Open Source Software Development Model

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**INTRODUCTION**

The open source movement can be traced back to the hacker culture in the ‘60s and ‘70s. In the early 1980s, the tenet of free software for sharing was explicitly raised by Richard Stallman, who was working on developing software systems and invited others to share, contribute, and give back to the community of cooperative hackers. Stallman, together with other volunteers, established the Free Software Foundation to host GNU (Gnu’s Not Unix, a set of UNIX-compatible software system). Eric Raymond, Stallman’s collaborator, is the primary founder of the Open Source Initiative. Both communities are considered the principal drivers of open source movement.

A number of worldwide, online communities for open source development have been established since then to facilitate the development of open source software. For example, the Open Source Development Network (OSDN) is one of the largest organizations for such purpose. One of its subordinates, sourceforge.net, is hosting nearly 70,000 projects and 700,000 registered developers and users at the present time. The recent wave of sponsoring open source projects by commercial companies is another significant phenomena. Big IT players such as IBM, Sun, and HP have realized the importance and benefits to “open” their source. From other perspectives, open source applications have been expanding into various domains, including education, the Internet, office management, programming, communication, and even the medical domain. The Apache server powers half of all Web servers worldwide, far more than Microsoft and Netscape combined. Table 1 lists some typical application domains and well-known open source software.

**BACKGROUND**

With the successful delivery of many software products, the open source development model has been attracting increased interests from both practitioners and researchers. The open source development model can be characterized by its fast evolution, distributed development, and extensive user collaboration. It is a simple mean of releasing software with free source code, but one that brings a series of new social and technical challenges, including licensing, distributed development, project management, commercial adoption, and user collaboration. A number of research methods have been adopted to investigate the phenomena of open source development, including general descriptive discussion (Raymond, 1999; Hars & Ou, 2002; Cubranic & Booth, 1999; Augustin, Bressler & Smith, 2002), case studies (Mockus, Fielding & Herbsleb, 2002; Lakhani & Hippels 2003), and surveys (Zhao & Elbaum, 2003; Lakhani & Hippel, 2003). As usual, different research methods employ unique ways of investigation but have potential weaknesses. For example, case studies tend to focus on a few large open source projects such as Apache, Linux, and Mozilla, but lack of comprehensive observations on common issues for a broader spectrum of open source projects. Survey research is able to cover a large number of projects, however it may ignore details or specific issues for individual open source projects.

The open source model can dramatically affect changes in the traditional ways of software development. Table 2 lists some relevant issues that arise with open source development.

**KEYS TO UNDERSTANDING THE OPEN SOURCE DEVELOPMENT MODEL**

Despite the debates, critques, and the evident enthusiasm regarding the Open Source Development Model, without any doubt, it is becoming a recognized paradigm that competes with the traditional methods of software development and is expected to grow in the future. To understand this phenomena, several essential attributes

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Table 1. A list of popular open source software products

| Operating system: Linux, FreeBSD | Internet: Apache Server, Mozilla |
| Communication: sendMail, OpenSSL | Programming: Perl, Tcl/Tk, GNU |
| Office: OpenOffice |