

Libre Software: Implications for Organisations

Frederic Adam¹, Joseph Feller¹ and Brian Fitzgerald²

¹Business Information Systems, University College Cork, Cork, Ireland

²Department of Computer Science and Information Systems,
University of Limerick, Limerick, Ireland

Libre software refers to software products such as the Apache Web Server and the Linux Operating System – collaboratively developed software products which can be freely acquired, modified and redistributed. Such software is also often referred to as *free software* and *open source software*.

Although the concept is as old as software itself (Feller and Fitzgerald, 2003), “free software” was formalised in the early 1980's by Richard Stallman, who established the Free Software Foundation and articulated the Free Software Definition (FSD). The FSD states:

“Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

A program is free software if users have all of these freedoms” (Free Software Foundation, 2003).

Stallman operationalised the concept by establishing the GNU project (dedicated to the development of a 100% free software operating system) and by creating the GNU General Public Licence (which remains the most common free software licence) (Feller and Fitzgerald, 2002).

In the late 1990's, the term “open source software” was championed as an alternative label for free software, on the grounds that it avoided the ambiguity of the (English) word “free,” and was thus more generally acceptable to the global business community. The Open Source Initiative (OSI) was established as advocates and watchdogs of the new label. The OSI maintain the Open Source Definition (OSD), which states that the distribution terms of open source software:

- Must allow free redistribution of the software.
- Must make source code available.
- Must allow modifications and derived works (and must allow them to be distributed under the same terms as the license of the original software. However, open source software may impose measures to protect the integrity of the original author's source code in the creation of derived works.)
- Must not discriminate against persons, groups or fields of endeavor.

- Must ensure that the rights attached to the program apply to all to whom the program is redistributed (without requiring the execution of an additional license).
- Must not make the terms of the license specific to a product, distribution, technology or style of interface.
- Must not restrict other software that is distributed along with the open source software (e.g., other software that is distributed on the same CD-ROM as the open source software). (Open Source Initiative, 2003).

Most participants in both the free software and open source communities would agree that the FSD and OSD are substantively identical at the software product/software license level. However, there has been considerable ideological contestation over the terms. The FSF (particularly Richard Stallman) argues that “open source” is a misleading term, and that it compromises the important goal of securing user freedoms. The OSI (particularly the OSI President, Eric Raymond) argues that it is the term “free software” that is misleading, and that it compromises the important goal of wide-spread mainstream adoption (Feller and Fitzgerald, 2002). In Europe, the French word “libre” has been widely adopted to unambiguously capture the connotation originally intended by the FSF, while addressing the public facing concerns of the OSI. We will thus use the term libre software as an inclusive label for these two largely overlapping phenomena.

Libre software is significant to the Information Systems (IS) community in the widest sense because the libre software concept has substantial, transformative implications for the ways in which individuals and organisations develop, acquire, use and distribute software products. In particular, it demonstrates radically new ideas in terms of software development and business models. From a systems development perspective, libre software development projects are often characterised by much higher levels of developer/developer, developer/user and user/user collaboration than in proprietary development projects. For example, users frequently take an active role in analysis, design, debugging, documentation and support, and development teams are often globally distributed, self-organizing collaborative communities. From a business model perspective, libre software challenges traditional understandings of software ownership (and cost of ownership) and further challenges the proprietary notion that software is a product, with the counter-notion that it is in fact a service.

The implications of the libre software movement on the IS domain is further illustrated by the fact that even the area of Enterprise Resource Planning software – an unlikely candidate for the application of the libre software model – has been touched (ERP5 Community, 2003). Thus, libre software appears to be moving towards the development of large-scale systems addressing complex business problems at the enterprise level. While a component-based approach is likely to be adopted for such projects initially, there are signs that a number of integrated libre software packages will gradually become available. OpenMFG (<http://www.openmfg.com/>), for example, is a (nearly) complete libre software ERP solution.

Unsurprisingly, over the past five years, a substantial body of rigorous research on the topic of libre software has emerged. Going beyond the earliest, politically motivated accounts by both proponents and opponents of the libre software movement, an international community of researchers from a variety of academic disciplines have studied the methods, tools and organisational structures that characterise libre software.

While there is evidence of a growing literature focused on “soft” or “human” issues in libre software, much of the research to date has focused on technological and software engineering

concerns. Furthermore, much of the socio-cultural analysis has focused on the motivations of individual developers, or on the dynamics of libre software development communities “in the wild.” Thus, although there is evidence of wide-spread adoption by commercial and governmental organisations of libre software products, processes and models, comparatively little research has been published to promote a better understanding of the role of libre software in such organisations.

This special issue of *Systèmes d'Information et Management* was organised to promote the dissemination of theoretically sound, empirically based research relevant to the concerns of organisations seeking to capture value through the adoption of libre software products, processes and models. We thus issued an open call for completed, original research focused prim on the following or related topics.

Motivations, dynamics and challenges associated with the adoption of libre software products by organisations

There are a number of libre software products that dominate their application space, products like Apache, Bind, Sendmail and Perl, and other products who arguably demonstrate the potential for market dominance, like Linux. In preparing the special issue, we were interested in research that addressed the question “Why this is the case?” Is the wide-spread adoption of these products driven purely by the lower cost of acquisition, or by questions of software quality and related issues? Is this an example of “platform inertia” – the Internet, after all, is substantially based on libre software – or is it a forward looking strategy? What are the costs, and the returns, associated with the adoption of such products? Where does libre software fit into an organisation’s systems architecture – as a back-end administrative platform, an end-user productivity platform, a software development platform, or some combination there-of? Etc.

Motivations, dynamics and challenges associated with the adoption of libre software processes and business models by organisations

In addition to the adoption of libre software products, we see evidence of an increasing number of organisations seeking to leverage libre software processes. These processes include software engineering methods like parallel development, peer review of code, increasing modularisation of software, etc. They also include “human” issues like the emergence and maintenance of knowledge communities and the provision of user-to-user and developer-to-developer systems. These processes are increasingly being adopted (or at least emulated) both in conjunction with – and also divorced from – the libre software terms of distribution. Likewise, we are seeing a rich and varied ecology of new, or at least modified, business models related to the use of libre software. Again, for the special issue, we looked for research that addressed these aspects of libre software adoption.

Legal issues associated with the use of libre software products, processes and business models

In addition to the technological and socio-cultural aspects of libre software adoption outlined above, organisations need to better understand the legal aspects of such adoption. There is a frequent misconception that libre software is somehow equivalent to “public domain” software (i.e. software for which the author has relinquished all rights). This couldn’t be farther from the truth. Libre software licenses vigorously protect the copyright of the

software authors and place user freedoms (to use, modify and redistribute) in the context of a very specific set of terms. There is also great variety from license to license – some libre software licences (like the FSF's GPL) are very strict, while others are very loose (like the MIT license). Understanding these licensing structures, and their interactions with each other, with proprietary software licenses, and with other legal vehicles like patents, is critical for the effective adoption of libre software by organisations.

We received 16 contributions from a broad range of countries, including Australia, China, Finland, France, the Netherlands, Sweden, the UK, and the USA. All contributions were subjected to double-blind review and to further review by the guest editors and the members of the *Systèmes d'Information et Management* editorial board. While all the papers we received were of high quality, in the end we selected four papers for publication.

The first paper, *Looking through a Window on Open Source Culture - Lessons for Community Infrastructure Design*, was written by Sanjay Gosain (University of Maryland, USA). Gosain presents an analysis of the discourse of participants involved in Slashdot, one of the major virtual meeting grounds for the libre software developer, user and advocate communities. Using a combination of primary interviews and secondary archival analysis, this study yields rich insights about the signifying practices, contradictions, norms, incentive structures and values systems that characterize the community that it supports. We considered this paper to be a strong contribution to our understanding of how libre software communities share and create knowledge, and of how community supporting infrastructures can be designed to sustain growth and promote vitality. These lessons are vital for organisations who seek to capture value from the collaborative knowledge production and knowledge management dynamics found in the libre software phenomenon.

The second paper, *Evolution of Open Source Software: A Study of the Samba Project*, was written by Mae Lyn Lee and Joseph Davis (University of Sydney, Australia). It investigates the evolution of libre software products using a case study of the Samba project. The authors used a combination of qualitative and quantitative techniques to analyse the development and evolution of Samba's software over a seven-year period. The case study is apropos to the special issue on two levels. First, the Samba product (a software suite that provides seamless file and print services to SMB/CIFS clients in organisational networks) has enjoyed widespread adoption within organisations seeking to address interoperability problems in contemporary, heterogeneous information system environments. Second, the authors use the case study to propose a general framework for understanding the key drivers of libre software evolution. Understanding these drivers is critical if libre software is to be embraced by organisations as a viable and sustainable model for software development.

In the third paper, *Dual Licensing in Open Source Software Industry*, Mikko Valimaki (Helsinki Institute for Information Technology, Finland) provides an analysis of how several libre software companies use dual licensing (parallel product release under both libre software and proprietary licenses) for their products. The paper uses three case studies – based on the experiences of Sleepycat Software Inc., MySQL AB and TrollTech AS – to illustrate the issue. The paper provides useful insights into the legal and economic requirements of dual licensing for organizations who seek to develop long term, viable business models based on this release model.

The fourth and final paper, *Le marché francophone du logiciel libre*, written by Nicolas Julien (de l'équipe Marsouin de l'ENST de Bretagne, France), seeks to better understand the new

business models resulting from the adoption of libre software products. In particular, it reflects on how libre software companies can both increase the adoption of libre software, and at same time, increase the range and diversity of commercial activities based upon such adoption. Such an understanding is a prerequisite for the long-term market viability of libre software. As pointed out by the author, although libre software is freely accessible, organisations must still analyse their needs, select the proper applications, implement them, adapt them, integrate them, and maintain them as new components become available and future needs arise. All of these issues provide commercial opportunities for new types of software firms. The paper is atypical of papers normally published in SIM, but is very interesting in the context of this special issue for two reasons. First, it concentrates on the French speaking community (Belgique, France, Luxembourg et Suisse). Second, the paper is based on a substantial collection of empirical data, namely a survey of 145 organisations that supply libre software products or related services.

We trust that these four papers will be seen as a substantial contribution to the research literature on libre software. We further hope that this special issue helps to shape the focus of future research on the topic. If libre software is to enjoy long-term, sustainable and significant adoption by organisations, the scientific community must increasingly seek to understand how libre software transforms organisations as developers, users and producers of software within a social, legal and economic environment.

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