Why We Need Strategies for Working Remotely

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"You have no idea how depressing and fatiguing it is to live in the same house where you work."
U.S. President Chester A. Arthur, 1881-85

1 Introduction

Many scientific software teams have functioned as dispersed teams [1] and are familiar with a variety of tools commonly used by software teams to stay connected, such as email, messaging, Slack, Gitter, GitHub, Skype, MS Teams, Zoom, etc. Additionally, if you have traveled extensively, have colleagues at geographically distributed institutions, or had worked offsite, then you experienced virtual, or remote work at one time or another [2]. While for some, working remotely has been an everyday occurrence, the global COVID-19 pandemic [3] thrust many of us into a new normal that involves extended remote work and/or reduced exposure to others while in co-located spaces and practicing social distancing. Several factors operating simultaneously have contributed to perceptions that working remotely now (during COVID-19) seems qualitatively different from working remotely before the pandemic. They include: unplanned and imposed transitions to working from home, degraded communication channels with which to express oneself and/or accomplish shared goals, and the need to learn new skills as well as *unlearn old habits* that over time may have shaped our views of what it means to be productive. Since it is likely that a combination of working from home and social distancing while at worksites is here to stay for a while in some form or another, we need *strategies for working remotely*.

2 Unplanned and Imposed Transition

The transition from the office to home for many of us working remotely was unplanned and imposed. We did not ask for it, we did not plan for it, and we certainly could not control it. Yes, we face challenges including parenting while working remotely, transitioning our teams and operations to a fully virtual set-up, and virtually onboarding new team members [4]. However, while the imposition of these unplanned changes may pose great stress for many of us, we should also nevertheless consider that there are many essential staff members who are required to report to work in co-located spaces while practicing physical distancing and in some cases putting themselves in harm's way for a greater good. The challenges faced by essential workers who our colleagues and the need to move much of the workforce to working remotely impact future policies and ways our organizations will respond in the near- and long-term. As our organizations shift back to what they consider "normal" — which was most likely a hybrid of co-located and satellite team members who are remotely working, there will hopefully be increased awareness of the struggles faced by all. Unplanned and imposed remote work created a sea change that has changed the way we work now and will likely change the way we work in the future.

3 Degraded Communication Channels

The face-to-face communication channel is what communication scholars call stimulus rich—that is, we use all of our senses (auditory, visual, haptic, olfactory, and taste) to engage in verbal and nonverbal communication and are mostly unaware of it. Technology-mediated communication today, on the other hand (except for holographic and cross reality systems [XR] which offer greater possibility for immersion), is still rather stimulus poor. Since a greater number of us are working remotely, the overuse electronic communication for extended periods of time often degraded by poor connectivity literally overwhelms the human brain as it attempts to process and share information via screens instead of through unmediated verbal and nonverbal channels. For example, "Zoom fatigue" characterized by our constant gaze into the video camera is exhausting [5]. Managing expectations when working in environments characterised by degraded communication channels (mostly electronic) is the unfortunate reality of working remotely. The good news is that in the best cases productivity does not suffer [6], rather, it flourishes.

4 Unlearning Old Habits

While most, if not all of us are open to learning new skills, we also should be open to *unlearning* old habits that no longer work for us in a new situation. With regard to working remotely and developer productivity, unlearning a habit in this case refers to a rethinking a familiar way of working that may no longer meet the collective expectations of productivity while we are working through a pandemic. Even though some, if not

most of us, may believe we are rather skilled at working remotely, we should be open to ways that newcomers to the remote working experience will impact perceptions of productivity and the stability or comfort of our habits we once enjoyed. Very likely, we will find that our openness to new ways of working is rewarded with increased opportunities for innovation, productivity, and overall satisfaction.

5 Building Community

In response to the challenges identified above related to the COVID-19 pandemic and the influx of previously co-located teams to working remotely, the Exascale Computing Project's interoperable design of extreme-scale application software (IDEAS-ECP) team launched the panel series *Strategies for Working Remotely* [4]. To date, there have been four panels who have addressed advice from those who are experienced, parenting while working remotely, transitioning to virtual teams, and onboarding and mentoring [7]. These panels are designed to promote informal, cross-organizational dialog and community building. In a time of pandemic that has exacerbated the challenges expressed in previous sections, we increasingly need to *reach across* perceived boundaries to learn from each other, so that we can *move beyond* stand-alone silos to more connected multidisciplinary and multi-organizational configurations. No longer bound by physical walls, we can consider how working remotely allows us to *lead the way* toward functioning more as global "teams of teams."

"Team of Teams" is a concept about interoperating people that has been applied to high performance computing scientific software teams [1]. A "team of teams" as a network of coordinated teams who are interdependent and share trust, transparent communication, and an awareness of a common purpose [8]. Ideally, "teams of teams" (see Figure 1) are characterized by flat organizations facilitating several opportunities to share information across and within teams, allowing for more rapid decision making and more institutional flexibility. They interoperate through collaboration around an aligning narrative [8].

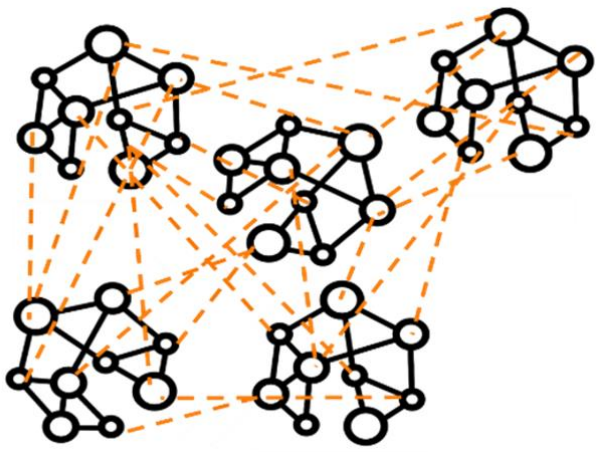

Figure 1. Notional diagram of Team of Teams [1].

6 Conclusions

In our daily roles as scientists, engineers, developers, and informal leaders of many sorts, we are all in positions to develop teams of teams. A panel series such as *Strategies for Working Remotely* [4] offers opportunities to scale and accelerate cross-institutional cooperation and collaboration in the community toward a culture of Teams of Teams. Each of us serves an important role in ensuring that we learn as a community from the COVID-19 pandemic. Anticipating the pandemic's lasting impact, we have an opportunity to shape and influence the future of scientific work by collectively developing strategies for working remotely.

References

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Author Biography

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