

Towards a Global Research Infrastructure for Multidisciplinary Study of Free/Open Source Software Development

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Background:

A History of Software

- Programmers, programming, and bugs
- Software crisis
- Software engineering
- Structured development: analysis, design, code
- Object-orientation: analysis, design, coding
- Computer-aided software engineering (CASE)
- Free/open source software development

Background: A History of Software

- Why are scholars in anthropology, CS, computer-supported cooperative work, economics, human-computer interaction, information systems, innovation policy, law, organization science, sociology, software engineering, and others now interested in software?

Overview

- Some core research questions
- Some observations on recent FOSS research practice
- Recent NSF Workshop on FOSS Repositories and Research Infrastructures
- Building a new international research agenda for multi-disciplinary research

Core *meta*-research questions

- How to mobilize and empower the global FOSS research community for mutual benefit.
- How to (re-)embrace and empower researchers in disciplines outside of CS/IS.
- How to develop an international agenda for FOSS research over the next 5-10 years
 - Research foundations and government ministries want to know, and are willing to help.

Observations on recent FOSS research practices

- Very large, population-scale studies
- Large-scale sampling and analyses of project and artifact characteristics
- Medium-scale comparative project studies
- Smaller-scale in-depth case studies

Observations on recent FOSS research practices

Objects	Success Measures	Critical Driving Factors
Artifacts	Quality, reliability, usability, durability, fit, structure, growth, diversity, localization	Size, complexity, software architecture (structure, substrates, modularity, versions, infrastructure), information architecture, artifact types, and document genres
Processes	Efficiency, ease of improvement, adaptability, effectiveness, complexity, manageability, predictability	Size, distribution, collaboration, knowledge/information management, artifact structure, configuration, agility, innovativeness
Projects	Type, size, duration, number of participants, number of software versions released	Development platforms, tools supporting development and project coordination, software imported from elsewhere, social networks, roles and role migration paths, leadership and core developers, socio-technical vision
Communities	Ease of creation, sustainability, trust, increased social capital, lower rate of participant turnover	Size, economic setting, organizational architecture, behaviors, incentive structures, institutional forms, motivation, participation, core values, common-pool resources, public goods
Knowledge	Creation, codification, use, need, management	Tools, conventions, norms, social structures, technical content, acquisition, representations, reproduction, application

NSF Workshop on Free/Open Source Software Repositories and Research Infrastructures

<http://fossrri.rotterdam.ics.uci.edu>

11-12 Feb 2008

What the Workshop sought to accomplish?

- To determine whether and how we might act collectively to further advance our individual research activities and impacts
 - An outgrowth of WoPDaSD 2007 and more.
- To develop the basis for a large, national (or international) scale cyberinfrastructure enabling FOSS research studies.
 - *<your ideas go here>*

How (and with what) to accomplish it?

- We developed a Web portal (content management repository using FOSS technology) structured to elicit, capture, and organize FOSS research ideas, concerns, issues, and contributions
- The content of the portal is open for update and refinement in an open content manner!
- Initially funded by *NSF* for 2008

NSF Workshop on FOSS Repositories and Research Infrastructures



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NSF Workshop on Free/Open Source Software Repositories and Research Infrastructures

University of California, Irvine
11-12 February, 2008
CALIT2 Room 3008, Building 325 ([map](#))

The overall goal of the workshop is to produce a plan for how to enable and transition the U.S. community of FOSS researchers and autonomous but disjoint FOSS research infrastructures to a common framework for collecting, accessing, organizing, and updating multiple FOSS research data repositories by researchers far and wide. The full realization of this goal would result in the preparation and submission of a community-based proposal to the NSF (and perhaps other funding sources) to design, implement, deploy a common framework for integrating, interoperating and accessing/updating multiple FOSS data repositories as a national FOSS research infrastructure. The goal of such a plan would be to outline and specify the necessary investigations and development of a shared FOSS research infrastructure that would collectively enable the U.S. FOSS research community to take on a new generation of empirical studies of FOSS development from different disciplinary perspectives. Further, such effort should also seek to achieve similar goals of integration, interoperation, and common access/update to multiple FOSS data repositories or infrastructures on an international basis, thereby enabling international research collaborations between U.S. FOSS researchers and their colleagues around the world.

Workshop Readings -- Please review as soon as possible

- [FOSSRRI Workshop Background](#)
- [CCC Request for Proposals: Creating Visions for Computing Research](#)
- [ResearchFriendly.org](#)
- [Understanding Infrastructure: Dynamics, Tensions, and Design \(optional\)](#)

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Posted January 24th, 2008 by [wscacchi](#)

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Research Interests:

Free/open source software development processes, work practices, project community dynamics; FOSS artifacts and repositories; FOSS research infrastructures; process modeling and simulation

Related References:

W. Scacchi, [Emerging Patterns of Intersection and Segmentation when Computerization Movements Interact](#), to appear in K.L. Kraemer and M. Elliott (eds.), *Computerization Movements and Technology Diffusion: From Mainframes to Ubiquitous Computing*, Information Today, Inc., 2008.

M. Elliott, M. Ackerman, and W. Scacchi, [Knowledge Work Artifacts: Kernel Cousins for Free/Open Source Software Development](#), *Proc. ACM Conf. Support Group Work (Group07)*, Sanibel Island, FL, 177-186, November 2007.

C. Jensen and W. Scacchi, [Guiding the Discovery of Open Source Software Processes with a Reference Model](#), in *Open Source Development, Adoption and Innovation*, (edited by J. Feller, B. Fitzgerald, W. Scacchi, and A. Sillitti), Springer, New York, June 2007, 265-270.

C. Jensen and W. Scacchi, [Role Migration and Advancement Processes in OSSD Projects: A Comparative Case Study](#), in *Proc. 29th. Intern. Conf. Software Engineering*, Minneapolis, MN, May 2007, 364-374.

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Preview

What are we seeking to accomplish through this Workshop?

Posted January 1st, 1970 by [wscacchi](#)

This Workshop represents an opportunity for researchers engaged in empirical studies of FOSS artifacts, processes, and practices to come together to develop the technical and social basis for establishing a national cyberinfrastructure for FOSS research. Such a cyberinfrastructure will not only advance the research interests of this community, but also enable U.S. researchers to combine results with the more substantially funded European FOSS research community.

Title: *

What are we seeking to accomplish through this Workshop?

Body:

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Building a new international research agenda for multi-disciplinary research

- Joint effort with Megan Conklin, Kevin Crowston, and Greg Madey
- How to “open source” FOSS research on a global basis
- *Forthcoming*: a new international workshop on the future of FOSS research (Winter 2009)
 - New funding from the *CCC* (Computing Community Consortium) for 2008-09 to continue the effort, and open to international participation.