

Association for Information Systems

AIS Electronic Library (AISeL)

Proceedings of the 2011 AIS SIGED: IAIM
International Conference on Information
Systems Education and Research

SIGED: IAIM Conference

12-15-2011

TUTORIAL: A Tutorial On Organizational Participation In Open Communities.

Matt Germonprez

University of Wisconsin - Eau Claire, germonr@uwec.edu

Julie Kendall

Rutgers University, kendallj@crab.rutgers.edu

Ken Kendall

Rutgers University, kendallk@camden.rutgers.edu

Brian Warner

Linux Foundation, brian.warner@linuxfoundation.org

Follow this and additional works at: <https://aisel.aisnet.org/siged2011>

Recommended Citation

Germonprez, Matt; Kendall, Julie; Kendall, Ken; and Warner, Brian, "TUTORIAL: A Tutorial On Organizational Participation In Open Communities." (2011). *Proceedings of the 2011 AIS SIGED: IAIM International Conference on Information Systems Education and Research*. 41.

<https://aisel.aisnet.org/siged2011/41>

This material is brought to you by the SIGED: IAIM Conference at AIS Electronic Library (AISeL). It has been accepted for inclusion in Proceedings of the 2011 AIS SIGED: IAIM International Conference on Information Systems Education and Research by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

A TUTORIAL ON ORGANIZATIONAL PARTICIPATION IN OPEN COMMUNITIES

Matt Germonprez
University of Wisconsin - Eau Claire
germonr@uwec.edu

Julie Kendall
Rutgers University
kendallj@crab.rutgers.edu

Ken Kendall
Rutgers University
kendalk@camden.rutgers.edu

Brian Warner
Linux Foundation
brian.warner@linuxfoundation.org

Lars Mathiassen
Georgia State University
Lars.Mathiassen@eci.gsu.edu

Abstract:

With the growing use of crowd-sourcing, the interaction between self-forming, open communities and traditional organizations is increasing in importance. Existing research has focused on factors affecting an individual's level of participation in open sourced work and on the organization of open source efforts, but scant attention has been paid to the significant strategic organizational involvement in these endeavors (75% of Linux kernel contributions are from paid developers). As design and development evolves within open communities, there are an increasing number of ways that organizations may seek to balance 'contributions to' and 'differentiation from' an open community, for reasons of cost, resource management, and time to market. Open communities provide real options for organizations seeking to improve systems design, development, and support. This tutorial helps develop a solution to this practical problem in the creation of new pedagogical knowledge. Building on principles of public sharing, collaboration, and organizational learning, this tutorial focuses on why and how organizations participate with open communities. We explore how the open-source environment interacts and merges with traditional organizations. A two-by-two classification scheme is used to present the value chain of participation for organizations that differ in their degree of contributions to a common product and degree of downstream product differentiation. Per the tutorial, a pedagogical framework and curricular materials are presented to improve student understanding about open community participation.

Keywords: Open communities, open source, pedagogy, tutorial

I. INTRODUCTION

With the growing use of crowd-sourcing, the interaction between self-forming, open communities and traditional organizations is increasing in importance. Existing research has focused on factors affecting an individual's level of participation in open sourced work and on the organization of open source efforts, but scant attention has been paid to the significant strategic organizational involvement in these endeavors (75% of Linux kernel contributions are from paid developers). As design and development evolves within open communities, there are an increasing number of ways that organizations may seek to balance 'contributions to' and 'differentiation from' an open community, for reasons of cost, resource management, and time to market. Open communities provide real options for organizations seeking to improve systems design, development, and

support. This tutorial helps develop a solution to this practical problem in the creation of new pedagogical knowledge.

Building on principles of public sharing, collaboration, and organizational learning, this tutorial focuses on *why and how* organizations participate with open communities. We explore how the open-source environment interacts and merges with traditional organizations. A two-by-two classification scheme is used to present the value chain of participation for organizations that differ in their degree of contributions to a common product and degree of downstream product differentiation. Per the tutorial, a pedagogical framework and curricular materials are presented to improve student understanding about open community participation.

II. Why Organizations Participate – Leveraged Development Model

Open communities provide flexibility and adaptability as a *real option* through this fundamental principle: we all give a little; we all get a lot. This has the benefit of enabling ‘leveraged design’ of a system that has shared value for all participants. The design and development is agile and distributed through a community where the members have shared responsibilities for the system in question (Ågerfalk et al., 2009). Systems built through open communities subscribe to a model where design and development are leveraged through participants, value is provided for all, and prediction, planning, and control are the domain of an open community (Neus and Scherf, 2005; Kely, 2009). Many organizations have adopted a proprietary model to systems development, so why shift to an open community model? The answer lies in how the costs of designing and developing in an open community are reduced via the leveraged development model (Figure 1).

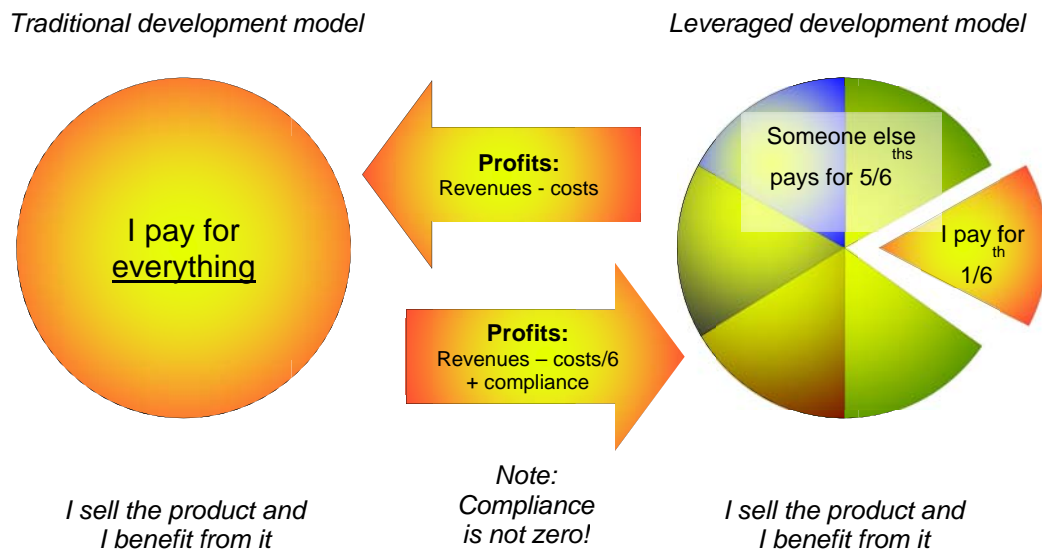


Figure 1: Leveraged Development Model of Open Communities

With the leveraged development model, systems can be developed through the ‘leveraging’ of the open community where participants contribute portions of a completed system (von Hippel and von Krogh, 2003). The complete system can be used as compliant with the rest of the open community or it can be differentiated for specific organizational settings. The complexities developing each respective issue is distributed throughout the open community, explaining *why*

organizations participate; and in each case, *contributions and differentiation* play crucial roles in explaining *how* to participate in an open community (Fitzgerald, 2006).

III. HOW ORGANIZATIONS PARTICIPATE – CONTRIBUTIONS AND DIFFERENTIATION

Open communities require the commitment of participants dedicated to common goals. *Contributions* come in a variety of forms. Contributions are the degree to which participants supply committed changes to a product. Contributions are also the engagement with an open community to share, trade, test, and develop ideas (Wenger, 1999). In our tutorial, we explore contributions to the Linux kernel as *high contributions* and *low contributions*. A high contributor is a participant actively engaging in the community by developing “1/6” in the leveraged development model. A low contributor is a participant far less active with respect to contributions to the leveraged development model.

Differentiation is the degree to which participants modify a stable, publicly-available product for specific organizational requirements. Differentiation requires participating with the open community, understanding changes, and differentiating a product away from the open community. Differentiation does not have a zero cost (Wenger, 1999); it requires internal development support from the differentiating organization but is expected to cost consistently less than non-leveraged development. Like the contributions, differentiation is viewed in two forms: *high differentiation* and *low differentiation*. Low differentiators are participants engaged in ways generally prescribed by the open community. High differentiators are participants engaged in specialized and ‘forked’ approaches that are not necessarily in compliance with the majority of participants. Table 1 illustrates a matrix of contributions and differentiation.

Table 1: Contributions and Differentiation (from Germonprez and Warner, 2011)

		Differentiation	
		Low	High
Contributions	High	Industry standard, commodity (or close to it) system Large participant base outside of the company driving the innovation Linux open community example: x86 chip vendors	Highly specialized system developed by one company Feature exploitation requires very detailed and specialized knowledge Linux open community example: UNIX-class systems
	Low	Uses industry standard parts, little differentiation Large and savvy user base using open system stack Linux open community example: Embedded devices	Specialized system meant to operate as a black box Interface is (intended to be) closed to the consumer Linux open community example: Flat screen TV menu

OPEN SYSTEMS PEDAGOGY: DEVELOPMENT AND MANAGEMENT

From a pedagogical perspective, there has been a lack of consideration of organizational participation in open communities in the IS discipline (Aksulu and Wade, 2010). Curriculum has been most notably developed and grant funded for engineering and computer science disciplines (Patterson, 2006). The focus of pedagogy development has been primarily on the technical issues associated with open source development. These often include technical issues of Linux kernel development, Linux library development, and code repository management, many issues beyond the reach of students approaching open community participation from less technical domains.

While participation undoubtedly includes technical skills necessary to participate in the Linux open community, it also includes alignment with business roles, processes, tools, customs, and behaviors (Neus and Scherf, 2005). Technical expertise is critical but we must also consider the organizational practices of participating in the Linux open community. As such, the focus of the pedagogical component of our research is on the organizational considerations of open community participation (Topi et al., 2010). We aim to educate students regarding *why and how* organizations participate in open communities and issues associated with the critical requirements, motivations, and challenges of participation. Our primary goals are providing practical and pedagogical solutions for open community participation.

REFERENCES

- Ågerfalk, P., Fitzgerald, B., and Slaughter, S. (2009) Introduction to the Special Issue, Flexible and Distributed Information Systems Development: State of the Art and Research Challenges, *Information Systems Research*, 20, 3, 317-328.
- Aksulu, A. and Wade, M. (2010). A Comprehensive Review and Synthesis of Open Source Research, *Journal of the Association for Information Systems*, 11, pp. 576-656.
- Fitzgerald, B. (2006) The Transformation of Open Source Software, *MIS Quarterly*, 30, 3, 587-598.
- Germonprez, M. and Warner, B. (2011). Commercial Participation in Open Innovation Communities, in *Managing Open Innovation Technologies* -- Lundström, Hrastinski, Ågerfalk, and Edenius eds., Springer, New York, NY, Accepted July 2011.
- Kelty, C. (2009) *Two Bits: The Cultural Significance of Free Software*. Duke University Press.
- Neus, A. and Scherf, P. (2005) Opening Minds: Cultural Change with the Introduction of Open-Source Collaboration Methods, *IBM Systems Journal*, 44, 2, 215-225.
- Patterson, D. (2006). Computer Science Education in the 21st Century, *Communications of the ACM*, 49(3), pp. 27-30.
- Topi, H., Valacich, J., Wright, R., Kaiser, K., Nunamaker, J., Sipior, J., and de Vreede, GJ. (2010) IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems, *Communications of the AIS*, 26(18), pp. 359-428.
- von Hippel, E. and von Krogh, G. (2003). Open Source Software and the Private-Collective Innovation Model: Issues for Organization Science, *Organization Science*, 14, 2, 209-223.
- Wenger, E. (1999). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, New York.

Matt Germonprez is currently a faculty member at the University of Wisconsin – Eau Claire. Prior to joining UW-Eau Claire, he was a faculty member at Case Western Reserve University and a Ph.D. student at the University of Colorado-Boulder. His research focuses on theory and method development and investigation with particular focus on emerging and tailorable technologies. In particular he explores how these new, user-centered technologies are designed and used in practice from the individual to the enterprise level. His work has been funded by the National Science Foundation and accepted in MIS Quarterly, The Journal of the Association for Information Systems, Information Systems Journal, Information & Organization, and The Communications of the Association for Information Systems.

Julie Kendall is a Professor of Management in the School of Business-Camden, Rutgers University. Professor Kendall is a fellow of the Decision Sciences Institute (DSI), a Vice President of the Association for Information Systems (AIS), and a Past Chair of IFIP Working Group 8.2. She is the co-author of a leading college textbook, Systems Analysis and Design (8th edition, 2011), as well as Project Planning and Requirements Analysis for IT Systems Development (2nd edition, 2002), and she has co-edited a research volume, Human, Organizational, and Social Dimensions of Information Systems Development.

Ken Kendall is a Distinguished Professor of Management in the School of Business-Camden, Rutgers University. He is one of the founders of the International Conference on Information Systems (ICIS) and a Fellow of the Decision Sciences Institute (DSI). He is a past President of DSI. Dr. Kendall has been named as one of the top 60 most productive MIS researchers in the world, and he was awarded the Silver Core from IFIP. Ken has published over 90 research articles. He served as a Program Chair for both DSI and AMCIS (Americas Conference on Information Systems). He recently co-authored a text, Systems Analysis and Design, eighth edition, published by Prentice Hall and Project Planning and Requirements Analysis for IT Systems Development.

Brain Warner is a diversified business professional, with experience in marketing, strategy, and operations. He works for The Linux Foundation as the operations manager for the MeeGo project, with particular focus on business operations, the trademark, and compliance. Prior to joining the foundation, he spent 5 years at IBM, largely on IBM's Linux Strategy team in business and marketing strategy, market analysis, and corporate business development.

Lars Mathiassen is Georgia Research Alliance Eminent Scholar, Professor at the Computer Information Systems Department and Co-Founder of Center for Process Innovation at Robinson College of Business, Georgia State University. His research focuses on development of information services, on IT-enabled innovation of business processes, and on management and facilitation of organizational change processes. He approaches innovation and improvement initiatives with a strong focus on people skills and collaboration while at the same time emphasizing adoption of state-of-the-art technologies and methods. The philosophy underlying much of his research is discussed in Reflective Systems Development.