

Chapter XLVII

Communities of Practice for Open Source Software

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ABSTRACT

This chapter studies the use of communities of practice in the process of disseminating open source software (OSS) in the University of São Paulo. The change management process included establishing an OSS support service and developing a skills-building training program for its professional IT staff, supplemented by a community of practice supported by an Internet-based discussion list. After using the resource extensively during the early phases of the adoption process, users replaced their participation in this local community by a mostly peripheral involvement in global OSS communities of practice. As a result of growing knowledge and experience with OSS, users' beliefs and attitudes toward this technology became more favorable. These results, consistent with the theory of planned behavior constructs, provide useful guidance for managing the change process.

INTRODUCTION

Strategic and economic considerations led the University of São Paulo to institute a program to promote the use of OSS, also driven by a national OSS dissemination policy that draws a lot of mass media attention. The major drivers were software license cost reductions and independence from single vendors, as well as the perception that OSS allows increased user control over systems and interoperability.

OSS technology has many adherents among Brazilian faculty members and students. However, the university's professional IT staff, responsible for the infrastructure and administrative systems and a significant share of the total IT budget, has been more conservative regarding technological innovation.

These professionals are largely autonomous in their technological decision-making, and therefore, they had to be motivated to adopt the new technology. The university, besides providing all necessary

support services to implement OSS, offered them special courses in order to make the process of adopting and implementing the technology easier. This chapter presents the case study of the change management program for the dissemination of OSS at the university, having as its main target the computer professionals of the various institutes and schools in charge of local IT infrastructure and support to end users.

The research approach was action-research, the authors being the sponsors and managers responsible for the dissemination process and the establishment of the community of practice (CoP). This chapter is structured as follows: the first section presents the motivation for OSS, its concepts and the theoretical framework for the case study. The case is described in the second section, whereas the third section analyzes the case and presents the conclusions of the study, with emphasis on the use and evolution of the CoP.

BACKGROUND: THE APPROACH TO THEORETICAL CONCEPTS AND RESEARCH

Open Source Software

Open source software (OSS) is based on the principle that computer programs should be shared freely among users, giving them the possibility of introducing improvements and modifications.

The Free Software Foundation (FSF), founded in 1984 by Richard Stallman, aimed at recreating the “open” environment of computers’ early days, replaced by the establishment of the for-profit software industry. OSS users and developers engage in intense voluntary worldwide cooperation leading to community-based continuously evolving systems that can safely be used in critical applications and infrastructure (Nuvolari, 2004). The use of OSS is growing steadily. The Campus Computing 2003 survey (Green, 2003) found that 11.1% of all network servers in American higher

education institutions run on Linux. Another survey conducted by the authors in 2003 found that 20% of corporate low-platform servers in Brazil are based on the Linux operating system (Reinhard & Foresti, 2003).

Cooperation among OSS users and developers is maintained through an elaborate infrastructure for sharing knowledge and communication, including issue-reporting/tracking repositories, discussion lists, chat rooms, forums, electronic journals, specialized media, and meetings. A strong culture and group behavior have been developed in connection with it, enabled by the Internet (Scacchi, Gasser, Ripoche, & Penne, 2003).

OSS is developed as distributed work, with ample freedom for the creation and distribution of nonstable versions of systems, but with special governance mechanisms for the establishment of standards, verification, and distribution of so-called stable software versions.

Theory of Planned Behavior (TPB)

Ajzen (1991) proposed the theory of planned behavior to explain and predict individuals’ intentions to exhibit a given behavior. Intention is seen as a function of the beliefs related to the following:

- Attitude toward the behavior (evaluation of the behavior)
- Subjective norm (perceived social pressure to conform)
- Perceived behavioral control (perceived ease or difficulty to perform)

TPB can be considered a suitable model for studying the behavior of computer professionals deciding on the adoption of OSS, since their behavior is largely under their volitional control (i.e., it is essentially their own decision whether or not OSS will be adopted in their departmental computing environments).

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