Distributed Collaboration and Telework
in Organizations and Networks (DCTONs)

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Abstract

This virtual minitrack for HICSS-55 highlights the continued importance and growth of geographically distributed collaboration and telework in organizations and networks. The ongoing global COVID-19 pandemic has greatly accelerated this practice in most private, public, and non-profit organizations and reignited interest in studying this critically important area of research and practice. The minitrack explores several questions related to distributed collaboration and telework, using a wide variety of research methods and approaches.

1. Introduction

While geographically distributed collaboration has been the subject of academic research for decades, most of the world coping with the global COVID-19 pandemic has reignited interest in this critically important area of research and practice. Many organizations and networks have experienced a substantial increase in the amount of telework and technology-mediated collaboration they utilize. The pandemic has accelerated the organizational practices of employees and members collaborating across multiple spatial and temporal boundaries in complex configurations comprised of multi-team arrangements, complex dependency relationships, and multiple organizational boundaries. Sometimes referred to as telework, coordinating task work and teamwork over a web of communication and information sharing networks continues to serve as an important locus for research opportunities. In addition, the pandemic has accelerated practices of remote education, online shopping, virtual conferences, distributed social events, and many other unique adaptations to this historic period.

Research on distributed collaboration and telework in organizations and networks is necessarily multi-disciplinary. The implications are profound from every perspective – social, political, economic, technological, and environmental. For HICSS-55, we have forged a fast track publication opportunity with *Data & Policy* published by Cambridge University Press to explore these implications. *Data & Policy* is a peer-reviewed, open access journal dedicated to data science and governance.

2. Minitrack Topics and Themes

The topics in this minitrack include, but are not limited to the following research areas:

- Spatial and temporal separation and its effects on collaboration
- Coordination and collaboration across multiple boundaries
- Team knowledge networks
- Impacts and consequences of telework on organizational and network outcomes
- Cross-cultural impact on collaboration (e.g., language, perceptions of time, power distance, conflict)
- Project management styles and differences across cultures
- eLeadership
- Personality and its role in virtual teams
- Virtual team collaboration and innovation
- Emotion in virtual teams
- Relationship building in virtual teams
- Information sharing in virtual teams
- Collaboration and communication processes and tools
- Differences between academic and non-academic virtual teams
- Social Network Analysis, and methodological advances in network science and graph analytics
- Identifying multi-level influences on virtual teams, organizations, and networks
- The science of team science (distributed collaboration in scientific teams)

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Our call for papers yielded thirteen papers addressing several of these topics, many grounded in the global COVID-19 pandemic. After our peer review process, our HICSS-55 minitrack includes six of those papers. Collectively, these papers present research and practical lessons on the effective use of technology to support distributed collaboration and telework. They also present experiences from the individual and team level perspectives, both of which are essential to a comprehensive understanding of virtual collaborations.

In the following sections, we present a summary of the DCTONs minitrack papers to be presented during two virtual panels at HICSS-55. Our first panel of three papers focuses on knowledge networks, knowledge brokers, and acceptance of team-based technologies in global virtual teams. The second panel has papers grounded in the COVID-19 pandemic, along with a paper assessing AI-based design thinking in networks.

3. Paper 1: Team Knowledge Networks, Task Dependencies and Coordination; Preliminary Findings from software Teams

The first paper is a minitrack chair paper, which studies the increasing use of teams with fluid boundaries, with team members that work on multiple projects at a time. To understand how work is effectively coordinated in such complex organizations, this paper focuses on the role of a company's task dependency network. The paper integrates three research streams – coordination, team knowledge and social networks to conceptualize multiteam work as a large collaboration with members in multiple functional roles and areas of expertise, with complex task dependency relationships, operating as a coherent and well-coordinated knowledge network. Through this integration and empirical test of associated hypotheses with data from a European software company, this study illustrates how to represent multiple relationships in one complex multiplex network. This paper extends our understanding of how the various knowledge relationships and individual attribute differences influence the effective coordination in collaborative software development work. The study addresses the concepts of awareness and shared familiarity and how they affect coordination, while keeping a focus on illustrating the power of network analytics to gain nuanced insights into the drivers of effective coordination.

4. Paper 2: The Influence of Psychological Safety and Personality on Technology Acceptance of Team-Based Technology in Global Virtual Teams

The second paper in our minitrack focuses on collaboration platforms for teams, such as Slack. These platforms are increasingly used in virtual teams. Conventional wisdom suggests attitudes about adopting these types of platforms is primarily driven by their affordances. The project in this paper emerged from the premise that psychological safety and personality traits can also significantly influence attitudes related to technology adoption. This research of roughly 300 global virtual teams showed that psychological safety influences views of collaboration platforms in terms of performance expectancy, effort expectancy, and hedonic motivation. In addition, this research showed that personality traits influence views of collaboration platforms. These findings about psychological safety and personality traits suggest a team-development approach is an integral component of the technology adoption process. Recommendations for future research are provided.

4. Paper 3: Enabling Knowledge Broker Analysis through Actor Clusters in Organizational Structures in Enterprise Social Media

Our third paper presents how Knowledge brokers serve as facilitators of knowledge sharing. The researchers argue the extant literature calls for nuanced analyses of different organizational structures as the spaces in which knowledge brokers operate. In this study, their primary interest lies in formal, semiformal, and informal organizational network structures and in how knowledge brokers are positioned in them. The researchers outline a collaborative analysis method, with researchers from different disciplines working together in data sprints. The benefit of this process is that it enables analyzing large organizational networks with deep insights. Amplifying social network analysis with field knowledge offers a deeper understanding of the connections in the network. This paper describes the analysis process and proposes interdisciplinary data processing techniques. The researchers applied the proposed method using an empirical data set that includes intraorganizational social media interactions between employees in a global organization. The analysis transforms enterprise social media data into a network model of organizational social structure.

5. Paper 4: Prototyping a Conversational Agent for AI-Supported Ideation in Organizational Creativity Processes

Our fourth paper presents design guidelines (DGs) for the development and improvement of a virtual collaborator (VC) for Design Thinking (DT). Based on interviews in an *ex-ante* study, the researchers designed a first prototype of a VC. From an *ex-post* evaluation using focus group discussions, this study derives strengths, weaknesses, opportunities, and threats of the VC. Strengths of the VC are good structure, giving inspiration as well as pace and accuracy. Opportunities are to set level of detail, give a more humane representation, and linking search with other DT phases. Weaknesses of the approach are that the content is not always suitable for the VC; that communication may include one-sided communication, and the process may lack empathy. Threats are questionable search parameters and the narrow focus of search. The researchers then derived DGs for further improvement of the VC, addressing the weaknesses, threats, and ideas from participants.

6. Paper 5: Gender Heterogeneity in the Effect of Telework on labor Market Outcomes During the COVID-19 Pandemic

Our fifth paper is located squarely within the lockdown engendered by the COVID-19 pandemic. The study addresses the concept of teleworkability, which the researchers conceive of as the feasibility of telework and see this concept as important in determining whether workers can maintain productivity and keep their jobs. However, the impact of teleworkability is likely to be heterogeneous, varying by worker characteristics, such as gender and childcare constraints. This study examines the heterogeneous impact of teleworkability on labor market outcomes (including unemployment, work absence, and layoff). Using stay-at-home order as a measure of labor market disruption, we find that teleworkability offsets the increase in unemployment due to the disruption of COVID-19 by 20%, that in work absence by 28%, and that in layoff by 26%. Specifically, the positive effect of teleworkability is i) stronger for females than males; ii) stronger for females with kids than their male counterparts as well as those without kids. This study contributes to the emerging literature on gender inequality by underscoring the nuanced impact of teleworkability.

7. Paper 6: Telework as a Means of Organizational Identity Change: Investigating Japanese Collectivist Culture in an ICT Company

Our final paper was selected as our Best Paper nominee. It is grounded in the COVID-19 pandemic, and its authors study companies implementing telework to balance business continuity with employee safety. However, this study argues that telework was not a widespread phenomenon in Japan until recently. It asks: why is a geographically decentralized workstyle not as widespread in Japan as in other nations? In a previous study, based on samples collected from 529 Japanese companies, the researchers used statistical analyses and clarified that the communication style aligned with Japanese collectivism seriously hinders telework. The present study used qualitative analysis to investigate how the communication style associated with Japanese collectivist culture hinders the introduction of telework. Finally, the researchers concluded that if a non-Western cultural company introduces telework, it should remove the negative aspects of the communication style associated with collectivist culture to bring about organizational change that leads to a new organizational identity.

9. Towards a HICSS DCTONs Community

Finally, the roots of this minitrack lie in Global Virtual Teams (GVT). As our expansion of the minitrack a few years ago has demonstrated, there is great potential to stimulate the ongoing development of a robust, interdisciplinary HICSS community studying geographically distributed collaboration and telework in organizations and networks (DCTONs) from a variety of perspectives.

Given the increasing use of virtual teams and telework in organizations and networks in industry, academia, medicine, and civil society broadly, such a community that uses research to inform best practices would be invaluable. The DCTONs papers at this 55th HICSS represent important trends in this direction, which we believe will remain for many years to come.

It is a privilege to bring you these exciting papers and we look forward to having productive and stimulating discussions about current and future DCTONs issues.