Hybrid Collaboration – Moving Beyond Purely Co-Located or Remote Collaboration

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Abstract. New collaborative practices and technologies increasingly blur the traditional boundaries between co-located and remote collaboration. Using technologies such as connected interactive whiteboards and mobile devices, team meetings are increasingly partially distributed with **co-located** and **remote** members. Collaboration tools such as Slack also invite users to transcend the dichotomy of **synchronous** and **asynchronous** team work. In a first attempt to frame this new kind of collaborative practices, Neumayr et al. (2018) have formulated their framework of "Hybrid Collaboration" to enable the description and analysis of current *hybrid collaboration* practices. Still, there is a considerable knowledge gap in the field of hybrid collaboration although it is daily common practice. This one-day workshop aims at bringing together researchers and practitioners working on empirical research methodologies and currently existing practical use cases of hybrid collaboration while ultimately striving for a high level of usability and UX in the tools we develop in the realm of either co-located or remote collaboration settings.

Workshop Themes

As exemplified by the popular time-space matrix of Johansen (1988), CSCW research has traditionally focused on different styles of group work and has

emphasized the distinction of either **co-located** or **remote** teams during either **synchronous** or **asynchronous** work. By isolating specific kinds of collaboration in our research, important advances could be made through formulating frameworks and models that described and analyzed important phenomena and also led to a deeper understanding of the nature of CSCW and substantial improvements of tool design. Just to name a few examples, Gutwin and Greenberg (1998) developed the notion of *workspace awareness*, later on, Gutwin and Greenberg (2002) coined the term *mixed-focus collaboration*, and O'Hara et al. (2011) presented the concept of *blended interaction spaces*, all of which are situated in the remote tradition. In the co-located realm, Tang et al. (2006) and Isenberg et al. (2012) developed their frameworks of *coupling styles*, and Scott et al. (2004) discovered the phenomenon of *territoriality*.

While greatly successful in describing and analyzing collaborative practices, this traditional approach also observes collaboration styles in isolation although they have recently been shown to be closely interwoven in real-world practice. Current collaborative practices, such as team meetings, often include simultaneous co-located and remote collaboration during phases of synchronous and asynchronous work. This is already reflected in the design of contemporary CSCW tools such as the software application Slack or the Microsoft Surface Hub device. They attempt to support and facilitate remote, co-located, and synchronous and asynchronous collaboration. To account for this intertwined nature of current collaborative practices, the term *Hybrid Collaboration* has recently been coined by Neumayr et al. (2018) and described along with a framework for its precise description and analysis.

As hybrid collaboration encompasses more complex and ubiquitous interaction among team members as well as their personal and shared devices regardless of the differences in time and space, new opportunities and challenges emerge for CSCW researchers in how to observe, analyze, evaluate, and prototype hybrid collaboration. Jordan (2009) mentioned the obscurity of borders between the real and virtual in hybrid spaces and underlined the need for conducting hybrid ethnography, which incorporates research in both virtual and physical spaces. In other words, as Prior and Miller (2012) also pointed out, while the rise of online and virtual platforms and tools paved the path for the development of new methods as well as discussions of virtual/online ethnography or webethnography, these approaches are valid only in observing the online-only communities and are not always applicable in analyzing both online and offline interactions around those platforms and tools within a group of people. Understanding and evaluating hybrid collaboration at a business setting today requires the triangulation of various qualitative and/or quantitative research methods, which could allow the researchers to make sense of the overall hybrid experiences of collaboration rather than reproducing the virtual/real dichotomy. Furthermore, as stated by Neumayr et al. (2018), the diversity of the tasks, settings and coupling styles in the real world workplaces of hybrid collaboration makes it hard for the researchers to design and conduct controlled experiments of possible scenarios.

The issues raised until here show that there are still many open questions resulting in a knowledge gap that entails a broad spectrum of hybrid collaboration topics. To address some of these aspects and besides the approach described by Neumayr et al. (2018) above, Saatçi and Klokmose (2018) discussed the methodological challenges of observing and analyzing hybrid meetings, which refer to video- and audio-based meetings with co-located and remote participants, in the business setting. The abundance of the participants and technical devices makes it difficult for the researchers to make sense of the hybrid collaboration and interaction at a hybrid meeting and requires more in-depth contextual data collection. Yet, today, companies are workplaces with highly confidential data and restricted time, which do not allow a far-reaching longitudinal study of the phenomenon. We believe that there is a strong need for a methodological discussion among researchers studying hybrid collaboration regarding the problems and possible solutions, strategies or attempts of studying new collaborative practices and developing new multi-disciplinary mixed methods.

A similar trend in this context is discussed as *physical-digital hybridity* by Lindtner et al. (2008). Here, the term hybridity is used to described that many physical and digital products have strong characteristics of the respective other domain. For example, Lindtner et al. (2008) describe "the interplay of collaborative practices across the physical environment of China's Internet cafes and the virtual game space of World of Warcraft". Introducing considerations and findings from the research of *physical-digital hybridity* into the domain of *hybrid collaboration and meetings* could hence proof beneficial because there are obvious similarities (e.g., the question how to ensure a rich observation of both physical and digital activities in a field study of hybrid meetings).

Thus, this workshop aims at bringing together researchers with expertise in CSCW scenarios including either remote collaboration or co-located settings to discuss possible common ground, how the findings of each field can benefit the other and find answers to the questions outlined above.

The topics dealt with in this workshop include but are not limited to:

- What are the opportunities and challenges of researching hybrid collaboration today?

- How can collaborative practices in hybrid meetings/events be studied in naturalistic environments?

- How can we prototype hybrid collaboration and conduct controlled experiments?

- Which established, alternative, or entirely novel research methods can help to tackle those challenges?

- How can we reach a shared conceptualization and understanding of hybrid collaboration, meetings and events? These concepts are often expressed through other similar terminologies such as remote, online, hybrid, or virtual

collaboration, meetings, and events in partially distributed teams, virtual teams, etc.

Workshop Activities and Goals

The workshop is planned not as a separate mini conference with conventional paper presentations, but as a mixture between short impulse presentations followed up by extensive discussion and dialog. For this purpose, an estimated number of 10 to 15 selected participants will team up to form small groups of three to four persons and work on current and future research agendas.

Goals

This full-day workshop aims at illuminating the intersections of co-located and remote collaboration research and mutually transferring results to the respective other field. There are notable examples of a successful transfer of findings from one area to the other, e.g., Tuddenham and Robinson (2009) who described phenomena for remote settings that were initially conceptualized for co-located collaboration, namely *territoriality* and *collaborative coupling styles*. Additionally, to further spur discussion, some aspects that are idiosyncratic to the aforementioned phenomena of Hybrid Collaboration and Hybrid Meetings will be suggested by the organizers based on their prior research (e.g., the difficulty to conduct field studies of hybrid meetings in naturalistic environments or how to establish sufficient workspace awareness in a hybrid collaboration setting). A first step will be a discussion of the state of the art of both areas. Relevant topics which will be discussed can address i) an understanding of current collaborative practices, ii) the technological challenges involved in their execution, and iii) possible concepts that can be embedded into the architecture of future collaborative systems in order to ensure a high usability.

Before the workshop

The call for papers will be distributed over the involved institution's mailing lists and social networks. Additionally, relevant research groups (CSCW, HCI, interaction design) will be addressed directly via personal invitations of acknowledged experts and their respective research groups.

Participants will be selected based on their position paper submissions (4 pages in length using the recent ACM SIGCHI Extended Abstracts format). The submissions will be reviewed by the workshop organizers and judged by their quality concerning relevance and potential to stimulate discussion at the workshop.

Accepted position papers will be distributed among the participants well before the workshop to allow a familiarization with each others' topics. In this process, participants are asked to reflect on the other submissions and bring questions with them.

At the workshop

A preliminary workshop schedule can be viewed in Table I. The workshop will span one day and start with short impulse presentations of the participants' position papers. After the lunch break, there will be a discussion reflecting on the different presentations and possible connections between the topics. This is used as preparation to facilitate associative thinking which is helpful for the identification of current and future research agendas. Next, one or two research agendas are assigned to small groups of three to four participants who further reflect on them based on their own experiences and try to formulate a common research aim. During the concluding consolidation session, the different research aims are discussed and rated based on their relevance. If possible, a common mission statement will close the workshop.

09.00 – 09.15	Welcome and Introduction
09.15 – 10.30	Impulse Presentations I
10.30 – 11.00	Coffee Break
11.00 – 12.30	Impulse Presentations II
12.30 – 13.30	Lunch Break
13.30 – 14.00	Discussion and Preparation
14.00 – 16.00	Small-Group Sessions
16.00 – 17.00	Consolidation and Wrap-up

Table I. Preliminary workshop schedule.

After the workshop

All accepted workshop papers along with additional material such as presentation slides, results and meaningful photographs or video material will be published on the workshop website. Workshop participants will be asked if they are interested in writing an article on the essential workshop results and backgrounds, which we plan to submit as a scientific journal article on current hybrid collaboration research agendas.

Backgrounds of Organizers

Thomas Neumayr is researcher at the University of Applied Sciences Upper Austria in Hagenberg and a PhD student at the Johannes Kepler University Linz. His thesis' topic is "Collaboration on the Brink of the Ubiquity Era" and his research interests include collaborative practices of smaller-sized teams, interaction design, personalization, and usability/UX evaluation. He holds a BA and MA in Communication and Knowledge Media from the University of Applied Sciences Upper Austria. Neumayr, along with two co-organizers of this workshop, Augstein and Jetter, recently received a best paper award at ACM CSCW 2018.

Banu Saatçi is a PhD student in the Department of Digital Design and Information Studies at Aarhus University, Denmark. She holds a background in Sociology and Science and Technology Studies (STS) and her research interests are hybrid and virtual meetings in the workplace, remote collaboration, user experience research and user-centered design. Her PhD research with the title "Shareable Dynamic Media in Hybrid Meetings" is co-funded by Aarhus University and Microsoft Research PhD Scholarship Programme in EMEA.

Mirjam Augstein is Professor for Personalized and Collaborative Systems at the University of Applied Sciences Upper Austria in Hagenberg. Her main research interests include adaptive systems and computer-supported cooperative work. Further, Mirjam is interested in User Experience and Interaction Design as well as novel User Interfaces.

She has recently coordinated several related research projects and organized several workshops in the area of HCI, e.g., the Workshop on Intelligent and Personalized Human-Computer Interaction series (associated with the HCI group of the German Computer Science Society) and is currently editing a book on Personalized HCI (to be published in 2019 by DeGruyter). Mirjam has been serving on the PC or as a reviewer at several top-tier ACM conferences in the area of HCI (e.g., CHI, ISS, ICMI, TEI or DIS).

Hans-Christian Jetter is Professor of User Experience and Interaction Design at the University of Applied Sciences Upper Austria in Hagenberg. As the head of the research group HIVE (Human Interfaces & Virtual Environments), he is leading a team of nine researchers and several research projects concerned with collaborative human-data interaction and how ubiquitous computing and information visualization can support group decision-making. Before his tenure as a professor, he was a research associate and postdoc at University College London, research visitor and intern at Microsoft Research Cambridge, and received his PhD from the University of Konstanz.

Clemens Nylandsted Klokmose is an associate professor in the Department of Digital Design and Information Studies at Aarhus University, Denmark. He received his Ph.D. in computer science in 2009 from Aarhus University. Before his tenure as an associate professor, he has been a postdoc at Laboratoire de Recherche en Informatique, Université Paris-Sud, a postdoc at computer science, Aarhus University and he has spent time in the industry as a software developer.

Clemens' main interest is the fundamentals of interactive computing, particularly to support and understand computing with multiple devices and multiple people. Many of his ideas are crystallized into the Webstrates platform (webstrates.net), which he leads the development of. He has received best paper awards at ACM UIST, ACM ISS and an honorable mention at ACM CHI. His research has been funded by the Carlsberg Foundation, Microsoft Research, and the Aarhus University Research Foundation.

Gabriele Anderst-Kotsis received her PhD (1995, honoured with the very prestigious Heinz Zemanek Preis PhD award) and the venia docendi in computer science (2000) from the University of Vienna. After visiting professor positions at the Business Schools in Vienna and Copenhagen, she accepted a position as full professor in computer science at Johannes Kepler University Linz where she has been since 2002. She is head of the Department of Telecooperation with a research focus in mobile computing, multimedia and hypermedia systems as well as cooperative and collaborative systems. Anderst-Kotsis is author of numerous publications in international conferences and journals and is co-editor of several books. She has successfully led several research projects, such as the EUfunded networks of Excellence CRUISE and EuroNGI/EuroFGI. She is also well known for her active engagement in organising international conferences, including the International Conference on Information Integration and Webbased Applications & Services (iiWAS) and the International Conference on Advances in Mobile Computing & Multimedia (MoMM). In 2014, Anderst-Kotsis has been recognized as ACM Distinguished Scientist for her scientific contributions.

Sean Rintel is a Researcher in the Human Experience & Design (HXD) group at Microsoft Research Cambridge (UK). His research covers technologized interaction across a range of contexts, such as video calling and video messaging in the enterprise and personal relationships, Skype as an accountable category, ambient audio technologies to support independent living, IRC openings and non-responses, social media in the workplace, crisis memes, error mascots, Internet culture, and cross-device interaction in video-mediated collaboration and slideware, membership categorisation analysis, and omnirelevance. He has been an Associate Chair for CHI, a Senior Editor for the Oxford Research Encyclopedia of Communication, and a former board member and Chair of Electronic Frontiers Australia.

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