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Free Software's Market-Oriented Aspects: The Example of Free Software Service Companies in France

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Des communautés au marché : l'expérience des Sociétés de Services en Logiciels Libres

Résumé

A partir du cas particulier des SSLL (Sociétés de Services en Logiciels Libres) françaises, le papier se propose d'analyser les impacts économiques des logiciels libres pour l'industrie du logiciel. Considérant l'émergence puis l'évolution de ces sociétés « issues des communautés », nous tentons d'analyser les conditions de viabilité d'un modèle économique alternatif basé sur l' « éthique » des communautés du logiciel libre. L'analyse de la concurrence entre SSLL et SSII (Sociétés de Services en Ingénierie Informatique) traditionnelles est envisagée pour en comprendre les récents changements, notamment au regard du positionnement des SSII sur les logiciels libres.

Mots-clé : Logiciel libre, Industrie du logiciel, Organisation industrielle.

Free Software's Market-Oriented Aspects: The Example of Free Software Service Companies in France

Abstract

Considering the french case of Free Software Service Companies (FSSCs), this paper analyses Free software's market-oriented aspects. We try to answer a fundamental question for free software: is the software industry have room for an alternative economic model based on the communities' ethic? Analysing FSSCs' competition with traditionnal IT Service Companies (ITSCs) and regarding the integration of free software in the ITSCs' product offer, we show how the software sector's strutures could explain both FSSCs and ITSCs recent changes.

Keywords: Free software, Organisational production, Software industry

JEL: L23, L86, O14

1. Introduction

The success of "free software" like Linux or Apache[1] has been a surprise to a number of analysts.[2] After all, these are products made by the non-market-oriented sphere, to wit, by hacker communities motivated by the idea that IT should function on an open software basis (Himanen, 2001; Levy, 1984), hence in opposition to the dominant *proprietary software* model that has structured the software industry for the past 30 years. Protected by intellectual property rights, proprietary software is available as object code[3] under a license granting simple utilisation rights in exchange for the payment of royalties. Inversely, *free software* has been given this moniker because people are free to use, copy, and modify it, and to redistribute any modified versions thereof. Disseminated as source code, it is protected by the General Public License (GPL) granting the four aforementioned privileges but also requiring that any modified versions of the software be protected under the same license. Originally restricted to the hacker communities, free software broke loose with Linux, which has been a serious competitor for Windows ever since the late 1990s.

Free software's increasing diffusion to non-IT users raises questions about the kinds of links that have existed between the non-market-oriented sphere where such software is produced, and the market-oriented sphere where its value is determined (Weber, 2000; Hawkins, 2002; West, 2003). What role has free software been able to play in an industry dominated by proprietary software? This line of thinking harks back to past analyses of the viability of a "free alternative", as formulated by Stallman in 1984: "*Free software does not fundamentally contradict capitalism since the sale of the different services associated with it generate profit sources that help market-oriented actors to achieve profitability*". The analysis we propose starts with the specific case of the Free Software Service Companies (FSSCs) that were created in France in the late 1990s (called*"SSLL"* or *Sociétés de Services en Logiciels Libres,* in French). Acting as a sort of "market-oriented emanation" for their communities, said FSSCs wanted to become the Information Technology Service Companies (ITSCs) of the free software sector.[4] FSSCs and ITSCs offer the same kinds of services, but some only work in the free software sphere, whereas others work with proprietary software alone.

Does the software industry have room for the kind of alternative the FSSCs are offering? Using France as a specific example, we will show that even though free software's market-oriented actors do have a role to play, FSSCs in the French market have been unrealistic in trying to persuade people that they constitute a broad alternative. To achieve this, we start out by defining the context in which the FSSCs find themselves, both in terms of the software industry's structures and also in regards to what we can call the free software "economy". We then present the model that these FSSCs have been trying to implement. Lastly, we discuss the recent changes the FSSCs and ITSCs went through between 2002 and 2003.

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[1] Linux has a ca. 25% share of the server operating system market, Apache 70% of the web server market.

[2] As witnessed by the number of articles published on this topic: see MIT's http://opensource.mit.edu, or the special issue of *Research Policy,* 2003, vol.32, issue 7.

[3] Source code is the version of a software that has been written in a programming language which people can work with. Translated into machine language, it becomes an object code, something that is operable for computers but incomprehensible for humans.

[4] In French: *Sociétés de Services en Ingénierie Informatique* (SSII)

2. FSSCs in their context: the software industry and the free software "economy"

In the late 1990s, the diffusion of free software was accompanied by the creation of related market-oriented activities. For some observers, this translated the emergence of a "new software economy" in the software industry (RNTL, 2002). What happened is that a slew of commercial actors, including Linux "editors" or FSSCs, were created in an attempt to propel free software's diffusion within the market-oriented sphere. French FSSCs appear to have comprised a particularly poignant example of this category, offering community-developed software as an alternative to a model that dominated the software industry, to wit, the ITSC-Editors tandem (figure 1).

Figure 1: ITSCs and FSSCs
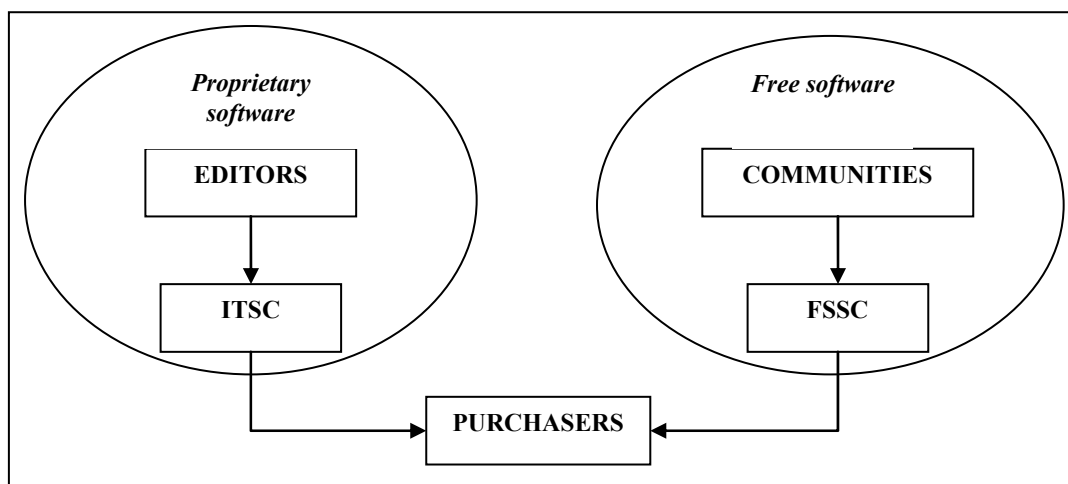
1.1. Using ITSC-Editors tandems to describe the customised mass-demand software sector
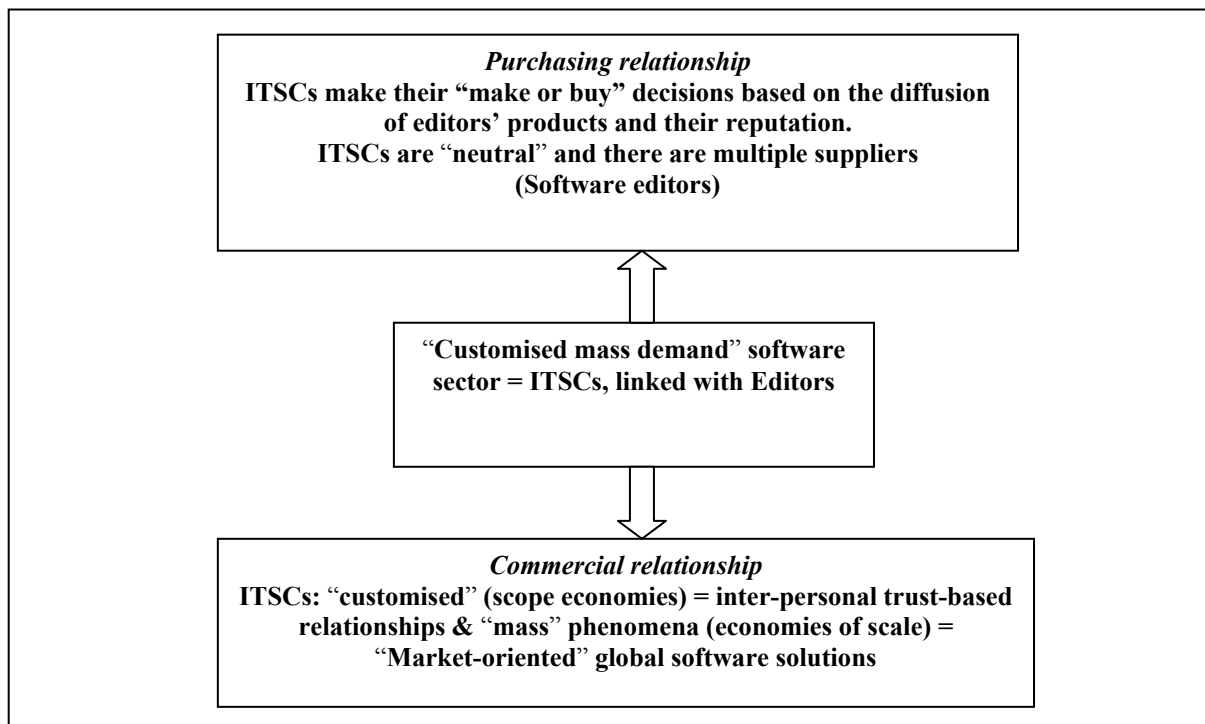
Within the broader software industry, it was within the "customised mass-demand" sector that the FSSCs tried to position themselves. This was also the sector where the ITSCs were operating. Born out of the generalisation of IT's usage since the late 1970s, an ITSC's job was to respond to the various types of IT demands that would emanate from different organisations (SMEs, large firms, administrations). In reality, the term "customised mass demand" signifies actors' efforts to achieve a compromise between "pure customisation" (highly adapted to user needs but often too costly) and software packages (less expensive but not necessarily satisfactory to users with non-standard needs). As such, the ITSCs offered a response to the need both to adapt the IT tools to a company's line of business, and to adapt the company to its IT tools.

ITSCs would function using generic software supplied by software editors. The end result was that these two actors came to dominate the software industry in its dealing with the "business-to-business" sector. Like Microsoft, Oracle or SAP, software editors would produce product destined for mass markets, with the sale of user licenses on proprietary software as their main source of renumeration. ITSCs had two main activities: supplying generic services based on a dedicated software (adapting to specific needs like parametering or installation); or

creating dedicated software based on standardised components or modules (global solutions combining several types of software as well as certain services).

Editors were the only actors attacking the home user market. The "business-to-business" markets, on the other hand, and regardless of the type of organisation involved, revolved around the actor couple that was the Editor-ITSC tandem, an archetype figure in the software sector's industrial organisation. This was the context within which free software and FSSCs had emerged in the late 20th century. As a matter of fact, the positioning that the FSSCs chose was similar to the ITSCs', despite the fact that they were operating in the free software sphere alone. By 2000, the opposition between free and proprietary software was fully replicated in the division between FSSCs and ITSCs, since ITSCs (in France at least) were not yet including free software in their product offer. This meant that the FSSCs were in direct competition with the ITSCs. One good way of delving into the ITSCs' customised mass-demand software sector would be to borrow Jullien and Smith's (2005) idea of analysing sectors and companies in terms of the four "fundamental institutionalised relationships" that firms entertain with their four main resource suppliers: workers (working relationship); input suppliers (purchasing relationship); investors (financial relationship); and buyers (commercial relationship). Defining these four institutionalised relationships allows us to describe the identity of the "customised mass-demand" software sector just as it presented itself to the FSSCs. Figure 2 offers one representation of the ITSCs' positioning at the interface between editors (purchasing relationship) and customers (commercial relationship).

Figure 2: The customised mass-demand software sector

Purchasing relationship
ITSCs make their "make or buy" decisions based on the diffusion of editors' products and their reputation.
ITSCs are "neutral" and there are multiple suppliers (Software editors)

"**Customised mass demand" software sector = ITSCs, linked with Editors**

Commercial relationship
ITSCs: "customised" (scope economies) = inter-personal trust-based relationships & "mass" phenomena (economies of scale) = "Market-oriented" global software solutions

The reference to the "institutionalisation" of the four fundamental relationships harks back to the idea that their regulation could not be homogeneous amongst all firms in a given sector. For example, a change in supplier would not cause a fundamental shift in a purchasing relationship. Such relationships define the spaces of constraints and opportunities that firms had to face, and they were subject to change (Jullien and Smith talk about the fundamental

relationships' de-institutionalisation and re-institutionalisation). Similarly, their "homogeneity" does not imply the need to standardise firms' practices, nor does it mean ignoring the diverse nature of the microeconomic models that firms were implementing. What this analytical grid does is allow us to focus on the opposition between ITSCs and FSSCs (and not between FSSCs or ITSC amongst themselves) - a level of diversity that is meaningful for our analysis. This is because the FSSCs tried to implement a different model than the ITSCs did, a model whose fundamental relationships sometimes conflicted with the relationships that had structured the sector back when it had first emerged. For instance, FSSCs were no longer basing their actions on editor-supplied proprietary software; instead, they were using community-produced free software as a starting point. On the other hand, the FSSCs were necessarily guided by the purchasing relationship that already existed between the ITSCs and their customers. Whether they took a position in the same market segments or not, they had to communicate in the same vein if they were to become visible to their potential customers. The whole question becomes the extent to which the relationships that the ITSC-Editors tandem had established in this sector were in fact structuring in nature. Did these relationships doom any and all alternatives to failure - or to the contrary, did they enhance the viability of the novelties that the FSSCs were proposing?

Two of the four relationships in question (purchasing and commercial) appear fundamental for our analysis. But before specifying which relationships underpinned the model shared by France's FSSCs, we should focus first on the interface positioning these firms assumed.

2.2. FSSC positioning at the interface between communities and customers

Which economic activities were twinned with the free software? Since products of this sort were available free of charge, users could source them directly within the communities without requiring any commercial intermediation. At the same time, there was a need for a market-oriented interface between communities producing "raw source code" and non-IT customers looking for "ready-to-use software". Examples like Linux "editing" companies (RedHat, Mandrake, SuSE or Caldera) help us to pinpoint the interface role that FSSCs tried to generalise by positioning themselves as the "ITSCs of free software".

In the field of free software, although GPL licensing arrangements prohibited any third party exploitation of intellectual property rights, the community development model did allow for commercial intermediation. What these communities were seeking was not profitability but technical excellence in software development. According to Raymond (1998), some authors have argued that, unlike the proprietary software model, the opening up of source code (and user-developers' contributions) may well have enhanced the free software development model's effectiveness from a strictly technical standpoint (von Hippel, 2002; Franke and von Hippel, 2003; Bessen, 2002; Benkler, 2002). Yet most of the free software developed thusly was aimed at IT experts, i.e., community developer-users who often developed products for their own purposes (Lerner and Tirole, 2002). In other words, these products were not "sellable" in their current state. From the mid-1990s onwards, Linux "editors" adapted communities' output to the needs of non-expert users by transforming this into commercial and user-friendly products (graphic interfaces, peripherals managers, etc.) for which they supplied whatever maintenance, guarantees or training was required (Lerner and Tirole, 2002). Each firm offered its own Linux "distribution", a sort of package that included the core product as well as various utilities, plus a certain number of services, with the

packages' contents being differentiated from one target market segment to the next (FLOSS, 2002).

Since the fixed development costs were spread amongst the community members, there were no entry barriers like thresholds of profitability to cover fixed development costs. Quite the contrary, compliance with GPL allowed any company to recoup whatever innovations another company had made. This intimates that companies developed a "brand image"-based strategy,[5] whereas traditional editors' strategies had been based on an exploitation of property rights. Although Linux "editors" derived their added value from sales of services, they were also in favour of a commercial strategy that pursued a "product" logic and allowed them to communicate in much the same way as the more traditional editors had done – hence these two actors' analogous positioning.

Through this interface role, Linux "editing" companies made their product into something commercial. As such, they were vital to the operating system's success (Kogut and Metiu, 2001), enhancing its credibility within the market-oriented sphere, much like the big names in the IT industry (IBM, Sun or HP) did when they finally joined this bandwagon around the year 2000.[6] Of course, this involved little more than granting recognition to a particular product. Unlike the Linux "editors", the FSSCs wanted to be free software generalists. In 2000, there were around a dozen FSSCs, whom we surveyed using an interview technique (see Appendix) to assess whether the *FSSC-communities tandem might have offered itself as an alternative to the dominant ITSC-editors grouping*.

In the free software domain, the FSSCs had to act as both integrators (a profession specific to the ITSCs) and "experts" (specific to editors in the proprietary software sphere). There were two phases in free software's "integration". The first included choosing software or components amongst all free possibilities. The communities' mission was not to market their software. The many websites listing free software targeted developers rather than users seeking "commercial" information. This was confusing for "non-experts" who found it hard to get information about choosing and installing free software. The second phase involved integrating this software or components into the customer's IT system, so that the different forms of software (free and proprietary) and the material components could work together.

Ensuring the interface between communities and customers also forced the FSSCs to supply all the expertise services that the free software's marketing required. In the proprietary software sphere, editors were supplying these expertise services (technical expertise, training, support and guarantee/maintenance), working either directly on their customers' behalf or else indirectly through their relationships with the FSSCs – in which case the editors would either act in partnership with the ITSCs by bidding jointly on calls for tender, or transfer part of their expertise to the ITSCs by training or certifying certain ITSCs who would then be authorised to offer some expertise. As for the "Linux editors", community-developed free software was solely available in the form of raw source code. The communities played an editor's role, but only insofar as this involved writing source code for the software. Asides from the specific example of Linux, where the "editors" were the ones supplying the expertise services, as the

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[5] RedHat's CEO, Bob Young, has drawn a parallel between his company and Heinz, which has a 80% market share in ketchup because it defines how consumers think the product should taste. In a similar vein, RedHat tries to be identified with what Linux might represent in its users' heads (Young, 1999).

[6] To overcome Microsoft's domination (rooted in its mastery of operating systems), they encouraged a dynamic adoption of Linux by ensuring the compatibility of their product's software and hardware (FLOSS, 2002).

new decade began no firm had truly associated itself as yet with another free software. In other words, the FSSCs had to supply whatever expertise services their customers required.

From a theoretical standpoint, this dual intermediary commercial role legitimised the FSSCs' existence. However, such entities could only be viable if they found customers to whom they could sell their services, and a form of organisation making this feasible. To represent the FSSC model properly, we should now specify its commercial and purchasing relationships.

3. How might the FSSCs have "succeeded"?

How to convince customers to choose free software instead of proprietary solutions? Which profit sources might the FSSCs have exploited, and on what kinds of market could they have positioned themselves? How should the "purchasing" relationship with the communities have been managed? These were the kinds of questions that the FSSCs' managers/founders had to ask themselves. Following the trials and errors of their first years of existence, a distinction could be made at the dawn of the new century between the two relationships (purchasing and commercial) that the various FSSCs had in common. The received wisdom at the time was that the model's viability could be ensured if these two relationships were properly managed.

3.1. "Flexibility" as a competitive advantage: managing the commercial relationship

To position themselves vis-à-vis the ITSCs, the FSSCs had to achieve competitive advantage, i.e., they had to exploit the profitability sources that were specific to free software. On this one point, the managers we met were all convinced that free software's adaptive flexibility (a characteristic enabled by the opening up of source code) gave it "superior" responsiveness to "customised mass-demand". In IT, flexibility goes hand-in-hand with modularity: the multitude of module combinations means that producers can devise solutions that fit their customers' needs exactly, without overwhelming them with useless functionalities (Baldwin and Clark, 2000). To enable different modules to function jointly, they are assembled using communications interface, called APIs (Application Programming Interface). In the field of proprietary software, the only actor who can modify an API to ensure the software components' interoperability is the one holding the property rights. The ITSC-Editors tandem used modularity to exploit a module's production-related economies of scale, plus whatever economies of scope could be achieved through module combinations. To benefit from these economies of scope, however, the ITSCs had to pay the editors royalties to use their software components. Moreover, the licensing contracts generally prohibited them from modifying the source code underlying the API and the components, although they could sometimes make changes if they agreed to pay something extra to the editor. To cover such costs, the ITSCs tried to generate scale economies by spreading their fixed costs across a sufficient number of customers. Modularity became particularly profitable in free software because not only the interfaces but also the components themselves could be reused and modified for free (Bonaccorsi and Rossi, 2003). By taking advantage of free components' adaptability to diversify the product offer to match demand, the FSSCs were exploiting economies of scope. This is how customisation services aimed at very specific customer needs came to constitute the lion's share of the FSSCs' added value. By mutualising free software's development costs, the FSSCs were able to recoup part of their acquisition costs.

Furthermore, by participating in the design function they were able to lower their outlays in this area as well.

The flexibility advantage was ostensibly relevant as it allowed FSSCs to position themselves vis-à-vis the ITSCs. Yet with the exception of Linux or Apache, free software's importance at the time was largely marginal, and potential customers had no proof of the flexibility argument's validity. A lack of knowledge about free software persuaded the FSSCs to base their sales arguments on its better-known traits. Hence their decision to start out by emphasising its cost and reliability advantages, both of which were grounded in the reputation that Apache and Linux had built up. Once these advantages generalised to all free software, they became the two main criteria that pundits used to explain free software's diffusion (FLOSS, 2002). In prospective customers' minds, however, the cost argument was frequently understood as meaning that the software was entirely free of charge. FSSC managers therefore began to reason in terms of total software operating costs over time (TCO, Total Cost of Ownership), including licensing charges but also the costs of adaptation, installation and evolutionary or corrective maintenance, plus any costs relating to hardware infrastructure. The flexibility advantage was then reintegrated into the argument, and the FSSCs began to follow a dual approach, making customers understand that free does not mean free of charge, and showing that the free solution had a lower TCO than the proprietary one.

But the FSSCs were not in a position to maintain direct contact with all of the customers or market segments that the ITSCs had traditionally targeted. This is because the FSSCs' positioning was directly dependent on the communities' output, and on free software's state of diffusion. By 2000, free software had become a serious rival for proprietary software in the field of infrastructure.[7] At the time, FSSCs were specialising in the development of free software-based infrastructure solutions, trying to ensure these solutions' compatibility with the (generally proprietary) applications being used by their customers, mainly large firms and administrations. Although some FSSCs did target SMEs, all of them repositioned themselves due to their aversion for the kind of risk that is associated with actors of this sort. Risk aversion led to a phenomenon of backward induction wherein each actor would wait to see whether or not all the other actors had decided to adopt a new technology before making its own mind up (Farell and Saloner, 1986). According to FSSCs managers, the potential clients with the least reluctance to adopt free software were large firms and administrations. Given the extent of their stock of IT assets, these actors could allow themselves to test free software on their system's edges before envisaging its deployment on a wider scale. This positioning should have enabled the FSSCs to compete, at least for a while, with the ITSCs.

3.2. FSSCs at the community interface: managing the purchasing relationship

The most striking particularity in the FSSCs' model was the specificity of their positioning at the inter-community interface, to wit, their purchasing relationship. Clearly, this relationship could no longer be of the same nature (contractual and market-oriented) as the one that tied the ITSCs we interviewed to the proprietary software editors, since the communities were operating in the non-market-oriented sphere. Did the relationship between FSSCs and communities consist of nothing more than a recuperation of the communities' work? To the contrary, empirical studies have shown that this positioning inferred the

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[7] In addition to the operating system, this also referred to the tools being used to develop and launch various software applications.

existence of some interaction, a "you scratch my back and I'll scratch yours" relationship with the communities.

The FSSCs were forced to "play the game" with the communities, if only because of the GPL license, which created a situation wherein any modifications made had to be covered by the GPL license as well. However, nothing guaranteed *a priori* that these commercial entities would in fact want to take part in community projects. After all, nothing forced the parties that had changed the software package to disseminate its modified versions, nor were they obliged to communicate any such alterations to the community project manager. In other words, when a FSSC carried out modifications on behalf of their customers and got them to accept the GPL license, what this signified is that they were being forced to accept that the product would be diffused free of charge. Furthermore, FSSCs could register their own modifications under a proprietary license[8]. Asides from the GPL license, FSSC managers were forced to comply with the communities' ethos because they needed a workforce that possessed a modicum of expertise in free software. Since the FSSCs' IT specialists had mainly come out of these communities (and seeing as they possessed the expert profiles that the FSSCs required), the FSSCs would only agree to "sell" free software if the company complied with community rules. This involvement was so crucial that employees were actually allowed to preserve their ties to such communities. In turn, this allowed for a modicum of continuity in their "training", the source of their expertise. In the traditional ITSCs, employee training in the editors' various products was generally provided by the editors themselves, within the framework of a competency transfer process that allowed ITSCs to fulfil their integrator's role. In the FSSCs, employee participation in the communities was what passed for training: since no editor was directly associated with the new software, the transfer of competencies necessarily assumed the shape of self-training.

It remains that the intensity of the links between the FSSCs and the communities also largely stemmed from the ethical orientation of these FSSCs, which had mainly been created by community members. But is this the only explanation for that fact that almost all the FSSCs had a website (or a space on the company's commercial site) listing their participations in community projects and detailing hackers' main ethical principles? Clearly, these statements were part and parcel of efforts to "extend community principles" to the market-oriented sphere, but they also served the direct interests of the company involved (in its avatar as a commercial entity). Conversely, the possibility of downloading the FSSCs' output for free was supposed to bolster the software's diffusion as well as the sale of related services. Furthermore, these manifestations of a company's actual commitment could prove to its customers that it really did belong to certain communities, thus that it possessed real expertise. By enhancing the FSSCs' reputation amongst the communities, this overt approach also facilitated the communities' collaboration with the FSSCs.

Of course, the communities' presence in the FSSCs' organisation also affected the third fundamental relationship (working). For instance, there was the risk that employees would equate "working with free software" and "working like people do in communities". What came out of our survey was that FSSC employees' main motivation was "working for free software". A firm's organisation could be partially inspired by a community's,[9] but the idea of

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[8] We have checked that the FSSCs did publish, under a GPL license, those developments that they had carried out within the company, and that they diffused any of the modifications they made to the communities' projects.
[9] A very good example was Easter-Eggs, the FSSC that was most in sync with the hacker ethos. The company was controlled and managed by all of its employees, each of whom had a voice in deciding its orientations.

a transposition per se was unthinkable. Nor could the employment relationship be the same as the one that prevailed in the ITSCs. In FSSCs, inter-employee relations were based on an open exchange of ideas and source code, encouraging knowledge transfers. But in the ITSCs, such relations were partially based on the retention of information, since this enabled individual employees to safeguard their own position vis-à-vis their colleagues.[10] And within the communities, volunteers worked for fun without any time constraints (Lakahni and von Hippel, 2003; Lerner and Tirole, 2002). Within profitability-seeking FSSCs, human resources existed for customers' benefit. To ensure both that projects were completed on time and also corporate profitability, a modicum of hierarchy became necessary.

In short, the employment relationship would have been unfeasible without a compromise aimed at getting employees to work in a company's interests, distinguishing between its short-term profitability objectives and the "free alternative's" prioritisation of long-term survival. Our interviews showed that this compromise was based on the idea of "getting employees to take responsibility for themselves". It found its translation in a flexible work organisation, with IT specialists being more or less free to participate in community projects, in their own name but during working hours. This sustained a high level of expertise, which in turn helped to sharpen corporate performance, guaranteeing compensation for any software developments the firm recouped. Directors at three FSSCs (Easter-Eggs, IdealX and Alcôve) affirmed that between 10 and 20% of their employees' time was spent on free projects. Christophe le Bars (Technical Director at Alcôve) specified in his interview that this equated to 10% to 20% of the firm's time, not the time of each of its employees. Like in the other FSSCs, working times were not being distributed uniformly. The actual time spent on a job reflected a kind of specific incentive being offered to "wage-earners in the free software sector".

A priori, the FSSC model seemed both coherent in terms of the three fundamental relationships (purchasing, commercial and employment) that were being implemented, and also relevant from an economic standpoint. Yet it is also possible to affirm that, starting in early 2003, FSSCs failed in their attempts to becomes the "ITSCs of free software".

4. Evolution rather than revolution: the joint development of ITSCs and FSSCs

Why did the FSSC model collapse towards 2003? The first explanation is the downturn the software industry experienced in 2002, one that had a particular impact on service activities. The FSSCs were not spared from this and after early 2003, their failure became patent: out of the ten FSSCs comprising the panel, three were liquidated and two taken over by ITSCs. Two of the five survivors were ITSC subsidiaries from the very outset. Whether or not they have been taken over, the ITSCs that have remained in business went through tough times (with redundancy rates averaging close to 50%). All have repositioned themselves as specialists in free software for private users. Yet even if the 2002 slowdown clearly hastened the FSSCs' failure, cyclical factors alone are not a sufficient explanation for what happened. The positioning assumed by the "free ITSCs" appears to have been no longer tenable due to the ITSCs' recent integration of free software into their product offer. The FSSCs' failure in this domain led to their repositioning themselves as free software "editors".

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[10] This characteristic caused two ITSCs (Asyres and Adequat) to transform their "free software" pole of expertise into independent FSSCs (Asynux and Adelux).

4.1. "Free software" and ITSCs: the FSSCs' failure and repositioning

It was mainly as a result of the 2002 downturn that the ITSCs ended up by integrating free software into their product offer. According to Syntec's annual statements,[11] the generalised contraction in IT spending caused a 3% to 5% fall in income. Hence its 2003 recommendations: cost-cutting programme; and increased corporate adaptability to specific customer demands. Both recommendations were congruent with free software's integration, the goal being to benefit from its two advantages, cost and flexibility. Yet by integrating free software into their product offer, the ITSCs were merely reacting to the overall changes traversing the IT industry. On the "supply" side, IBM began to behave like everyone else in 2003, also reacting favourably to free software. Moreover, the big IT names were not only rallying Linux's case, but a whole panoply of free, mainly LAMP platform-based software: Linux, Apache, MySQL and PHP. On the "demand" side, ITSCs' traditional customers, notably those operating in the State sector, large firms and the telecoms industry, were explicitly requesting free software. Asides from the 2002 slowdown, market acceptance of free software, plus pressure from customers, meant that traditional ITSCs like Cap Gemini, Unilog, Steria or GFI IT began to include it in their product offer. Reinforced in 2004, ITSCs' free software positioning now appears to have been strategic insofar as it has enabled such firms to protect their commercial margins and maintain traditional customers.

The ITSCs' positioning in free software has been a kiss of death for the FSSCs, who now suffer from a lack of credibility when competing with the ITSCs in calls for tender. Yet ITSCs do not source their free software directly from communities. They require commercial intermediaries, much as they themselves are accustomed to calling upon software proprietary editors. This is because their real profession is to devise a product offer after compiling all of the components and software found in the marketplace. Free software is viewed in a similar light as proprietary software and will only sell if it offers a better technological or monetary response to customer demands. Free, mature and recognised technologies are the only ones taken into consideration. With technologies like this, it is possible to offer the same kind of services and guarantees as with proprietary software. In sum, the ITSCs' integration of free software has reinforced the purchasing relationship that serves to structure the "customised mass-demand" software sector. ITSCs started out by using Linux "editors' " expertise in operating systems, and then got FSSCs to reposition themselves as free software "editors".

A new series of interviews with FSSC managers, conducted in 2003-2004, has confirmed this repositioning by "editors". Having been incapable of turning into viable free software generalists, today's FSSCs have learnt to specialise in certain areas. Their job now consists of offering ready-to-use solutions accompanied by guarantee, maintenance and expertise services. By exploiting their cost and flexibility advantages, FSSCs should be able to brass together their own specific software packages, products by which they can be identified. For example, IdealX concentrates almost exclusively nowadays on two types of software it has developed under GPL licensing. Based on very different components, these software packages are its PKI (IDX-PKI) and its signature and encryption product (Cryptonit). Similarly, Alcôve has developed a networks management software (CAOBA)[12],

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[11] French professional association in the Software & Services sector. http://www.syntec-IT .org.

[12] After Aurora's sale to ITSC Business & Decision, Jean-Noël de Galzain created two related commercial entities: Linux Consulting, a sort of R&D laboratory used for the industrialisation of free projects; and Wallix, which markets the service offers revolving around such software.

and Linagora is specialising in community projects via its OpenLDAP (directories). By acting thusly, these FSSCs are behaving similarly to certain number of actors like Nuxeo, a specialist in ZOPE software (collaborative platform for web development) and JBoss, which specialises in application server software. Their positioning in the" free software economy" is similar to the one that Linux "editors" have adopted. In the "customised mass-demand" software sector, it is similar to the proprietary software editors' positioning. The FSSCs can intervene directly on behalf of their end users, but their main work takes place at the interface between the communities and the ITSCs. This is the positioning that ITSC managers expect of FSSCs whenever they seek to set up a partnership.[13] Cap Gemini's Mickaël Raymond has confirmed that what interests his ITSC is accessing cost and flexibility advantages and applying them in solutions that can be guaranteed by a market-oriented actor - solutions to rival the ones that the traditional editors are offering. Despite the lack of assurance today that this positioning can become a durable one, FSSCs like Linagora or IdealX still found themselves in a hiring phase in 2004-2005, and their profitability rates are satisfactory.

The purchasing relation that traditionally links ITSC with software editors appears to be of a structuring nature and can help to explain the joint developments that these two types of actors (ITSCs and FSSCs) have been going through. The FSSCs have refocused on supplying "expertise" in community-developed software, by turning this into a "product" whose integration function can be fulfilled by ITSCs acting on behalf of end users. However, the FSSCs' repositioning as "editors" also raises questions about the purchasing and working relationships that are a direct translation of the FSSCs' "industrialisation".

4.2. Revisiting the purchasing and working relationships

The FSSCs' development has given analysts cause to take a new look at the organisational components constituting a model that was first created to satisfy investors' wishes – before being confirmed by the nature of the "editing" business.

When scrutinising the FSSCs' model, it is important to consider the financial relationship that these entities have set up with their investors. Many of them took advantage of the "new economy" fad to fund their activities using easily accessible venture capital. The cyclical downturn in 2002 (i.e., the bursting of the speculative bubble that was the "new Internet economy") precipitated the FSSCs' industrialisation, and they became assimilated with Internet start-ups once investors had begun to generally withdraw. In the case of Alcôve, which was mainly funded through venture capital, its takeover led to a change in management, translating notably by the firing or resignation of those employees who had nurtured the greatest involvement in communities. In the case of IdealX, its main financier (Partcom) forced a summer 2002 change in its management team; a refocusing of its activities; and a transformation of its employment relationship. At our July 2003 interview, Nat Makarevitch (IdealX) confirmed that he had shifted to an ITSC type model, "the only one capable of ensuring profitability for market-oriented actors".[14]

Furthermore, the positioning of FSSC "editors" raises questions about the introduction of commercial interests into community-developed projects, especially where such communities tend to develop free software that evolves under the guidance of a leader who is

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[13] Linagora works with HP and Cap Gemini, IdealX with HP, Steria and Unilog, Nuxeo with Cap Gemini.
[14] Financed on an associative basis, Easter-Eggs was the only company not to have made changes in its organisational components. However, it still had to engage in massive redundancies.

collectively recognised by members. In a sense, this system satisfies the criterion of technical excellence (Gonzales-Barahona and Robles 2003). The "editing" business suggests, on the other hand, that any such software become a project that is at least partially commercial and specific to one firm. Any free components being exploited should in this case be modified independently of whatever changes the community makes, so that the only commercial interests being satisfied are the company's. For IdealX, for example, this development (facilitated by changes in the employment relationship) led to the 2003 establishment of a "contributor customer club" grouping the users of its PKI solution (around 40 members, including Auchan, GAN and Gaz de France). The club members would decide software developments jointly with the FSSC, and fund them. Although the modified software was covered by a GPL license, the communities would not have it returned to them right away. Until someone came up with a new version, the software would only be available to those users who had funded it.

The FSSCs' evolution raises two questions about their initial "model". Today, participation in free projects depends strictly on a firm's direct interest: the old "you scratch my back, I'll scratch yours" link between communities and FSSCs runs the risk of becoming a mere "co-optation". Similarly, FSSCs' restructuring has led them away from their original ethical orientation, and the employment relationship they now apply is not really different from traditional ITSCs'.

5. Conclusion

Some observers may have equated FSSCs with the emergence of a general alternative to the ITSC-Editors model, but what has become apparent after only a few years of existence is that this alternative remains incapable of ensuring its own long-term survival. Yet free software seems to have taken root: ITSCs have been forced to include free software in their product offers. At the same time, FSSCs are being forced to industrialise. Questions have arisen about their desire to ensure a durable free alternative. In short, it seems that free software can only survive if it is co-opted. The present article has used the FSSC example to show that, regardless of a new model's theoretical or assumed viability, it has no choice but to try and fit into an existing industrial sector – even if the sector's structures could be fatal for it.

Clearly, free software's non-market-oriented creation is compatible with the generation of related commercial activities. However, the specific example of FSSCs demonstrates that the viability of this "free alternative" raises questions as to whether the hybridisation between the market-oriented and community spheres is sufficiently in balance. Once an increasing number of industrialists can benefit from communities' development efforts without offering anything in return, opportunistic behaviours will arise and this will reduce developers' willingness to participate on a volunteer basis. To round out this analysis, we need to open it up to include the way in which the main actors in the IT industry have positioned themselves vis-à-vis free software. Free software's viability within the market-oriented sphere means more than the viability of "software products" alone; it also includes the communities' intellectual property model. Models like the one governing the FSSCs can only survive if they are "recognised". Now, neither the communities represented by these free software associations, nor the FSSCs, have been able to undermine the current rules of the game in the software industry. Similarly, industrialists are clearly not going to question intellectual property rights whose exploitation constitutes the very source of their profitability. In short,

what we should be scrutinising are the levels at which public regulatory bodies operate, to wit, the levels of the institutional context that serves to structure the different economic sectors.

Appendix: Survey's presentation

We wanted to meet the companies which 1) offer services only on free software, i.e. are "generalists of free software in the same way as ITSCs are "generalists" of proprietary ones and 2) are not positionned on one piece of software as Linux "editors". We first selected them in 2000 at the LinuxExpo (national meeting of free software actors, included market-oriented ones). In 2000, FSSCs were around ten "major" ones. We tried to meet all of them (just tow FSSCs don't want to participate). We also tried to test our hypothesis on employees (by the way of a questionnary) but it felt because it was in 2003, just when FSSCs felt down like their working relationship. In order to understand the FSSCs'evolution, we met these companies another time (2003-2004). To complete our analysis, we also met tow ITSCs at the same moment: *GFI Informatique* (J.P. Paratre) and *Cap Gemini* (Mickaël Raymond).

Meeting of FSSC:

FSSC	Meeting date	Present situation	Second meeting
ADELUX	Mars 2002	Subsidiary company (ITSC, since creation)	No
ALCOVE	July 2001	Purchased by the ITSC *Genious* (November 2002)	Impossible because of the number of boarding changes.
AURORA	December 2001	Purchase by the ITSC *Business et Décision* (November 2003)	Febuary 2004
ASYNUX	December 2001	Subsidiary company (ITSC, since creation)	No
ATRID	Cancelled because of liquidation	Liquidated	
EASTER-EGGS	Juin 2001	Activity	July 2003
IDEALX	Février 2002	Activity	July 2003
LINAGORA	Juin 2001	Activity	July 2003
LINBOX	Juillet 2001	Liquidated	
OPEN CARE	Mai 2001	Liquidated	

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