

The Tension Between Expectations of Availability and the Reality of Availability in Hybrid Teams

A Reflection by a Hybrid Team of Academic Practitioners

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Abstract. The demands of the global world increasingly dictate that people travel in order to conduct work. Oftentimes, this means that team members are neither strictly here nor there. Teams such as these are hybrids, where members alternate between co-located and distributed contexts. The pervasive nature of information and communication technologies, however, continues to impose an expectation of availability on the team members even as they travel. In this paper, we take a reflexive research stance to inform our understanding of the complexities of accomplishing knowledge work within a hybrid team configuration. An illustrative case highlights issues and outcomes associated with member availability that arose during the writing of a research paper. Categorical reasons for member unavailability are identified and contrasted with the expectation of availability. We suggest that the issues and conflict we experienced may be traced to the ambiguous nature of the task and the early project phase requiring problem formulation.

1 Introduction

Advances in information and communication technology (ICT) have changed the way that teams collaborate. ICT enables work to be accomplished by virtual teams – teams that conduct work predominantly via computer-mediated communication (CMC) [1]. Thus, teams can be composed of members distributed across space and time.

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However, ICT has also impacted the way that co-located teams conduct work. While continuing to meet in the traditional face-to-face (FtF) manner, ICT allows members who share the same physical work location to also collaborate electronically. Arguably, there are few traditional teams that work strictly via FtF interaction. While there is a wealth of research focused on traditional teams, and a growing body of research focused on virtual teams [2-4], there is a need to understand the collaboration complexities of teams that straddle both domains, where both traditional FtF and virtual contexts prevail. We will refer to teams operating with this mixed configuration as hybrid teams.

Knowledge work involves “accessing data, using knowledge, employing mental models, and applying significant concentration and attention” [5]. In this paper, we begin with the premise that the efforts of conceptualizing and crafting a research manuscript constitute knowledge work. Informed by research on virtual teams and knowledge work, we take a reflexive research stance [6-8] to examine our experiences in working as a hybrid team to write a research paper.

This paper is organized as follows. Section 2 presents an account of knowledge work by a hybrid team writing a research paper (the authors of this paper). In section 3, a retrospective analysis of key issues relating to team member availability and unavailability are identified. Reflections on availability are discussed in section 4, informed by the literature on virtual teams and knowledge work. The paper culminates with conclusions in section 5.

2 An Account of Knowledge Work in a Hybrid Team

We use our own experiences, in a manner similar to Mathiassen and Puroo [8] and Naur [6], drawing on the account of a specific case that consists of a series of episodes. A retrospective analysis of the case follows along with a comparison of surface-level findings against those derived from prior research.

2.1 Illustrative Case

We describe the activities of a hybrid team and individual members of the team as it engaged in the process of formulating a research paper. Table 1 includes a timeline of the key events.

The four authors of this paper, whom we will refer to as A, B, C and D, were colleagues in the same department in the same university in the same country (U.S.). They decided to collaborate on a research paper for an upcoming conference. While A, B, and C had worked together for many months and were an established team, D was a relative newcomer to the group. However, over the course of the three months prior to this undertaking, the four individuals had various face-to-face (FtF) meetings, ranging from the entire group to different combinations of triads and dyads, to discuss potential research activities. Additionally, all had exchanged numerous emails with one another. In short, the group had an established working rapport.

For this specific manuscript, the group met for an initial FtF meeting to brainstorm. After actively exchanging and discussing ideas, they agreed on a direction and core message of the paper. The topic for the manuscript would be at the intersection of global software development (GSD) and ubiquitous organizations. As they began to plan their work, it became evident that two members would be traveling during the time period leading up to the submission deadline. First, B would travel to Asia to attend a research conference, and before B returned, A would travel to Australia to give a keynote address at a research conference and to conduct field research.

Realizing that they would not be able to meet FtF very often before the deadline, the group developed an action plan and assigned responsibilities to members. By the close of the meeting, they felt good about their efforts; they had a productive meeting and were off to a good start on this project.

A, C and D remained co-located while B traveled to Asia. The three co-located members conducted electronic brainstorming, in an effort to include B, as the next step in the development of the paper. A drafted a rough outline of the paper and emailed it to the group, stating that A would reconnect with the group in early December (2 ½ weeks later). Several days later, just prior to B's return, B sent an email to the group with some modifications to the paper outline. This was the only communication from B during B's trip to Asia.

B returned a few days after A's departure. B and D had several impromptu FtF meetings, after which B, C, and D had a scheduled FtF meeting. In this meeting, new concerns and issues surfaced. The ensuing discussion resulted in a key revision of the paper's core message. B devised a high-level outline for the paper and D agreed to write an initial draft given the revised core message. Over the next two weeks, the draft went through four written iterations, as B and D took turns developing it. During this period, D notified the group, via email, of this change in direction. Neither A nor C responded (A was in Australia; C was co-located with B and D).

B continued to work on the paper and sent a second iteration of the revised core message during the Thanksgiving holiday break. At the end of the holiday weekend, A established contact with the group via email. However, neither C nor D responded. After the holiday break, D emailed the group, explaining that a family emergency was the reason for D's lack of contact. A group meeting was scheduled for later in the week. Meanwhile, C updated A on the group's progress during A's absence.

A few days later, A, B, and D had an impromptu hallway encounter where A expressed confusion over the change in the direction of the paper. Also, A was concerned as to whether they could meet the deadline for paper submission. While B and D were under the impression that the group had the next six weeks to work on the paper (submission deadline was mid January), A expressed availability over the next ten days and a desire to complete the paper before the end of the semester (mid-December).

Over the next two days, B and D sent out two more iterations of the revised core message. Later that week, the group scheduled its second FtF meeting, where all members were available to meet FtF. But, as luck would have it, B's child became ill, requiring participation in the meeting via a conference call.

Table 1. Timeline of key events

Date	Players	Key Events	Activity
10/30	All	FtF Kick-off Meeting	brainstorm ideas for paper; agree on core message of paper; availability of individual members discussed and order of authors determined
11/6	B	leaves for Asia	attends research conference
11/8	A	email to group	attaches outline of paper; will re-connect with group in early December
11/10	C & D	meeting	discuss paper; divide responsibilities for paper sections
11/11	B	email group from Asia	connection very slow; adds some content to A's outline
11/12	A	leaves for Australia	keynote speaker at research conference; conducts field research
11/15	B & D	FtF informal encounter	status update
11/15	C & D	FtF meeting	give feedback on each other's drafted sections
11/16	C & D	FtF meeting	give feedback on each other's drafted sections
11/19	B, C & D	FtF meeting	agree that core message 'not working'; agree to revise core message of paper; prepare outline for paper
11/22	D	email to group	attaches draft of revised core message; specifically draws to A's attention that core message has been revised; asks A to acknowledge
11/22	B & D	FtF informal encounter	B gives feedback to D; they discuss some ideas in-depth; they are in agreement on revised core message
11/25		Thanksgiving Holiday	
11/26	B	email to group	attaches 2nd iteration of revised core message
11/28	A	email to group	first contact since 11/11
11/29	D	email to group	D explains that was out of contact for several days due to family emergency
11/29	B & D	FtF informal encounter	group will hold off on next FtF meeting until D can catch up
11/30	A & C	FtF meeting	C updates A on status of paper
12/1	A, B & D	FtF informal encounter	A confused over core message; concerned whether group can meet deadline; A available to work on paper over next 10 days; B&D thought everyone available until paper deadline in mid January

Table 1 Continued: Timeline of key events

Date	Players	Key Events	Activity
12/2	D	email to group	attaches 3rd iteration of revised core message
12/3	B	email to group	attaches 4th iteration of revised core message
12/3	All	FtF and phone	Discuss draft of revised core message; revise work-plan
12/9	A	email to group	attaches 5th iteration of revised core message
12/9	D	email to group	Suggests need to address struggle/conflict
12/19	All	FtF meeting	Second FtF meeting of all four members; discuss paper

At the meeting, as D tried to explain the chain of events leading to the morphing of the paper's core message, A and C relayed ideas from their meeting earlier in the week. Clearly, the group was not 'on the same page'—*two different conceptualizations* were being developed. B had to disconnect from the conference call early, due to parenting needs. The climate became uneasy as the three FtF group members attempted to reach an understanding regarding the focus of the paper.

The meeting ended with a newly revised work-plan; A volunteered to take the lead in writing the next draft of the paper. Although the three-some tried to repair the meeting and end on a positive note, there was an unspoken distance between them as they left the meeting room. Six days later, A distributed the draft of the research paper via email and asked members for feedback, especially in terms of 'holes or issues that were not identified,' preferably before their scheduled FtF meeting the next day. Within several hours, D sent an email with the following message:

As I've been thinking about what has transpired since our initial FtF meeting, I believe we need to address the struggle/conflict we've experienced in reaching a shared understanding on the message of this paperWhile people traveled and found themselves unavailable (technology infrastructure not much help; mentally focusing on other work), others met FtF and also shared work electronically. The message of the paper developed, as deadlines required. However, when we all found ourselves back in the same location, we evidenced a division in direction.

Within moments, A responded electronically, asking D to revise the draft to incorporate these thoughts. By that evening, D distributed a modified draft of the research paper. B and C were not heard from during this exchange. The following day the four members gathered for what was the second meeting where all members were actually present. The atmosphere in the room was quite tense as the meeting began.

3 The Multi-faceted Nature of Availability and Unavailability

A surface analysis of the account above showed that the group experienced several key issues that exist in virtual teams, including member unavailability,

expectations of member availability, difficulty maintaining a shared understanding, and group conflict.

3.1 Unavailability

The group experienced difficulties associated with members' availability to work on the paper. Below, five reasons pertaining to unavailability are identified.

1. *ICT Unavailability*: While B was at a conference in Asia, the difficulty related to connecting with the group was traced to the slowness and intermittent nature of the Internet connection. From the conference, Internet access to people and websites within that country was superb; the problem was Internet access to the rest of the world due to legal and/or regulatory barriers.
2. *Social Unavailability*: A was a keynote speaker at the conference in Australia. After the speech, discussions with interested colleagues clearly took precedence over getting to the bank of computers for email. Thus, the availability of the technological infrastructure was hindered by the need to be socially present with conference attendees.
3. *Physical Unavailability*: Sometimes, even when the underlying technological infrastructure could be navigated, time differences across the globe made team members physically unavailable. For example, when B was overseas, significant time differences (close to eleven hours) made synchronous collaboration impossible. Furthermore, receipt of asynchronous communication was delayed, as emails sent from the U.S. were 'received' when B was asleep, and sent by B when the other team members were asleep.
4. *Mental Unavailability*: When in Australia, A found it necessary to focus on conducting field research and could not devote the mental energies needed to collaborate with the team during that time. Competing demands on time meant C could also not be mentally available to the group for extended periods. Thus, the problem of mental availability was unconstrained by location—distant team members, as well as co-located members, required periods of uninterrupted time.
5. *Emotional Unavailability*: When the group was once again co-located and attempted a FtF meeting, parenting duties and a sick child made B emotionally unavailable to the group. Furthermore, due to cultural observances, while half of the group celebrated a national (U.S.) holiday, they were emotionally unavailable as they took time off from work to spend with family and friends.

3.2 Expectations of Availability

Although members discussed their travel schedules at the initial FtF team meeting, no explicit mention was made regarding members' lack of availability.

There was an unspoken expectation that individuals would remain available to the group.

ICT Availability: Due to the pervasiveness of ICT, distant members were expected to remain in contact with the group. During both A and B's travels, co-located members emailed both and anticipated a response. Co-located members also used email to communicate with each other, even though they worked in very close proximity (some within 20 feet of each other), and expected a response.

Physical Availability: Expectations of the physical availability of co-located members were high. For example, A, C and D scheduled a FtF meeting while B was traveling, and B and D had a series of FtF meetings while A was traveling. Meetings of the entire group were schedule when all members were co-located.

Mental Availability: Due to their shared work experience, it was tacit knowledge that group members were working on other projects as well. However, no one made their work commitments explicit. The implicit expectation of other work commitments did not supersede the expectation that members would devote the mental energy required to remain aware of and responsive to developments in the group's paper. For example, when the paper's direction changed as a result of interaction between B and D, A was performing field research in Australia. D sent an email to A describing the changes, expecting that A would remain up-to-date as the paper developed.

Emotional Availability: When members were co-located, they were expected to be available to meet during normal business hours, within the usual confines of work schedules. However, B, who was unable to attend a critical FtF meeting due to an unforeseen family situation, was expected to participate anyway.

3.3 Consequences of Mismatch Between Availability and Unavailability

Difficulty maintaining a shared understanding: Even though the group established a direction for the paper at their initial meeting, they experienced difficulty maintaining a shared understanding. The core message of the paper evolved as different dyads and triads of co-located members worked on it. Over time, the core message fractured such that two conceptualizations were pursued in tandem.

Group conflict: As the weeks passed and the paper deadline approached, the elusiveness of developing a single core message led to increased levels of tension and conflict within the group. What began as a concerted effort by four motivated colleagues resulted in a less-than-satisfying group outcome.

4 Reflections Informed by Prior Research

Based on the key problems identified, in this section we reflect upon and interpret the group's experiences informed by the literature on virtual teams and knowledge work.

4.1 Awareness and Availability

It is commonly accepted that working in a virtual team is difficult [2-4]. Research suggests that establishing and maintaining an awareness of members is important to the success of virtual teams [10, 11]. Awareness refers to an understanding of others' activities and provides a context to interpret behavior [12, 13]. Weisband [10] describes five types of group awareness: *self awareness* is information about another's activity at a specified time; *activity awareness* is knowledge of others' project-related activities; *process awareness* is knowing what tasks fall within project phases; *social awareness* is knowledge about others outside the context of work; and *availability awareness* is knowing whether others are available to meet or participate in an activity. To date, activity awareness has received the most attention [14].

However, Panteli [15] draws attention to the importance of availability. She articulates three states of availability: present availability, absent unavailability, and silenced availability. Present availability refers to an individual's time availability and commitment during a project. Absent unavailability refers to an individual's temporary unavailability for project work due to non-work related reasons. Silenced availability refers to an individual keeping silent when participation is expected.

Awareness in virtual teams is conceptualized from the perspective of the group, usually in terms of how information regarding members pertains to the team's progress and performance. However, the illustrative case demonstrates the importance of viewing availability awareness from the perspective of individual members. ICT can have dual effects: the supportive and intrusive effects of anywhere/anytime communication, and knowledge sharing [16, 17]. Schwarz, et al. [18] use the term 'work boundary' to refer to 'the increased need but also increased difficulty to create, maintain, negotiate, and manage boundaries, both at work and between work' in virtual environments. They suggest that knowledge workers need to constantly negotiate their position within the sphere of work (how active, reachable, and available one wants to be at different times), in order to maintain an uninterrupted space to be able to effectively manage and balance between various work responsibilities [18]. In our case, during the trip to Australia, A set up boundaries to protect high priority work activities from interruptions from other activities. Such uninterrupted space is critical for the individual knowledge worker. First, it serves as a reflective space to enable the individual to be more concentrated on the priority tasks at hand. Second, such boundaries are constantly negotiated and reset to reflect the organizational needs and one's own needs.

Schwarz, et al. [18] point out that it is the shift in social and cultural expectations about speed in response and availability that can convert the technical potential of advanced ICT into social requirements. For example, when working under a deadline, interruptions are inevitable, necessary or even urgent. Therefore, sometimes there are conflicts between individual needs and social requirements.

4.2 Managing Competing Demands: the Expectation of Availability vs. the Need to Hide-out

The collaboration of knowledge workers is often characterized by the portion of individual work that team members conduct. While some part of this work may require interactions with others, other parts of the work may require uninterrupted time to think, reflect, and reconfigure. This time for reflection can become a casualty of expectations about electronic availability brought on by the availability of ICT. A team member may find herself constantly interrupted by email messages or phone calls requiring immediate responses, which can take her away from the reflection in which she was engaged. After responding to the interruption, she may not be able to get back into her earlier 'flow.' The solution to this predicament, for the knowledge worker, is to 'get away from it all.' This form of remoteness has been termed 'hiding out' [16] or 'islanding' [18] and necessitates cutting off interruptions from people, technology (cell phones, emails) and other potential disturbances.

4.3 Dialectic Progress in Hybrid Teams

Dialectic refers to the notion of conflict [19] among team members and the manner in which this conflict is resolved to reach a higher level of shared understanding that can facilitate progress towards the project objective. In the account provided, it was necessary that the group reach a common understanding regarding the direction and focus of the paper.

Typically, for co-located teams, a series of FtF meetings occurs in order to reach a shared understanding of the problem to be solved. In this manner, the problem is formulated and reformulated as new knowledge is shared and ideas explored [20]. For virtual teams that cannot engage in a series of FtF interactions, reaching such understanding can prove to be a difficult proposition. In practice, a series of FtF meetings is often impractical or impossible if team members are distributed across substantial distances, or, as in the case study group, if member availability does not permit. Purportedly, the next best solution is to have a single FtF kick-off meeting, where the group can establish enough common ground [21] to carry it forward after it is dispersed. The imperative of the initial meeting is not only to reach an agreed upon understanding and direction to guide the group's work, but also to deal with logistical concerns such as establishing group processes, member roles and responsibilities, and communication norms. For most groups, this is not readily achievable in a single meeting.

In theory, hybrid teams have the ability to meet regularly—at least more than once. However, availability issues can make it difficult for all members to meet. As highlighted by the case, although all members were available some of the time, rare was the case when all were available at the same time.

As our illustrative case shows, the members of the group found themselves in a conflict situation, even though they conducted an initial FtF meeting and seemingly reached a shared understanding on the direction of the paper. Furthermore, they

mapped out responsibilities and a work schedule with milestones. However, although they discussed their pending travels, they did not foresee the availability problems they would encounter partly because members found themselves unexpectedly without the technology to communicate with their group. This was partly due to non-ICT related availability reasons and partly due to different expectations concerning member availability. With the paper deadline fast approaching, the group needed to resolve their conflict situation. Although the four members had never worked together as a group, they had built up some social capital over the previous months. Their trust of, and mutual respect for, each other helped to mitigate the conflict. Electronic communication proved helpful in providing the distance and precision in words to surface the conflict (for example, D's email to the group) while a FtF meeting of all group members proved essential for working through differences.

5 Conclusions

If the group had adhered to the direction and core message of the paper as originally conceptualized in its kick-off FtF meeting, perhaps many of the problems stemming from availability could have been avoided. However, this is not a realistic expectation, particularly for groups engaged in the early, problem formulation stage of problem solving activities. For non-routine problems, problem formulation is an unstructured and ambiguous activity that consists of both divergent and convergent thought processes [22], and as such provides a rich opportunity for creativity [23-25].

Problem formulation *evolves over time* into a stable conceptualization. Due to these characteristics, knowledge work occurring at the front-end of problem solving can be quite challenging. Performing this knowledge work in a hybrid team, where members were not continually available, hindered the group's ability to maintain a shared understanding of the direction of the paper. Researchers suggest managerial strategies such as front loading projects with FtF kick-off meetings and scheduling intermittent face-to-face meetings in an effort to build and maintain a shared understanding among team members [26-28]. However, our experience indicates that even with established relationships that include mutual trust and respect, accomplishing ambiguous work in a hybrid team is quite difficult.

ICT provides the means to conduct work virtually. However, as our illustrative case indicates, a social structure that sanctions such communication still needs to be cultivated and maintained [28-32]. Advancements in technology will, no doubt, address issues such as ICT availability and the richness of electronic communication. However, our experience indicates that much of the promise of ICT to support ambiguous, unstructured knowledge work may remain largely unrealized. Even with increases in the availability of ICT, the *social, physical, mental, and emotional availability* of knowledge workers is, and may well remain, a dilemma. Add to this the conflict and its effective *resolution* that is prevalent in, and important to, realizing the creative benefits of teams working on unstructured problems, and the stumbling block resembles more of a boulder.

There is a real need to focus research efforts on the study of issues of availability, especially in terms of the softer, social aspects. Understanding these issues in terms of the complex reality of hybrid teams is a fruitful area for future research.

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