Pathways to Adopting Cyberinfrastructure (CI)

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Spring, 2017, Chapman University; Orange, California

Introduction

The purpose of this study is to create a website page that clearly articulates pathways to adopting cyberinfrastructure (CI). In short, CI is an extremely powerful, high performing, computational system (Kee, Cradduck, Blodgett, & Olwan, 2011). Undoubtedly, this technology is advanced. Thus, it is quite difficult for individuals to understand the concept of CI, let alone, consider the possibility of one day using it. That said, with this project, the OCT team sought to find a way in which CI can be communicated to others in a highly comprehensible manner. Ultimately, the comprehensible communication process is also one that will display CI in an extremely beneficial light, so that those who are interested in its capabilities, will adopt the technology.

Literature Review

The research carried out in this project is rooted in the **Diffusion of Innovations theory**, developed by Everett Rogers. The theory sets out to explain how and why certain, innovative concepts are spread throughout a social environment (Rogers, 2003). Subsequently, we found this theory appropriately applicable to our study's purpose because CI is both an innovative idea, and one that's diffusion process has not be examined. The theory led us to the concept of **opinion leadership**, which is, "the degree to which an individual is able informally to influence other individuals' attitudes or overt behavior in a desired way with relative frequency" (Rogers, 2003, p. 271). Those who are high in opinion leadership characteristics are more likely to convince someone to adopt a certain idea. Accordingly, opinion leadership characteristics became the foundation for the methodology. These characteristics include accessibility, socioeconomic status, and innovativeness (Rogers, 2003, p. 282-284).

Methodology

This study employed the Grounded Theory Approach (Corbin & Strauss, 1990) and analyzed 60 interviews conducted with members in the e-science community, such as directors, domain scientists, and principal investigators. Participants were from a diverse range of institutions across the United States. Following a semi-structured protocol, interviews were conducted by telephone. The co-authors performed multiple iterations of data analysis and literature integration, yielding preliminary findings presented in this poster.

The Networker's Pathway

Step 1: Identify as a networker

Qualities of a networker:
Interpersonal Skills
- You have the innate ability to communicate ideas effectively and efficiently, face-to-face, with others
Innovative - You are innovative, in that, you seek out and adopt new ideas before anyone else does

Step 2: Promote the idea of CI

Utilize formal meetings

Utilize Weak-Ties

Utilize social media platforms

Utilize conferences

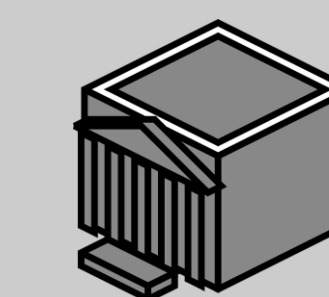## The Educator's Pathway

Step 1: Identify as an educator

Qualities of an educator:

You value **education** and **outreach**

You visit **research institutions** in order to promote CI

You attend multiple **conferences** a year

Step 2: Campus Visits

Communicate the idea of CI to **researchers** and **administrators** on the campus of institutions

The Administrator's Pathway

Step 1: Identify as an administrator

Qualities of an administrator:

You are in a **high position** at your organization

You have latched on to the idea of CI

You have the **financial resources** and the **space** needed for CI

Step 2: Connect with Networks and Educators

Attend CI conferences where you can talk, **one-on-one**, with networkers. Then, have the networker present at an administrative meeting.

Find an educator at research institutions that already have adopted CI.

Conclusion

This study theorized three different ways of adopting CI: The Networker's Pathway, The Educator's Pathway, and the Administrator's Pathway. The pathways serve a substantial and practical purpose of being a reference for those who want to know how to adopt CI into the workplace. In terms of future research, these pathways will be treated as a living organism, in that, the content will be in constant flux as new data is discovered. To that point, more data will be collected from a multitude of other interviews. This will hopefully create more pathways for many more people to reference. Last, **it must be noted that these pathways do not ensure CI adoption. Rather, from the qualitative data compiled, it can be deduced that the characteristics of an individual and the actions taken by the individual, illustrated in the pathways, have high correlation to successful CI adoption.**

References

Corbin, J.M., & Strauss, A. (1990). Ground theory research: Procedures, canons, and evaluative criteria. Qualitative sociology, 13(1), 3-21.
Rogers, E.M. (2003). *Diffusion of innovations.* New York: Free Press.
Kee, K., Cradduck, L., Blodgett, B., & Olwan, R. (2011). Cyberinfrastructure Inside Out: Definition and Influences Shaping Its Emergence, Development, and Implementation in the Early 21st Century. In D. Araya, Y. Breindl, & T. J. Houghton (Eds.), Nexus: New Intersections in Internet Research (pp. 157-189). New York: Peter Lang.