.g., E1–P01, where E1 is the unit and P01 is the participant). We do not include participant roles when referencing quotes, as some roles are held by only one individual, so disclosing them would compromise confidentiality.

D. Validating Procedure

Shortly after the interviews, the main takeaways from the collected data were presented to each unit through separate feedback sessions. Each session consisted of a 25-minute presentation followed by a 10-minute Q&A segment. The feedback sessions were open to all members of the investigated units and conducted in a hybrid format via MS Teams. Participants were specifically invited and generally attended. Unit E1 had a total of 73 attendees; Unit E2 had 52 attendees; and Unit K had 27 attendees. According to Runeson and Höst [19] and Yin [18], having case subjects review preliminary results is an effective strategy to enhance the validity of a case study. Hence, these sessions helped confirm the validity of our findings, as no revisions or objections were raised. Additionally, the final version of this paper was reviewed and confirmed by case representatives.

IV. Results

In this section, we present our results. The findings reflect the guidelines, office infrastructure, events, and communities at the time of the interviews, which have since evolved, as we briefly discuss in the concluding remarks (Section VII).

A. Unit Guidelines and Team Office Co-presence

In both cases, the guidelines around work schedules define core hours in which employees must be available, i.e., between 9:00–15:00 in Ericsson, and between 9:00–14:00 in Kempower. The unit guidelines regarding work location are more varied, as is the office co-presence of the teams. We have defined several different types of guidelines for the location of employees in hybrid work, based on the findings in this study, and on a previous study [29]. Our definitions of the guidelines are shown in Fig. 1, while the exact implementation of each guideline is described in the following section.

Fixed guideline: In Unit E1, most employees are required to work from the office every Tuesday and Thursday, an office presence guideline we define as 'fixed' (see Fig. 1). One participant from Unit E1 explained the reasoning behind this decision: *"In previous units, there were endless debates about office attendance [...] To avoid that [in our unit], we decided early on to set fixed office days."* (E1–P01). The six teams in the unit are collocated, i.e., all members operate from the same physical location [31], and are present in the office every Tuesday and Thursday in accordance with the guidelines (see Fig. 1).

Semi-fixed guideline: Unit E2 offers more flexibility by adopting what we define as a 'semi-fixed' guideline (see Fig. 1) for office presence. Employees are allowed to choose their preferred office days, as long as they meet the requirement of two office days per week. Six of the teams in the unit are collocated, while three teams are partially dispersed, i.e., one or a few members are situated in different locations, compared to the majority who are based in the same physical location [32], as they each have one member who works entirely from home. While four teams are present at the office, the same two days every week, similar to Unit E1, the other five teams have more varied office co-presence, ranging from almost always, to once monthly, as can be seen in Fig. 1.

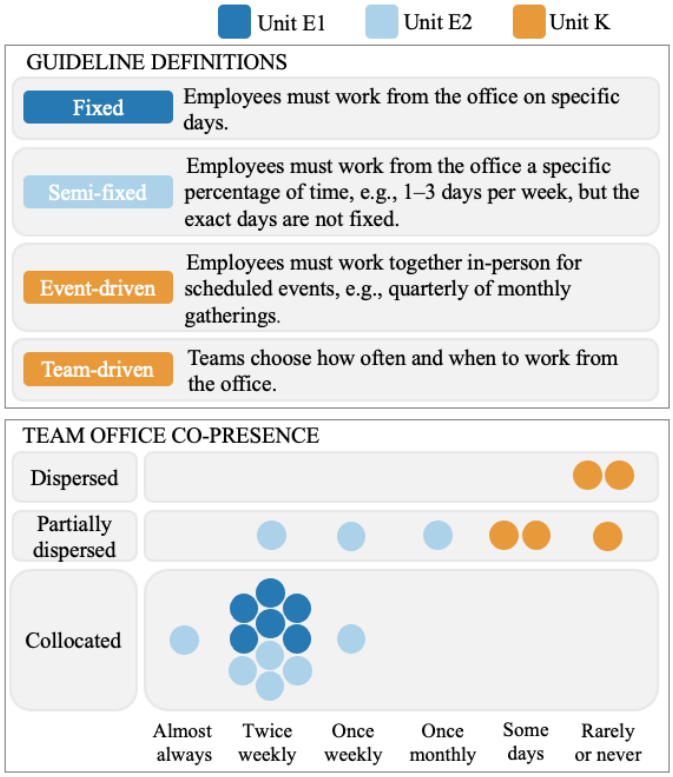

Fig. 1. Unit guidelines for the work location of employees and team office co-presence. Each circle represents one team.

Event-driven and team-driven guidelines: Kempower adopts two guidelines, which we define as 'event-driven' and 'team-driven' (see Fig. 1). Employees are expected to be present in-person for unit-level events, but otherwise, the teams should decide when and where to meet. As stated by one participant, *"We are required to be present for unit events, and then the teams define their own needs"* (K–P01). The reason behind the adopted guidelines is largely due to necessity, as employees are located in multiple locations and all of the teams are either partially dispersed, or dispersed (i.e., most or all members are distributed across various locations [33]).

Interestingly, in contrast to the teams in Ericsson, none of the teams in Kempower have made agreements about fixed office days. Two of the partially dispersed teams do however have members who are co-present at the same office some days every week, while the other members work from home (see

Fig. 1). In the remaining three teams collaboration is almost entirely virtual, as the members never, or very rarely, work from the same office at the same time. Some teams have also experimented with planned, but ad hoc, in-person team days. For example, one team organized an in-person agile workshop to improve cohesion and awareness of individual work styles, while another team held a Scrum hackathon to facilitate the transition from Kanban to Scrum.

Finding 1. The guidelines for office presence in the three units have four variations; fixed, semi-fixed, event-driven, and team-driven, which are shaped by the organizational context. The team office co-presence varies in accordance with the guidelines and the members' location, ranging from almost always to rarely or never.

B. Employee Satisfaction With Guidelines

Regarding the schedule guidelines, no participants expressed dissatisfaction with the core hours in any of the units. The actual schedules of participants were quite varied outside of the core hours, with some starting their work days for example at 7:00, and ending earlier, while others started at 9:00 and finished later, but this was not an issue for the participants: *"Some people work earlier and finish at 15:00, so there might be some questions for them, but it's not a problem cause they can be reached the next day."* (E1–07).

Overall, the participants are quite satisfied with the two different office presence guidelines in Ericsson, with 20 mentions of satisfaction in total (nine from Unit E1 and 11 from Unit E2). Ten participants specifically highlighted the balance the guidelines offer, as one explained, *"It's good to be home some days and nice to meet people on others. Two days at the office and three at home is a good balance."* (E1–P06). Although the guidelines are fixed, and semi-fixed, seven Ericsson participants noted that the guidelines provide a high degree of flexibility: *"It gives a lot of flexibility. When we need to come to the office, we can, but there are also many times when I need to focus and work on my own."* (E2–P11). Other key benefits of the guidelines discussed by the Ericsson participants included the opportunities for in-person collaboration (n=6), and socialization with colleagues (n=3), while still being able to carry out more focused work at home (n=3), which they felt optimized their productivity (n=4).

Regarding the employee satisfaction with the guidelines in Kempower, more than 50% of the participants (n=7) focused on the flexibility and freedom they entail, highlighting this as a positive aspect: *"It's working very well because we have the freedom to choose."* (K–P09). However, four participants did express a desire for more regular in-person team days, as one of them explained, *"It makes sense to have a [...] team day where you could work on the specific things you have on your plate and utilize that time with the team together."* (K–P02). Similarly, one person highlighted that they would like to work with their team in-person at the office more often: *"I would like to have more regular work days, just sitting close by teammates, but that requires more planning."* (K–P10).

Finding 2. Despite the variation in the guidelines, employees in the three units are satisfied with their units' respective guidelines, largely due to the balance of office and remote days (Units E1 and E2), and the flexibility to choose when and where to work (Units E2 and K). However, some employees in Unit K desire agreements at the team level to have more in-person team days and work days.

C. Office Infrastructure

Both Ericsson and Kempower utilize an open office layout design, have a variety of meeting spaces, and use a hot desking system where employees do not have assigned desks, and have to book a workstation when coming to the office. We discuss these aspects of the office infrastructure in the following section. Both cases also support ergonomic home offices by providing employees with fully equipped workstations, including adjustable desks, chairs, monitors, and peripherals. While the home offices are not the focus of this research, the participants from both cases were satisfied with the provided equipment and did not express any additional needs.

Meeting spaces: Larger meeting rooms, equipped with MS Teams Rooms technology [34] to support both in-person and virtual collaboration, are provided by both cases and require booking. In Ericsson, there are also smaller meeting rooms for two to four people, mainly equipped with monitors, and commonly used for virtual meetings, personal calls, or tasks that require privacy and concentration: *"We have different kinds of small meeting rooms where you can just go, without needing to book [...] if the meeting room is free you can just use it [...] This, I think works very well"* (E1–P08). Similarly, Kempower provides frameries (meeting pods) for up to four people, used for private discussions or focused work in a quieter setting. Kempower also offers phone booths for one or two people, suitable for private calls or to concentrate on heavy tasks. All small meeting rooms and the frameries are available on a "first come, first served" basis.

In Ericsson, a total of eight participants, four from Unit E1 and four from Unit E2, shared difficulties related to meeting spaces. In Unit E1, two participants noted that larger meeting rooms are sometimes fully booked, preventing them from continuing discussions beyond the scheduled time. Similarly, three participants from Unit E2 mentioned that the larger, well-equipped meeting rooms are insufficient and frequently occupied. One participant emphasized the importance of having enough meeting spaces, especially due to frequent collaboration with other sites. Even when employees are in the office, meetings are often hybrid, requiring a room where those attending in-person can gather and connect with remote colleagues at other locations: *"We need enough meeting rooms because the culture is remote, even if we go to the office, because we have teams in other sites [...] You shouldn't need to put heavy effort into finding a meeting room."* (E2–P17).

Furthermore, one participant expressed frustration with the technical setup, explaining *"The screens do not always work,*

it's easier to use individual screens instead of wasting time trying to make it work [...] It can also be tricky when people have different operating systems." (E1–P06), while two participants from Unit E2 mentioned that all meeting rooms should be modernized, equipped with better cameras and improved audio quality, to support remote collaboration with other sites. Regarding the smaller meeting rooms, one participant described them as uncomfortable and cramped, stating, *"They feel like phone booths. I need space around me when I work."* (E1–P02). In addition, two participants from Unit E1 suggested adding some pictures, flowers, or plastic plants to make them cozier and colorful.

When comparing the two units in Ericsson, the participants in Unit E1 placed more emphasis on smaller meeting rooms, often used for virtual meetings, personal calls, and focused work, as more employees are present in the office simultaneously. In contrast, the participants in Unit E2 showed a greater need for larger meeting rooms in both quality and quantity to support hybrid meetings with a large number of attendees at the office and in other sites.

Similar to Ericsson, four participants from Unit K expressed concerns about the insufficient availability of meeting rooms, including larger rooms and frameries. One participant explained, *"Meeting spaces have been the bottleneck, as there's a limited number of meeting rooms."* (K–P01). One other participant explained further that the limited availability of appropriate meeting spaces affects how people plan their office days, stating, *"If there are only two or three people in the office, they might join meetings from their desks [...] Some people might even choose to stay home because there aren't enough spaces, either ad hoc meeting rooms or the larger ones that require booking."* (K–P04). Four participants did state they sometimes join meetings from their desks, if they are the only meeting attendee who is working from the office.

While the meeting rooms were described as well equipped in Kempower, as a participant shared, *"Meeting rooms! That's one thing indeed. The meeting rooms in the offices are well equipped."* (K–P12), the shortage is especially challenging, as team members are spread across different offices and thus rely on hybrid and virtual meetings, and available spaces to hold them.

Finding 3. Hybrid work requires numerous well-equipped meeting rooms, both when a large number of employees are at the office, as they need spaces for discussion, and when less employees are at the office, because spaces are needed for hybrid meetings. Comfortable, small meeting spaces are especially needed for the teams in Unit E1, as they have higher office co-presence, and use the small rooms more frequently for individual work.

Workstations: In Ericsson, six participants expressed frustration with the hot desking system, highlighting the inconvenience at both the individual and team level. At the individual level, the inconvenience of not being able to leave personal belongings added extra effort when coming to the office, causing frustration: *"the laptop, keyboard, and mouse, that we have to carry with us when we come to the office [...] Hopefully that's going to change."* (E2–P14). One participant even suggested scheduling office days consecutively to reduce the frustration caused by the hot desking system, explaining that back-to-back office days make it easier to use the same desk and leave belongings in place overnight.

At the team level, the difficulty of finding seats near team members was discussed by the participants: *"We try to sit together, but booking flex seating through the application is required. If you're late, you won't find a seat next to your team."* (E1–P09). In line with this sentiment, one person suggested having a closed team area for discussions and focused work: *"Teams should have their own team room where they can have some debates or brainstorming. On the other hand, they can concentrate and not to be disturbed."* (E2–P06).

In contrast, in Kempower, no frustration with the hot desking system was expressed by the participants. Since employees are spread across multiple locations and a few team members are present at the same office at the same time, there is less need for everyone present to sit together. Hot desking was in fact seen as beneficial for accommodating visiting colleagues from other cities: *"[Hot desking] is useful because we have a lot of members from different cities [...] If team members who aren't based in this office come, it's easy to adjust and sit next to them."* (K–P10).

In addition, the hot desking policy in Kempower states that permanent seats will be assigned to employees who work from the office four or five days a week, to accommodate their consistent presence, which was seen as positive. As one participant explained, *"I do tend to sit in the same spot. We're creatures of habit. It can be hard to fully embrace the concept of hot desking, when you're used to a particular chair or lighting."* (K–P10).

Finding 4. For the teams who are often co-present at the office, hot desking caused personal and team inconvenience, leading to frustration. For teams who are co-present at the office less often, hot desking is practical and even beneficial, as is assigning fixed workstations for individual employees who are frequently at the office.

D. Events

All of the units hold some regular events, tailored to their specific context, which we describe individually in the following section.

Sprint review: At the end of each two-week sprint, Unit E1 holds a sprint review. During the review, product managers present the achievements of the previous sprint, showcase completed work, and outline goals for the upcoming sprint. The event is held virtually on Mondays, one of the designated remote workdays, because according to the experience of participants, the virtual format is more effective for larger presentations: *"We conduct it virtually because presentations are more effective in virtual settings than in-person."* (E1–P01).

Unit increment change and retrospective: At the end of each increment, which spans across five sprints, Unit E1 hosts a full day in-person event, which is also referred to as a unit day. The event begins with an increment change session, where product managers recap the achievements of the past increment and provide updates from product management, offering guidance on future focal points. This is followed by an increment retrospective, where the teams collectively reflect on the previous increment, and engage in focus group discussions to come up with actions for improving their work process. The participants were satisfied with the event and the format, with three mentioning that they especially valued the retrospective component: *"They're important because they have retrospectives on those days. We go through what was learned in the increment."* (E1–P05).

Sprint change: In Unit E2, each two-week sprint culminates with a virtual sprint change event, held on Wednesdays. The event starts with product knowledge sharing in plenum, continues with summaries from team coaches, and ends with team breakout sessions for sprint planning. A shared Confluence template is used to guide discussions on past accomplishments, upcoming plans, and key learnings, with team coaches responsible for documentation and presentation during the event. The sprint change is held virtually in this unit, to accommodate cross-site collaboration: *"It's virtual because in sprint change [events], multiple sites participate."* (E2–P08). Overall, participants were satisfied with the event and the format. Two participants especially appreciated the sprint change event because of the product-related knowledge sharing that took place: *"It's good because we are still delivering to the same product and release. We hear news about the release, and also what other teams are working on."* (E2–P14).

Information sharing: Every other week, on Fridays, the project management team in Unit E2 hosts a 30-minute hybrid information sharing session. The event follows a fixed two-part agenda. The first part consists of an appreciation segment, product and business updates, and customer insights, while the second part focuses on dynamic discussions, such as social events and tech talks. Although management sets the overall agenda, individual speakers also present specific topics, ensuring effective knowledge dissemination. The event is held in a hybrid format to ensure that all employees have the opportunity to attend, regardless of their location, which works especially well considering that it is held at the end of the work week: *"If you're not at the office, you're just going to join from home. It's Friday."* (E2–P08).

Unit day: Similar to Unit E1, Unit K organizes a full day in-person event every six weeks, known as unit day, for all employees. The event includes workshops, strategic discussions, hands-on demos, new colleague introductions, social activities, and a segment for appreciation. The unit day event serves multiple purposes: to share information about the broader product vision, build familiarity between teams through cross-team workshops, and encourage informal discussions that support social interaction and relationship-building between employees.

The in-person format of the event provides a valuable opportunity for employees to build relationships and socialize with colleagues they might not otherwise meet with on a day-to-day basis, which in turn makes it easier to cooperate virtually: *"Physical presence at these unit days ensures that employees meet in person, engage in off-topic and personal conversations, and build trust. This shared culture and trust make it much easier to cooperate virtually."* (K–P01). Eight participants from Unit K expressed positive views about unit days, highlighting their value for fostering in-person interaction among their colleagues: *"People from all over Finland come to one place [...] we can talk in person, not only on the product-related things but also discussing what's in their minds."* (K–P11).

Finding 5. A virtual event format is most effective for events with presentations, like the sprint review, and is necessary to accommodate cross-site collaboration in the sprint change event. In-person events, like the unit days, are most beneficial for discussions and socializing. Organizing the information sharing event in a hybrid format ensures equal attendance opportunities for all employees.

E. Communities

Three units across our cases organize different types of communities of practice (CoPs), which we discuss in the following section.

Closed CoPs: In Unit E1, closed CoPs are organized for employees with specific roles, e.g., architects, testers, designers, or security leads, who engage in these communities, in addition to their core team duties. Each closed CoP holds meetings based on need, weekly or biweekly, either virtual or in-person. However, a hybrid format is always maintained to accommodate those who are unable to attend in-person. The topics of discussion vary, but the agenda is always distributed in advance to ensure participants are well-prepared. One participant emphasized the experience sharing that takes place, stating *"[Closed CoPs'] members have their home team, but they also operate in this community to share experiences. The intent is that each member acts as an ambassador, bringing best practices from the community back to their team."* (E1–P01). In Unit E2, closed CoPs are organized in a similar way to those in Unit E1, but are primarily conducted in either fully virtual or hybrid formats to accommodate participants from other sites.

Open CoPs: The open CoP in Unit E1 is an inclusive community for all employees to share experiences and exchange knowledge. As one participant explained, *"If a team comes up with a new solution or way of working, they can present it to the entire company [...] Mostly related to coding practices and streamlining other processes."* (E1–P09). Two slots are reserved for open CoP meetings, one in-person on Thursdays (office day) and one virtual on Fridays (remote day). The format is determined by the agenda, with discussion-based topics scheduled for in-person sessions on Thursdays

and presentation-focused topics held virtually on Fridays. As one participant explained, *"If you have a lot of discussions or brainstorming, it might be better to have that on an office day."* (E1–P02). Anyone can propose a topic and lead a session, and they are only held if topics are proposed.

In Unit E2, there are different types of open CoPs in which all employees can participate, each with different structures. The types include coaching, unit-specific, and product-related. Each open CoP has a reserved time slot, held weekly, bi-weekly, or even twice a week. These community gatherings are typically held virtually to support participation from global sites, and are often scheduled in the afternoon after the daily team meetings. Some are also held in the morning to accommodate different time zones, and therefore overlap with the daily, which makes attendance for some teams challenging, as discussed by four participants: *"It's on top of our daily [...] We are allowed to go there even though we have daily, but I have chosen to take the daily instead."* (E2–P05).

In both units, the open CoP sessions are recorded and presentations are shared afterward to ensure accessibility for those who cannot attend. Moreover, in Unit E2 the team coaches distribute the agenda for the open CoPs daily in advance, allowing individuals to decide whether to participate based on their interests. Three participants mentioned that there are so many open CoPs, so they only attend some of them: *"If it's an interesting topic or something useful, then I try to participate."* (E2–P15). If a topic is particularly relevant, coaches may suggest that the entire team, or at least one member, attend.

Aside from the challenges mentioned regarding the overlap of daily meetings and open CoPs in Unit E2, participants in both Ericsson units expressed generally positive views on the closed and open CoPs. The value of open CoPs for sharing knowledge and best practices across the organization was highlighted by the participants, as one stated, *"It's important for fostering collaboration, not just within small teams but across the entire company"* (E1–P08).

Guilds: Similar to the closed CoPs in Ericsson, guilds in Unit K are cross-team, role-based groups (e.g., architects, product managers, designers, testers, and coaches), that complement members' core responsibilities: *"We have guilds, which are cross-team collaboration groups, like the architects or agile coaches guild, that help keep teams aligned and connected across the unit."* (K–P04). Guild sessions are held weekly or biweekly, with flexible durations based on the agenda, and may be canceled if there are no discussion topics. All sessions are hybrid to support both in-person and virtual participation. The guild masters manage scheduling, documentation, and follow-ups via a dedicated Confluence page. Each guild also uses Slack channels for continuous, asynchronous communication and updates.

Similar to Ericsson, the participants in Unit K also expressed positive views about the guilds, and no one mentioned any downsides. The guilds function well as a dynamic platform for accomplishing tasks and enhancing practices within the various fields: *"We critique each other's work, offer help, and share ideas."* (K–P12). The guilds were also highlighted as particularly valuable for cross-team agile collaboration, as one participant states, *"I like this model [...] we have many people working on the same, large product. To stay agile, teams need to remain small, but we also need a way to communicate across teams."* (K–P10).

Finding 6. In hybrid work, communities provide valuable opportunities for sharing knowledge and experiences within specific groups, and fostering collaborations across a unit. The format for community sessions is largely based on the topic, with in-person sessions preferred for discussion and brainstorming, while hybrid and virtual sessions can accommodate all employees, including those located at other sites.

V. Discussion

In this section, we discuss our findings and their implications in connection with prior literature on hybrid work in ASD.

A. Implementing Guidelines for Hybrid Work

The guidelines for office presence in the three units have four variations, which we have defined as: fixed, semi-fixed, event-driven, and team-driven. While the guidelines vary, each unit implements what Conboy et al. [1] defines as a 'calendar-based approach', which is characterized by predetermined schedules in which employees are entitled to work remotely for a certain number of hours or days per week, or for specific weeks per month or year. Our findings also show that team office co-presence varies significantly, but is determined largely in accordance with both the guidelines and the location of team members.

Within Ericsson, Unit E1 implements a fixed two-day office presence guideline, which is similar to the guidelines discussed by Wang et al. [21] and Bablo et al. [22], who advocate setting specific office days for in-person collaboration. Unit E2 implements a semi-fixed guideline, allowing teams to choose their two office days, which works well for the unit, possibly because the product is more mature and employees have longer tenure. Kempower follows both an event-driven guideline, which is similar to one example described by Jackson et al. [35], of a company that supports remote work, yet recognizes the importance of in-person events, so they organize these events three times a year for their employees. In addition, Kempower also follows a team-driven guideline, and while some have held ad hoc in-person team gatherings, some employees expressed a desire for more in-person team and work days.

Although the office presence guidelines differ across cases and units, employees in the three units are satisfied with their units' respective guidelines. The balance of remote and office days was highlighted by the Ericsson participants, while the flexibility to choose when and where to work was highlighted by the participants in Unit E2 in Ericsson, and in Kempower. These findings show how different guidelines

can succeed when they align with collaboration needs and employee expectations.

B. Designing Office Infrastructure

The redesign of office spaces to better support hybrid work has been discussed in prior studies, e.g. by Neumann et al. [14], who advocate for investments in equipment, such as 360-degree microphones, high-quality cameras, and digital whiteboards. Similarly, Wang et al. [21] emphasize that well-equipped conferencing tools, hybrid collaboration software, and access to phone booths and varied meeting rooms are crucial not only for effective hybrid meetings but also for maintaining focus in open office settings. Our findings also support the need to redesign office infrastructure and invest in both the quality and quantity of meeting rooms. However, such efforts should extend beyond technology and infrastructure, incorporating deliberate planning to accommodate diverse modes of collaboration.

Hot desking has been recommended as one solution for underutilized office spaces in hybrid work environments [2]. Companies like Kempower, especially as they grow and evolve, can benefit from hot desking systems to optimize office space. With a workforce based on multiple locations, fewer team members are in the same office at the same time, allowing for more flexible use of available workstations. However, for companies where employees are often at the office at the same time, like Ericsson, assigning fixed desks or team areas may be more effective. This is supported by Moe et al. [4], who found that employees preferred fixed team zones because they gave each team a dedicated home zone. Similarly, Wang et al. [21] reported that teams with fixed office days aligned to sprint rhythms were assigned dedicated desks to support their presence.

C. Organizing Events

Bablo et al. [22] highlight that events focused on project vision enhance team commitment by fostering shared understanding. Similarly, all units in our study organized events to communicate product-related information, though their approaches varied. Our findings provide nuance to how such events can be structured to support shared understanding in hybrid environments. Both units in Ericsson require at least two office days per week and the teams follow synchronized sprints, but the events differ in structure. Unit E1 uses a fixed schedule with virtual sprint reviews and in-person unit days to reinforce vision and cohesion, while Unit E2 adopts a more flexible approach, adapting events such as sprint changes and information sharing to hybrid and virtual formats, supporting global collaboration and flexible participation. Kempower, meanwhile, has no fixed office days, as employees are based in multiple offices, but relies on periodic in-person unit events to share product updates and maintain team connection.

D. Building Communities

Building community when many employees are working from home can be a challenge for companies, as described by for instance Šmite et al. and Moe et al. [2], [4]. Similarly, the units in our study addressed these challenges by adapting their communities of practice to align with employees' office presence and collaboration patterns. In Kempower, all guild meetings are structured in a hybrid format, aligning with the unit's flexible office presence guideline. In contrast, Unit E1 in Ericsson follows a different approach. Since employees are in the office two days a week, open CoP meetings in Unit E1 are held either virtually or in-person, depending on the content, with in-person sessions preferred for discussion and brainstorming. Two slots are reserved for these meetings: one virtual on a remote day and one in-person on an office day. Topics are assigned to each slot based on their suitability for virtual or in-person format. However, in Unit E2, where collaboration with other sites is common, open CoPs meetings are conducted in a virtual format to include participants from different locations.

E. One Size Does Not Fit All

As discussed in the previous subsections, the guidelines, infrastructure, events, and communities for hybrid work in ASD environments varied across different cases and units, each tailored to their specific context and setting. These findings are supported by prior literature (e.g., [1], [11], [14]), which emphasize the need for adaptation in hybrid work environments. Thus, when organizing hybrid work, the one-size-fits-all approach is not optimized, and companies should tailor hybrid work arrangements to align with their unique operational needs and workforce dynamics.

Key takeaway: One size does not fit all in hybrid work. Hybrid work guidelines, infrastructures, events, and communities in ASD should be customized based on companies' unique settings.

Our recommendations for tailoring hybrid work in ASD environments, based on our findings, are presented below.

- Encourage teams experiment with organizing in-person days and gatherings, if they are not co-present at the office often.
- Involve employees in the design of office infrastructure, as beyond the meeting rooms and equipment needed for in-person, virtual, and hybrid meetings, consideration should be given to the diverse needs of employees in hybrid work. For example, fixed seating and team spaces for teams who are often co-present at the office may prove beneficial.
- Select the format of the events based on the intent of the event. Use virtual formats for presentation-driven and cross-site collaborative events, like sprint reviews and sprint change events; choose in-person formats for interactive and social events such as unit days; and adopt a hybrid format for events like information sharing, to ensure equal participation for all employees.
- Establish inclusive, cross-functional communities that are open to all employees, as this can significantly enhance

the sharing of product-related and unit-level information, especially in hybrid work environments where such details might otherwise be overlooked.

VI. Threats to Validity

In this section, we assess the validity threats of our case study according to Yin [18] and Runeson and Höst [19].

Construct Validity: In our study, construct validity was ensured through a comprehensive interview guide addressing guidelines, infrastructures, events, communities, and employee perceptions in the different hybrid work environments. The questions focused on individual work, team collaboration, tools used, and employees' views on workspaces. All participants were experienced in ASD and hybrid work, minimizing the risk of misinterpretation. Feedback sessions were held to confirm the findings' validity, with no objections or revisions raised. Additionally, the final version of this paper was reviewed and confirmed by case representatives.

External Validity: To enhance external validity, we conducted a comparative multiple case study using theoretical replication logic to capture both convergent and divergent patterns. Both cases use ASD in hybrid work environments but differ in organizational settings. While the findings are analytically generalizable to similar contexts, particularly ASD companies in the Nordic region adopting or transitioning to hybrid work, they may not apply to companies with different cultural, geographic, or organizational settings. The detailed case descriptions and inclusion of diverse roles support both transferability and broader insight for generalizability.

Reliability: For reliability, a standardized interview guide was used to ensure consistency across interviews. Multiple researchers were involved in data collection and the codebook was collaboratively refined throughout the process. To enhance transparency and support replication, both the interview guide and final codebook are made available online.

VII. Conclusions and Future Work

This study offers qualitative insights into how companies customize their guidelines, infrastructures, events, and communities in hybrid work within ASD environments, and how they vary based on their unique organizational contexts. A comparative multiple case study was conducted, with 39 semi-structured interviews involving developers, product owners, specialists, and managers. There were 27 participants from two units in Ericsson, and 12 participants from one unit in Kempower. The guidelines, infrastructure, events, and communities for hybrid work in ASD environments varied across different cases and units, each tailored to their specific context and setting. Successful adoption of hybrid work in ASD environments requires careful adaptation, not uniform solutions.

Our findings offer actionable guidance and recommendations for companies navigating hybrid work in ASD. When designing office presence policies in hybrid work, companies should consider workforce dispersion and collaboration needs. Hot desking helps optimize space for companies with dispersed and partially dispersed teams, whereas fixed desks and fixed team areas may better serve teams with aligned office co-presence. Offering fixed desks for frequent office-goers can also reduce friction. In office redesigns, team presence patterns matter. Prioritize meeting rooms for full-team attendance, and provide smaller, quiet spaces for individuals or small groups to collaborate, or join virtual meetings. For events aimed at knowledge sharing and community building, companies should align the format, i.e., virtual, in-person, or hybrid, with office presence of employees and the event goals, to maintain flexibility and accommodate remote participants.

These findings reflect early experiences with hybrid work after Covid-19 and are based on the context at the time of data collection. Since then, both case companies have continued to refine their guidelines and infrastructure. For example, the two units at Ericsson have shifted to three weekly office days and fixed team workstations, while Kempower has increased their focus on team days and gatherings. These developments highlight that hybrid work is still maturing and being actively shaped based on ongoing experiences.

For future research, longitudinal studies on hybrid work in ASD could reveal how guidelines, infrastructures, events, and communities evolve over time, especially as companies continue to experiment and refine their approaches. We also encourage future research to examine this topic in other regions, outside of the Nordic countries, for broader insight.

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