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CEPIS NEWS

The Morfeo Project: an Open Source Approach towards Open Innovation

Cristina Breña and Andrés-Leonardo Martínez

Morfeo is an Open Source Software (OSS) community whose members are enterprises, public administrations, universities, research groups, technological centres and small and medium companies. They support OSS as an effective strategy for research, development and innovation processes of (software) technology development. Platform software development allows feasible open business models to be designed and win-win relationships that promote collaboration to be formed. MyMobileWeb, ezWeb, the contributions of CENATIC and OpenFwPA, and the Principado de Asturias *(Spanish region) e-government framework released as OSS to the community, are success cases of technological production from the Morfeo community. However, the improvement of internal/external communication, the development of new tools to support collaboration between enterprises, and the search for solutions to other complex problems hindering that collaboration, such as the production of standards and business development, are challenges currently facing Morfeo.*

Keywords: Business Fostering, Open Innovation, Open Source Software. Software Forges.

1 Introduction

One of the main contributions of the 20th century to the technological revolution has been the popularization of collaboration. The Internet and its most famous services such as Flickr, Wikipedia and Facebook are the result of collective participation. At the same time these Web applications are also collaboration tools [1][2]. Before that, open source communities such as Debian, Linux Kernel, Apache, Mozilla Suite and OpenOffice had defined the collaboration model for software development, producing the infrastructure required [3][4] for a worldwide community.

However, there still are a great many complex problems [5] whose only solution lies in the design and application of collaborative mechanisms among the agents interested in solving them. For example, the management of scientific research, technological development and, even more complicated, innovation processes are issues that remain unresolved. There are also some scenarios for which it still seems very difficult to design collaboration models; collaboration between companies is a case in point, because of the inherent competitiveness of the market. In this context, the pursuit of a solution to foster productivity, competitive advantage, and effective strategies in order to compete in the software market, led to the creation of the Morfeo open source community project, in which all the stakeholders of Research, Development and Innovation (RD&I) processes are involved.

Morfeo Project [6] is a technological and economic ecosystem composed of enterprises, public administration, uni-

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versities and research groups, technological centres and industrial clusters, and small and medium enterprises (SMEs). All its members are involved in the research, development and innovation processes of technology production and they share the following objectives:

- To promote open standards and software platforms.
- To define open business models based on open licence technology.
- To foster competitive technology markets as a means of achieving innovative solutions, cheaper technology production, and avoiding provider dependence.

Each member has its own motivation (cooperative glue) for becoming involved in community activities, e.g.:

- Universities and research groups can complement their (more o less) pure research with technological transfer activities performed by enterprises and SMEs.
- Public administrations, as major technology consumers and sometimes providers as well, need to have a broad base of technology suppliers/customers and to improve their positioning in order to define e-government standards.
- Enterprises' technological investment gains critical mass which minimizes platform adoption risk.
- SMEs can participate at the last part of the value chain, diminishing the risk of creating new services and products. In other words, SMEs can access RD&I activities and overcome their financial constraints.

2 The Morfeo Project

Late in 2004 the Morfeo Project was created jointly by Telefónica I+D, an R&D company of the Telefónica Group, the Polytechnic University of Madrid (UPM), and the *Universidad Rey Juan Carlos* (URJC). The initiative aimed to demonstrate the viability not only of the use of OSS in industry but also of companies' involvement in the development of open source software. The evolution of the community shows how different approaches were taken in pursuit of Morfeo's objectives (Figure 1).

From mid-2004 until the end of 2005: Code release.

During this time Telefónica I+D was aided by URJC and UPM in the releasing of internal (proprietary) software projects as open source projects. TidOrb, an implementation of a Common Object Request Broker Architecture (CORBA) middleware, SmartFlow, a workflow based on Petri Nets, and MyMobileWeb, a framework for developing Web content for mobile devices, were released as open source. All these were very mature products with a roadmap which was close to its end and which had been extensively used within the Telefónica Group. The main goal was to build a (traditional) open source community around these products, i.e. a community composed of software developers with a not-for-profit participation (volunteers). To do this a community forge [7], a collaborative tool for software development, was created.

Today it would be true to say that this strategy did not enjoy uniform success. While TidORB and SmartFlow were unable to connect with the community, myMobileWeb currently has a small but active community of developers all around the world. The main conclusion drawn from this period was that it is very difficult to have industrial partners, with no experience in OSS development, and traditional OSS community members, with prejudices regarding companies and their needs or interests, in the same community.

From 2006 until the end of 2007: Building an open innovation community. In the middle of 2005 the Morfeo Board became aware of the difficulty of mixing traditional OSS fans with industry in Morfeo. The main problem was a mutual distrust: traditional OSS practitioners did not have any confidence in industry's intentions or how industry would be able to give back to OSS community, while industry had problems adopting to open source technology, both from the point of view of supporting their business processes, and regarding the delivery of services and products, mainly due to a lack of knowledge of OSS technology and its development process.

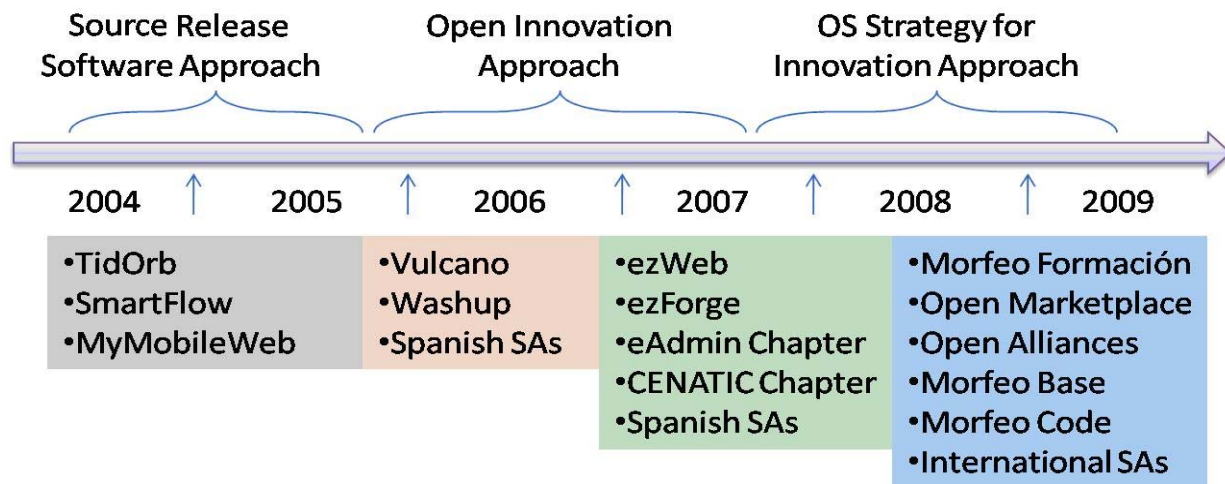So a different strategy was adopted, that of building an

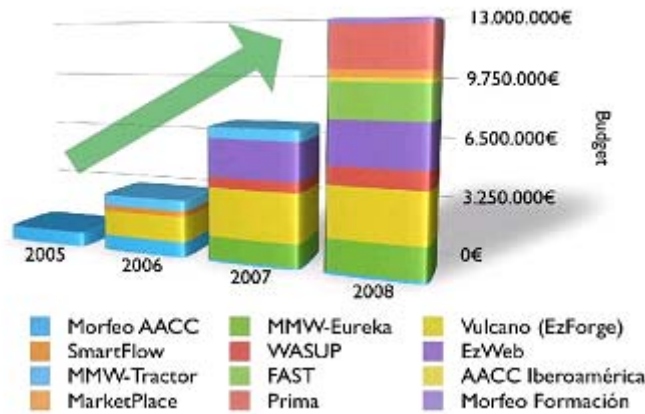**Figure 1:** Evolution of the Morfeo Community Model.

Figure 2: Total Budget Trend (© 2008 Javier Soriano).

open innovation [8] community for organizations involved in RD&I processes. Thus Morfeo embarked on the construction of a technological research, development and innovation ecosystem, one that was able to meet industrial criteria. The response was immediate: RD&I stakeholders found a collaborative schema capable of eliminating risk in technology management related activities.

As a result, Morfeo needed to define a new set of rules to promote participation, together with new channels of communication and new infrastructures; for example, a community refactoring was performed to accommodate this new kind of members. This time the results were very different. Since 2006 Morfeo has incubated a large number of RD&I proposals. Many of them have had public funding and the total budget has been about 25M euros. The budget trend can be seen in Figure 2.

From 2008 until now: Defining Open Source strategies for innovation. Previous experience had shown how an OSS strategy can be used to create a non-competitive collaboration schema between organizations. So it was natural to address new challenges in an attempt to apply this approach to other complex problems emerging from relationships between enterprises. Late in 2008, Morfeo members began to work on new problems: the standardization process, the delivery of professional services based on OSS technology, and the development of entrepreneurship facilities for SMEs. These three initiatives have received the following names: Morfeo Open Alliances, Morfeo Competence Center, and Morfeo Base.

Morfeo Open Alliance is an initiative to create a consortium of enterprises that share a common vision of technologies and their associated architecture. Additionally this consortium agrees on open specifications and promotes open source implementations of components in the envisioned architecture. This collaboration model speeds up the definition of standards, which leads to a shorter time to market and a lower technology investment risk. The initiative has been tested in a specific domain: the service front-
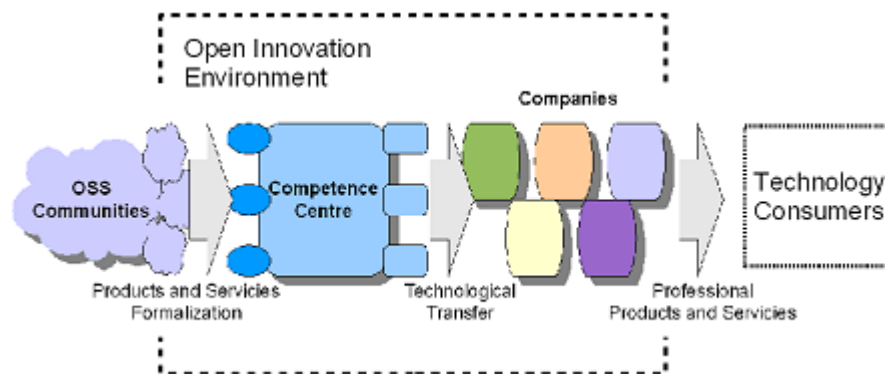

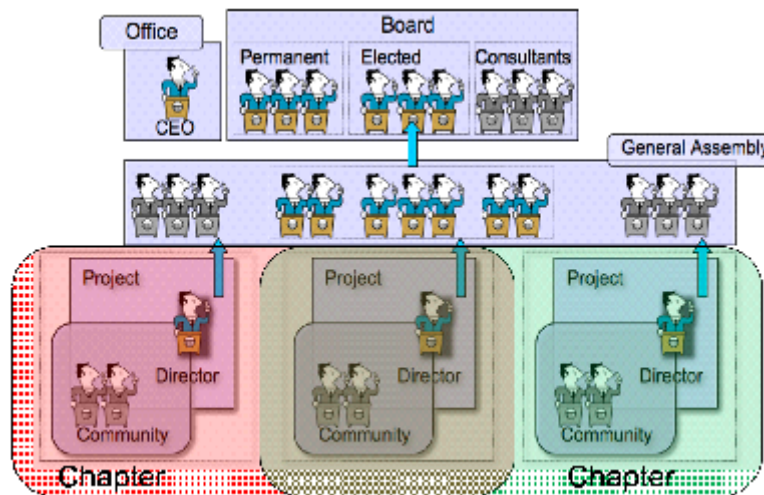**Figure 3:** Morfeo Competence Center.

Figure 4: Morfeo's Organizational Model.

end [9].

The Morfeo Competence Center (CC) [10] is an initiative to foster the development of OSS professional service delivery. The concept of the OSS competence centre was introduced by the QualiPSo [11] project as a way to "*help industries and governments fuel innovation and competitiveness by providing the way to use trusted low-cost, flexible open source software to develop innovative and reliable information systems*". The Morfeo Competence Center is intended to form part of the QualiPSo CC Network. The CC aims to accelerate OSS adoption in order to promote the development of professional services around OSS technologies that help reduce the risk of OSS adoption by industry. Figure 3 shows its structure and business model.

Finally Morfeo Base [12] is an initiative to increase the economic development of SMEs. In this proposal Morfeo is working on the definition of value chain management strategies under a collaborative approach. As a special case, the community is trying to develop a specific strategy based on the commoditization of software solutions (Christensen's law [13]) and transfer added value from product (by selling licences) to services (pay per use). This will allow an ecosystem of SMEs to be created around OSS communities.

3 Structure of an Open Innovation Community

The current strategy of the Morfeo Project is based on a specific community structure. This is because the Morfeo Community is not like other open source communities. Morfeo is not composed mainly by volunteers and individual software developers but rather by research and development process stakeholders. Also, the kind of institutions that are form part of the community makes the structure of the Morfeo community unique.

The community is organized into projects and chapters (see Figure 4). Chapters are just a bundle of projects that are in some way related. Each project has its own government rules due to the fact that Morfeo is quite flexible. You do not have to pay a fee in order to be a member of the Morfeo Project, but your project must meet three conditions:

1. Free technology: the outcomes of a project must be free under OSI criteria [14].

2. Defined intellectual property management model: the intellectual property rights (IPR) policy must be defined, so the potential contributors can know the conditions of their collaboration.

3. Strong mentoring: the project proposal must be led by at least one organization such as an enterprise, a university or a research group, a public administration, a technological centre or an SME.

For those projects that do not comply with condition 3, Morfeo provides a more traditional community known as Morfeo Bazaar. In either case, to become involved in Morfeo, a "future" member has to send an application for project membership stating the project's goals and providing a clear description of the project, the consortium, the licence, and the IPR policy. Upon validation the project becomes a Morfeo project and the members of the consortium will from then on be Morfeo members.

Each project has one representative in the General Assembly where the Board reports annually on the status of the community and its shared roadmap, new proposals for horizontal services, and new projects and members. Morfeo Board is the community's executive committee. It is composed of permanent members, e.g. foundational members, elected member, project representatives elected onto the Board, and consultants who are prominent OSS professionals with advisory skills. Morfeo Board is responsible for identifying new OSS strategies and introducing new services to foster collaboration between Morfeo members. Finally, Morfeo Office is in charge of daily activities such as infrastructure maintenance, project approval management, communication issues, and other minor tasks. Morfeo Office reports to the Board providing information to support decisions.

4 Producing Open Innovation Technology

Morfeo currently has various technological projects, evidencing the evolution of the community. The following types of projects are to be found:

■ Legacy Project: MyMobileWeb [15] "*is a low-cost, modular, open-standards-based, open source software platform that simplifies the development of top-quality mobile Web applications and portals, providing an advanced content and application adaptation environment*". It was initially developed by Telefónica I+D and released as an OSS project when the community started. Subsequently MyMobileWeb has been able to create its own community around itself. It is led by Telefónica I+D and is one of the few success cases of this kind of project.

■ Open Innovation project: EzWeb [16] is an enriched enterprise mash-up platform to build the front end layer of a new generation SOA architecture. It is Morfeo's front-end proposal for the new Internet of services. It has been developed from scratch in the community environment and is the fruit of many organizations working together; SMEs mainly, but also universities and public administration. It is led by Telefónica I+D but other enterprises are currently becoming involved in ezWeb technology. It can be said without hesitation to be another success case of open innovation community projects.

■ Contributed projects: CENATIC [17] chapter and OpenFWPA [18] are instances of contributed projects. In these cases public administration or public agencies set up a collaboration framework with the Morfeo community. They provide clear OSS adoption or OSS technology strategies for the implementation of e-government while Morfeo provides an active community of stakeholders in RD&I processes. These kinds of project are not led by any foundational members but by an external organization that has selected the Morfeo Community to incubate its projects. Contributed projects are an example of the expansive effect of the community which is seen as an effective environment of technological support.

5 Conclusions

The Morfeo Project has achieved some important successes in recent years. Morfeo has been able to define an effective OSS strategy for innovation management. It has built an open innovation environment in which IPR is based on OSS licenses. Morfeo is also a benchmark in public RD&I programmes since many of its projects are been partially funded by regional, Spanish and European RD&I programmes. Morfeo is becoming a true environment of technology transfer, business development, and economic growth. Although Morfeo started out as a Spanish initiative, it now has European recognition. The Community is also beginning to collaborate with Latin American with the incorporation of a new Latin American network of offices in Brazil, Argentina, Uruguay, Paraguay and Chile.

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