In recent years, the development of Free/Libre Open Source Software (FLOSS) has attracted the attention of academics, practitioners and policy-makers. In a first step, these OS initiatives have been primarily launched by communities of motivated “user-developers”. Whatever their exact motivations (technical as well ideological, among others), these communities formed original social networks and organisations. Those proved efficient to develop an alternative model of software production relying on an alternative definition of property rights. For FLOSS to sustain, a second step is now to diffuse to new populations of users (individuals, businesses, government agencies). The motivations of these populations to adopt FLOSS may however differ from those of initial user-developers. Besides, such step questions the whole architecture of the whole software industry and the cooperation and competition between the FLOSS model and the traditional model of Software production and development. The objective of this project is to study the consequences of the transition towards this second step. This study has been broadly organised along three lines of research:

A first concern is about the internal production process of FLOSS software: how are OSS projects organised? What type of innovation network do these projects generate? How are roles distributed inside this network and what are the incentives for individuals to play a specific role? Finally, are these types of communities suitable for even larger communities?

A second dimension is about the uses of FLOSS software. Based on specific case studies, there is a need to better identify what makes this type of software different from proprietary software (quality? reliability? ability to generate customised features?) from users’ point of view. Grounding on that, what are the key determinants for FLOSS adoption?

A third issue encompasses the two previous dimensions and relates to the articulation of FLOSS software inside the whole software industry. One should then better understand why in some cases FLOSS and proprietary software are competing while in others, they do cooperate. By the way, this question raises legal issues such as the type and level of property rights desirable to protect present innovations without harming the development of future ones on the one hand; and the attitude of policy makers towards standards on the other hand.
To deal with these numerous aspects, one should integrate the analysis of several disciplines (economics, sociology, management, etc.). For that, we organized a series of regular meetings dedicated to FLOSS issues. The first two workshops were FLOSS 1.0 in Nice (June 07) and FLOSS 1.5 in Salon-de-Provence (February 2008).

The third workshop (FLOSS 2.0) was jointly organized by CREM (Center for Research in Economics and Management) and GREDEG (Groupement de Recherche en Droit Economie-Gestion) and took place at Rennes (France) on June 25-26th. The set of articles presented in this special issue of JOSSP comes from a selection of some works presented during this workshop.

THE ARTICLES IN THIS SPECIAL ISSUE

The articles selected for this special issue reflect the diversity of these topics. The two first articles more closely relate to OS production and diffusion.

N.P. Radke, M.A. Janssen, and J.S. Colloffello propose a theoretical framework to analyse the dynamics of OS projects. Based on a multi-agent modelling, he considers a situation where several OS projects can be alternatively joined by user-developers. Since these users are characterized by different needs and different skills, they join different OS projects and thus reinforce (or not) the attractiveness of some particular projects. Using a Genetic Algorithm, the model is then calibrated to actual data gathered on the Source Forge repository. The article finally compares the simulated data to some stylized empirical facts.

The issue of OS diffusion is also raised by T. Le Texier and D. Versailles yet in the framework of the US Defence Industry. As pointed out by the authors, military OS applications reveal distinguishing properties such as the need for “technological agility” which are rather specific to this defence context that have been largely unexplored in the previous literature. In their article, the authors first identify three types of military activities (front-office, back-office, military R&D) where OS can be deployed and show how the uses and strategies towards OS differ according to the activity. Grounding on that point, they identify some implications for organizing defence-based OS projects.

The last three articles are all related to the competition between OS and proprietary software. R. Pollock examines the effect of such competition with respect to the traditional innovation/imitation dilemma. While comparing the relative performance of an ‘open’ versus a ‘closed’ (proprietary) regime, the article characterizes the circumstances in which an open approach, despite its effect on facilitating imitation, results in a higher level of innovation. The approach represents the set of feasible innovations as determined by a model of competition between ‘innovators’ and ‘imitators’. When innovators enjoy first-mover advantages, innovation may still occur even when imitation is cheaper than innovation. The article examines the situation where a move to an open production model results in a reduction of both innovation costs as well as imitation costs: if the proportional decrease in innovation costs is at least as large as that in imitation cost then an open regime is better.

The article of A. Gaudeul also analyzes the patterns of competition between open source and proprietary software. Yet, the focus is here on the joint effects of product differentiation and public good production on this competition. It examines the case of an industry where consumers can choose between contributing to open source software development or buying proprietary software: in this case, the OS model of production may be more efficient from a welfare point of view than the proprietary model. However, an OS-based industry is more vulnerable to entry than an industry based on proprietary software. Further, A. Gaudeul shows that a mixed industry where large OS projects coexist with more specialized ‘proprietary’ projects, is more efficient than the proprietary model of production from a welfare point of view.

Finally, the article of E. Darmon & D. Torre deals with the OS/proprietary competition in the case of a platform software (i.e. a software upon which new applications are built). One original feature of their analysis is to investigate this issue using two different time horizons. In the short term, software characteristics can be considered as given. In the long term, the contributions of user-developers add to the software knowledge
base and increase the services bought by the corresponding software platform. In this framework, the authors characterize the conditions for a ‘mixed’ industry (coexistence of both proprietary and OS software platform) to sustain in the long run and show how this outcome may be threatened by some strategies used by the editor of the proprietary platform (strategic disclosure of some code, compatibility).

Eric Darmon is associate professor at the University of Rennes 1 and CREM (Centre de Recherche en Economie et Management, UMR 6211 of CNRS and University of Rennes 1) since 2006. His PhD thesis was on the impact of ICT on market organization and performance. He is now a member of M@RSOUIN (consortium of research centers dedicated to ICT-related issues) and is carrying research into two interconnected directions: economics of ICT (economics of software with an emphasis on competition/cooperation between open source/commercial approaches and piracy, economics of online markets and communities) and behavioral economics (learning on markets). He also organized a series of workshops on open source.

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