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Open Source at Microsoft

An Academic View of Open Source

Microsoft is focused on providing its customers and partners with the most options to succeed in a heterogeneous technology environment. Recognizing that maximum choice requires an effective understanding of the technological ecosystem, Microsoft actively researches software development as well as license and business models, including open source. Recently, Microsoft Research and the Open Source Software Lab (OSSL) partnered with Penn State University (PSU) to study usability design in open source projects.

In spring 2007, Paula Bach joined Microsoft as a Ph.D. intern to research the role of Human Computer Interaction (HCI) in open source development. Paula is a Ph.D. student in the College of Information Sciences and Technology at PSU. Paula's advisor is Dr. John M. Carroll, a leading expert in HCI. The project is the result of extensive discussions between Dr. Carroll, Paula, and Bryan Kirschner, the Director of Platform Community Strategy.

Paula's project is an outgrowth of the CHI 2007 Free/Libre/Open Source Software Special Interest Group: HCI Expertise and Design Rational, which met in San Jose, California, in May 2007. To learn more about the project, visit the wiki page for the Floss Usability Special Interest Group, found at http://flossusability.ist.psu.edu/wiki/index.php/Main_Page. The project will involve investigating and assessing the usability decisions of HCI experts and developers in open source development.

The goal of Paula's research is to understand what role usability expertise plays in the development of open source projects and to build a resource to support such expertise for open source projects. "By working with Microsoft on this project, we hope to understand better how usability is incorporated in open source projects, and how it might be more effectively addressed. For example, how might we translate some of the design and management lessons learned in the commercial arena into the community-based software development paradigm of open source," Dr. Carroll explains. Bryan adds, "Usability is a recognized challenge for open source development but is a tough issue for software development in general—more so for anyone who does not have the resources for dedicated usability assessment. Paula's research may be valuable not only for open source developers, but for end-user developers and small software companies as well. In this respect the project is a natural complement to Microsoft's commitment to the success of a diverse developer and partner ecosystem."

In addition to her studies at PSU, Paula currently works on usability design issues for Openwengo, a community of enthusiasts and developers creating a free telephony application for talk, chat, and conferencing. That ongoing experience has led her to wonder how HCI issues are addressed generally in the open source community. When Paula investigated other open source projects, she quickly discovered that most do not have a well-defined design process, let alone a user-centered design process. While some major projects have HCI experts working on them—for example, Firefox, KDE, and GNOME—Paula notes that HCI improvements may increase adoption, noting that "the usability of many open source desktop applications could be improved, especially if open source developers want to have their products used by the mainstream market."

Whereas usability processes have long been part of most proprietary software projects through funded research and development, they are underdeveloped in the open source environment. The lack of formal usability processes in open source projects arises from the developer-focused nature of most open source communities. As Paula explains, "[t]he open source movement was founded on developers creating tools for themselves. Because developers think differently about technology compared to average users, when developers create tools for average users, they typically need some help from HCI experts."

Even when a project takes usability into account, integrating usability design into the open source software development culture is not always easy. Many HCI experts do not write code, so even if usability problems (or bugs) are identified, the questions of who will decide what code needs to be fixed and who will fix it remain. In a community-driven development process, those questions can be difficult to answer. As Rob Deline, a Senior Researcher in the Human Interactions in Programming Group at Microsoft Research (http://research.microsoft.com/hip/) and the supervisor for Paula's project, notes, "communicating usability information is difficult in any development process, but the distributed nature of OSS development can make it a particularly challenging issue for open source projects."

Paula's project will create a much-needed bridge between the HCI and open source worlds. By examining the current state of usability design in the open source community, Paula hopes to better integrate the community-based open source developer culture and the academic usability culture. Furthermore, by expanding the understanding of usability processes and usability design rationale, Paula hopes to benefit software development environments across the continuum of proprietary to open source development. As Paula puts it, this is not a study about open source *per se*; it is "a study about software development methodology."

Paula's project will specifically involve to following:

- Surveying open source project members about usability issues and fixes
- Interviewing HCI experts working on open source projects
- Analyzing the usability discussions of three open source projects
- Designing and developing a resource that helps developers and HCI experts decide which usability issues to fix

Paula will not know the form and content of the proposed usability resource until she has gained an understanding of how open source communities create and use usability design rationales. However, she does know that the resource will support well-established design rationale and that it will be hosted on the Microsoft open source community site CodePlex.

Jim Newkirk, the Principal Product Manager of CodePlex, is excited about what could come out of Paula's project. "Many OSS projects don't have the resources to devote to usability, and they are on their own when it comes to assessing the usability of their applications," he explains. Hosting the results of Paula's research will help support those projects and will assure that whatever resources Paula develops are

widely available to the OSS community. It will also allow Paula to integrate CodePlex features such as an issue tracker and tagging, which could be used to support usability design rationales.

Paula's internship will last for two years. She will spend the 2007 and 2008 summer at the Microsoft headquarters in Redmond and continue her work at PSU's main campus during the school years. Paula presented her project in-progress in September 2007 at the European Computer Supported Cooperative Work conference's Doctoral Colloquium (http://research.microsoft.com/~ast/dc_ecscw2007/) in Limerick, Ireland. She found the experience invaluable and the feedback has enriched her research considerably.

Paula's research and the research of others like her continues to expand our understanding of the heterogeneous software ecosystem. That understanding will allow Microsoft to provide more opportunity to its customers and partners by providing much needed tools to make their paths to success, whatever form it may take, work better.

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