



The Role of Facilitator Networks in Cyberinfrastructure Adoption

Cara Cummings and Kerk Kee

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Introduction

Cyberinfrastructure (CI) is still a developing concept only introduced over a decade and a half ago. CI can be understood as “a complex system involving a diverse network of interdependent technologies, remote instruments, big datasets, dispersed experts, diverse institutions etc.”(Kee et al., 2016). CI technologies enable scientists (as users) across disciplines to collaborate, share, store, and manage big data more effectively within a virtual environment. However, due to its newness and complexity, for it to be adopted more effectively, users CI facilitators, such as Campus Champions and ACI-REF (Advanced Cyberinfrastructure – Research and Education Facilitators), are of vital importance in bridging the adoption gaps between new users and CI technologies.

Literature Review

New users often lack the capacity to adopt a complex innovation such as CI. McKinsey (2001) notes how capacity building offers organizations guidance and tools that enable them to grow and adopt innovations. Furthermore, Kitson et al (1998) explain, “Facilitation is a technique by which one person makes things easier for others. The term describes the type of support required to help people change their attitudes, habits, skills, ways of thinking, and working”. Applying to CI, for the technologies to be effectively adopted and utilized, facilitators can help build new users’ capacity to adopt CI. We wanted to find out more, and posed the research question (RQ): *How do facilitator networks such as Campus Champions and ACI-REF help facilitate access to the adoption and or implementation of CI?*

Methodology

This poster employed grounded theory approach (Corbin & Strauss, 1990) and analyzed 60 interviews with domain scientists (e.g. bioinformatics, computational chemistry, theoretical physics) and computational technologists. Participants for this study were CI personnel stationed across the United States (US). Interviews were conducted either through telephone call or in person at conferences. Following the interview guided by an established protocol, the authors performed multiple iterations of data analysis and literature integration, yielding preliminary findings in this poster.

Findings

Personal One-on-One Introductions

Facilitators often help new and potential users get acquainted to CI by giving them an introductory tour of the technologies. Such an introduction helps them explore how CI can benefit them in their work. An informant shared, “[G]iving [new users] a tour of the tools and how they’re used can spark their interest in using them or figuring out or thinking of ways that those tools can apply to their work” (Administrator, OK). Another informant emphasized the importance of meeting in person with new users, and improve the perception ease of adoption. He commented, “[As] research facilitators, whenever somebody asks us to meet, we meet. [We]... encourage new users to meet with us in person so that we can explain to them how things work here and what we can do to help. We’re trying to make it pretty easy for them - so they can try things” (Technologist, UT).

Group Training Workshops

Facilitators also provide workshop and training. An informant who works at a university with an established research computing center told us, “[T]he university offers courses [and] training. The university provides the infrastructure to allow or facilitate adoption. The organization supports the kinds of activities... [to] facilitate adoption”(Administrator, OH). Another informant further shared how some of the workshops are more show-and-tell, but it can also promote adoption. He said, “So, we’ve had software workshops where people get together and talk about their tools and products and development, how we use them and can contribute and develop them” (Atmospheric Scientist, ND). We learned from interviews that these software workshops can attract users who are interested in software development, not simply developers who are interested in new CI tools.

Community Conferences

In order to effectively facilitate CI adoption for new users, facilitators have to stay up to date on the trend. They often participate at conferences, as one informant explained, “We go to conference, we stay up to date. Because if we are not the cutting edge of what is available, how can we help or advance to our faculty and researchers where they should go and what they should be doing” (GIS Researcher, SC). Another informant concurred, “A lot of this [our knowledge] is from... conferences where the new technologies are discussed and introduced, and having a network that goes beyond just our center...so that we’re made aware... of what’s going on and what’s coming up in the future” (Chemist, UT).

Conclusion

Adhering to the principles of grounded theory, this project analyzed the ways in which facilitators work to promote CI, especially among new and potential users. As illustrated by the quotes, facilitators operate across the levels of personal, group, and community to help facilitate CI access and adoption. We argue that facilitators increase new users’ imaginative capacity to recognize how CI can help them with their work, and their technical capacity to use the technologies. Furthermore, while facilitators participate in CI community conferences to stay up to date on the trend, their interactions with each other essentially help build capacity of their entire CI facilitator network to bring information and expertise back to the users they work in their respective campuses. We conclude by urging more attention and support given to help facilitators better do their job, as they represent a critical link between new users and CI during adoption.

References

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