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Interaction and influences in an Open-Source eco system

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Interaction and influences in an Open-Source eco system

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Abstract

The development of open source software has gone from a model characterized by skilled software developers that developed open source software for their own interest and their own needs to a model that is more business friendly and more attractive for companies and organizations. One new business model for open source software is the professional open source software model or OSS 2.0. The business model includes three roles: the open source project, the professional open source company and the user. This dissertation studies the relationship between these three roles and focuses on the development of the user role and how it may develop for a new user in a specific OSS ecosystem.

The roles in the eco system that has been studied are taken by the open source project Alfresco, the professional open source company Redpill and a user from a large international company, without any previous experience of open source software or the business model of professional open source. The result of the study showed a well developed eco system between the open source project and the professional open source company but a need of more information about the user's role in it. Open source software is still seen by the user as an unsafe and unsecure alternative to the proprietary software available and more information about the business model of professional open source software and how the user can interact and influence the eco system is still needed.

Key words: Open source, Open source software, Open source eco system, Professional open source software.

” Writing the code is tough but building an eco system is
the work of the ages.”

(Russ Danner, 2008)

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Chapter 1

Introduction

1.1 Problem area

Open Source Software (OSS) is a new and evolving phenomenon within software development. Bonaccorsi and Rossi (2003) describe the process of OSS as a revolutionary process for producing software without constraints concerning the access to the source code¹. The Open-source reflects a wide distributed development trend and the use of Internet makes it possible for a worldwide cooperative development (O'Reilly, 1999). The beliefs that previously characterized the community around Open-Source software as a community with gifted software hackers that freely developed high-quality software are starting to be outdated (Fitzgerald, 2006). This type of early development method is referred to as FOSS business model (Fitzgerald, 2006). The new trend within OSS also referred as the OSS 2.0, describes a business model using the concept of Open Source in a more business-friendly domain, recasting the idea that it is not possible for organizations and individuals to earn money on 'Free software' (Fitzgerald, 2006).

Using OSS will allow users and organizations to for example, adjust applications for their requirements by manipulating and change the source code after their needs (O'Reilly, 1999). The increased use of OSS within organizations has furthermore led to new demands concerning support regarding OSS. Organizations want to reduce the cost for information and they want to know that trouble concerning the implementation of a new system will be well covered (Woods, 2005a). This has led to a business opportunity for companies to repack OSS into a type of solution (Lundell et al., 2006b; Fitzgerald, 2006; Woods, 2005a).

Nevertheless, OSS has lately not only attracted the industry of software engineering but also received attention from researchers within the subject area of information technology (Calibre roadmap D3.3, 2004)². Qualipso is an alliance including European, Brazilian and Chinese contributors with the purpose to help organizations and government to find the same trust for OSS as existing for traditional propriety software.

The Qualipso project includes seven different research domains, for example studies regarding the business model to facilitate the use of OSS in the industry and studies about the quality and trust of OSS (Qualipso, 2008). Qualipso is looking into the relationship between the community and the industry and how trust can be achieved between these two parts. The result could lead to a better understanding between these two parts and a more collaborative relationship. Another research example is the Calibre project. Calibre is an EU project that involves top authorities within libre/OSS. The aims for Calibre are among others to characterise open source projects, products and the processes around them (Calibre roadmap, 2008).

¹Source code is computer related statements. The source code is readable for humans and is used to create computer software. The source code must be transformed for a computer to understand it; this is often referred to as compiling.

² www.calibre.ie

The Calibre project has for example resulted in publications regarding the open source business model (Fitzgerald, 2006), distributed development (Ågerfalk and Fitzgerald, 2006; Lings et al. 2006; Lundell, 2006b) and the community (Fernández .L et al. 2006)

Industrial associations also start to exist to support companies using open source in their business model. Example of these types of Industrial associations can be found in Sweden, Finland and Denmark (Open Source Sweden, 2008; COSS, 2008; OSL, 2008).

1.2 Problem scope

Adoption of open source

A widely spread view still thinks that OSS is an unsafe alternative to safe proprietary software, without any support or guaranties. If you come into trouble with the software you are by yourself, however OSS has for a long time being used in the back-end of computer system, and adoption of OSS to the desktop environment is a new phenomenon (Fitzgerald and Kenny, 2003). A company using desktop application developed under open source can save huge amount of money compared to the license fee for the commercial proprietary software, but the adoption can be a long way from trouble-free, problems with resistance from the staff and the lack of knowledge and experience about OSS was some of the problems identified by Fitzgerald and Kenny (2003).

The problem with resistance to OSS may however be eased if organizations knows more about how OSS are developed and about the existing eco system for the OSS.

The eco system for professional open source software

Professional Open Source or the OSS 2.0 declared by Fitzgerald (2006) is a new trend within OSS. As mentioned in the background, professional OSS is a business model for open source. The general eco system for proprietary software often includes two roles, the company creating the software and the customer buying it and people are familiar with this type of eco system. The eco system for professional OSS tends to be more complex. First of all we have the user who is using the software, the software is developed in an open source project including a community and it also exist a company selling service and support for the software. In addition we need to take into consideration that open source project tends to influence each other and the success in one project may affect another. The company selling service and support for the software is also often a part of a greater organization and the whole eco system becomes more complex and harder to understand than an eco system for proprietary software. The eco system for professional OSS is new and more complex compared to the proprietary eco system and research about the eco system is needed to understand the different roles and how these roles interact with each other.

1.3 Problem Description

This dissertation presents a characterization of roles in a specific eco system. The dissertation studies the relationship in an eco system based on the business model of professional open source. The focus is on the development of the user role and how it may develop for a new user in a specific OSS ecosystem.

1.4 Outlines

Chapter 2 will contain the background information about what OSS is, the definition and history. Theories about the communication within open source projects will be presented and also the business model for OSS, compared to the more familiar commercial proprietary software development model. Chapter 3 will include the problem description and present the aim and objective for the dissertation. Chapter 4 will describe the different methods for each of the objectives. Chapter 5 will include information about the first objective and the execution of it. Chapter 6 will describe the second objective and also present the result from its implementation. Chapter 7 will include the analysis and the final conclusion will be presented in Chapter 8.

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Chapter 2

Background

This chapter will introduce OSS and important aspects of the open source phenomenon. The chapter will also describe the concept of computer support and how the view of support differs between proprietary software and Open-Source software. The final part of this chapter will present different business models for proprietary software development and the development for OSS. All these three aspects of open source are fundamental to fully understand the problem presented in this dissertation.

2.1 Open source

OSS is software that is under a licence accepted by the open source initiative. These open source license exists to guarantee that the source code for the application is open for everyone to see, distribute and change. (Woods, 2005b).

2.1.1 Open Source Definition

The most definite definition of OSS is the Open Source Definition stated by the Open source initiative (OSI, 2008; Feller and Fitzgerald, 2002). The definition can be found in *appendix 1*. The Open source definition exists as a type of specification of what OSS is. Open Source Definition is not a license itself it is rather a standard for Open source licenses. A software must fulfill all 10 requirements stated in the OSD to be accepted by OSI as an OSS, it cannot be an OSS if, for instance, only 9 out of 10 requirements are fulfilled.

2.1.2 History of Open Source Software

Even if the term OSS was coined in 1998 traces can be found back in the 50s and 60s at the time when software and hardware were sold in packages together (Hars and Au, 2001). Users of these systems created and shared utilities and macros in special user groups, which can be seen as a pre-phase of the Open Source moment (Hars and AU, 2001). In 1984, Richard Stallman a researcher at MIT started the GNU project. The purpose with the GNU project was to develop a free and open system instead of UNIX, as a response against the proprietary software system (Stallman, 1999) In 1985 the Free Software Foundation (FSF) was created by Richard Stallman (Hars and Ou, 2001; Stallman, 1999; Free Software Foundation, 2008; Krogh and Hippel, 2003). Free software is according to the definition stated by GNU (GNU Project, 2008) a matter of freedom not a matter of price. The definition states four different types of freedoms, presented in *appendix 2*. To fulfill some of these freedoms access to the source code is required. Free software and the GNU project have similarities to the business model set up by the Open Source Initiative and OSS and the creation of the Free Software Foundation may be the reason why OSS exists today.

Cygnus was the first Open Source business and was founded in 1989 (Tiemann, 1999). During that time it was hard to understand how you could make money on free software but Cygnus invented business model worked and by 1998 Cygnus was the largest open source

business (Tiemann, 1999). In 1999 Cygnus Solutions was bought by the company Red Hat for \$674 million (Royal Pingdom, 2008, Linux Journal, 2000).

2.1.3 Open Source Licenses

When proprietary software often is copyrighted by the developing company OSS chooses another way and copy left their applications (Krogh and Hippel, 2003).

Copyleft allow an open and more decentralized software development (Mustonen, 2003). The main catch with a copyleft license is that once an application is licensed by it, all subsequent application based on that also must have the same license (Mustonen, 2003). One of the most common copyleft licenses is the General Public License (GPL) (GNU Project, 2008). The GPL are created so the user of a GPL licensed application have the freedom to distribute copies of it, that the source code for the application is available and that the user are allowed to change the source code and also use pieces of the application in other free applications that are under the same license (GNU Project, 2008; O'Hara and Kay, 2003). However, it exists open source licenses that are not copyleft. One of the most common ones is the Berkley Software Development (BSD) licenses which for instance can be found on the BSD Operating System. The BSD licenses allow more or less the user to do anything with the application as long as the name of the owner of the application can be found in the source code (GNU Project, 2008; O'Hara and Kay 2003). Except these two extremes of Open source licenses other licenses like 'Lesser' GNU public license (LGPL), Mozilla Public license 1.1 (MPL) and Apache software license exists. It existed in 2008 (25 may), 68 licenses approved by the Open Source Initiative (Open Source Initiative, 2008).

2.1.4 Differences between proprietary software and OSS

When talking about OSS, the opposite, proprietary software are often mentioned. Proprietary software is with restriction on how to use or modify the software. Example of proprietary software is Microsoft Office³ and Adobe Photoshop⁴. The difference between this type pf software and the OSS are the restrictions on how to use the software, e.g. some Windows operation system is restricted to only be installed on one computer. It is also very rare that the source code is available for proprietary software's. The source code is often seen as a business secret and is protected so that only employee can access it. The source code however is always available for OSS's.

2.2 Communication in Open source projects

This section will describe the communication within an OSS and briefly describe the different roles and how these roles interact with each other. The chapter will also discuss how the development model for open source looks like and how this model differs from the development model for commercial proprietary software development.

2.2.1 The open source development model

The free distribution of OSS and the free access to the source code has created a development movement different from the one used to create proprietary software (Fuggetta, 2003).

Development of OSS makes it possible for a greater distribution of work where developer can develop, test and debug the product in parallel, which can lead to a more rapid software evolution (Fuggetta, 2003). Supporter of the open source development model also claims that the model produce software of better quality. Software with a closed source allows only a few

³ Microsoft Office 2007 <http://www.office.microsoft.com/>

⁴ Adobe Photoshop CS3 <http://www.adobe.com/se/products/photoshop/>

programmers to see the source code and everybody else must use the binaries. OSS makes the source code accessible for everyone to see and bugs can more easily be identified. “given more eyes all bugs are shallow” (Raymond, 1999).

2.2.2 Characteristics of Open source development

The process developing OSS and traditional commercial software differs from each other. A greater part of the larger Open Source project are developed within a community often widely distributed over geographical, temporal and socio-cultural distances (Lundell et al., 2006a), whether proprietary software are often developed within organizational walls. The widely distribution of the OSS projects has also lead to that the projects are normally internet-based networks or a group of software developer working in a community (Krogh and Hippel, 2003; Hars and Ou, 2001). What more differentiate the development of OSS and traditional commercial development is the overall reason for development. A development of a traditional commercial software has an interest in selling as many copies as possible, gaining as much profit possible for the developing company whether the development of OSS tends to start with dissatisfaction in existing application or as described as “an itch worth scratching” (Raymond, 1999).

Another phenomenon with the development of the OSS is the dependability of other ongoing projects. Many open source projects have been interdependent through e.g. software developers, shared websites and development artifacts (Scacchi et al., 2006). The effect of this dependability result in that the success, failure and weaknesses of one project can affect other projects that are linked to it (Scacchi et al., 2006). An example of these dependability can be projects that are based on the Unix operation system, like Linux, BSD and Darwin, and from these it exists hundreds of sub variants or distributions (Scacchi et al., 2006). A change in the Linux kernel can for example affect a lot of distributions using the kernel.

2.2.3 Motivation for Contributors

A common question about the open source development model is why software developer joins a project often without any payment (Scacchi et al., 2006). Some studies have been conducted about this phenomenon (Hann et al., 2002; Hars and Ou, 2001).

Developer of OSS does also devolve most of the proprietary rights e.g. the rights to use, modify and distribute the applications for no monetary charge a direct opposite to the business model used for developing commercial proprietary software (Hars and Ou, 2001).

Hars and Ou (2001) identified sources of motivation. They divided the different types of motivations into two parts, an internal factor, that describe the selfless reason, working with OSS as a hobby without the need for any monetary reward. The second type of motivation identified was the external factor of which programmer was driven of some type of reward (Not always monetary). The result with the report was that the internal factors, such as the joy of programming and the identification in a community played a role for the developers, but not as big as the external factors such as monetary rewards and self-marketing. (Hars and Ou, 2001). As mentioned a big part of the developer of an OSS do develop for internal factors, such as the joy for programming. Some jobs in software development are considered less glamorous such as writing specifications and documentation. This is an explanation why some jobs, like documentation and writing specifications is a job not many developer are interesting in (Michlmayr, 2004) and this could be a reason why such information are missed in some open source project.

2.2.4 Quality of Open Source Software

According to Asklund and Bendix (2001), it is without doubt that Open source project produce high quality software. Open source projects can produce high quality software that

can be used by millions of users (Mockus et al., 2002). But as much as it exist verified quality software created in open source and free software projects, such as GNU/Linux and Apache (Mockus et al., 2002), it also exists application of less quality. Many studies has been conducted on popular open source applications like Linux and Apache and it is without doubt that these projects are extremely successful, but this is not the common result for OSS. Capiluppi et al., (2002) accomplished a horizontally study on a large random group of OSS. The result of the study showed for example that 57% of the project analyzed only had one developer and 97% of the projects did not change by size or only changed by 1% over a period of 6 months (Capiluppi et al., 2002). These numbers shows that not all open source project gain the benefits of the open source development model, e.g. one developer cannot for example be a community. However some large open source project has been very successful and do take benefit of the open source development model. For example the free access to the source code for OSS makes it possible for a large amount of people to peer-review the application and collaborates to find weaknesses. Eric Raymond described this benefit as “given more eyes all bugs are shallow” (Raymond, 1999). This process may be one factor why some large OSS is of such a high quality.

2.3 Business models

A business model can be seen as a plan for how a company will make business and how money will be earned. Or more specific, what a company do for a living. A business model for a company selling some type of software can of course be more complex than just selling this type of software. The company can for example promote software from special software developing company or particular hardware for the software. The free access to the source code in OSS makes the business model differ from other commercial proprietary software development companies. The following part will describe different business models in proprietary software companies and companies producing OSS.

2.3.1 The proprietary software business model

Proprietary business models can basically be described as a company that hires software developer to develop an application. The company will then sell the right to use this application to its customer. The application has one release date of when the application is available for the market and after that patches will be used to fix bugs and other problems that may be detected after the release.

2.3.2 The open source business model

The open source initiative has change the view of OSS and made it more clear how companies can make money on OSS. This chapter will discuss two different business models for OSS, the dual licensing and the professional open source. Companies are however not forced to use one or another, but can use the benefit of combining them. Compared to the proprietary software business model OSS user don't have to wait for the vendor to fix bugs that may occur, the users can do this by themselves because of the access to the source code.

Dual licenses

Dual licence is one way to make money on OSS. It is e.g. adopted by mysql⁵. The main idea is that the product is released for free under a restricted license and the user can chose to use the application with that license or buy a copy of the application with a less restrictive license. Some companies may need to modify a OSS but cannot release it as open source for

⁵ <http://dev.mysql.com/>

competitive reasons buying a copy with a licence less restricted may allow these companies to keep their modified version as closed source within the company.

Professional Open Source

Professional OSS is a new trend within open source development and was coined during the development of the Java application server JBOSS. It refers to a combination using open source with the support and accountability from a software vendor (Watson et al., 2005) and has several similarities with OSS 2.0 described by Fitzgerald (2006) and similarities can also be found from the business model earlier invented by Cygnus Solutions (Tiemann, 1999). This business model has continued to evolve and are being adapted by several other projects where the community and support-companies, collaborate and offering their customers the benefit of the OSS and possibility to receive first class support and maintenance for a fee. The result of this business model has many similarities with the result for companies investing in proprietary software but it still differs when it comes to pricing and the development model (Watson et al., 2005).

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Chapter 3

Problem description

3.1 Problem motivation

Qualipso is an ongoing project focusing on the relationship between the open source project and the industry (The professional open source company). This work will adopt the conceptualization of an open source eco system from the Qualipso project. The eco system will be used to distinguish the different parts of an eco system. In contrast to the Qualipso project, this dissertation focus on the relationship between all three roles, the Open source project, the professional open source company and the user/organization and how these three roles interact and influence each other in a specific eco system with the main how roles evolve within the eco system.

3.2 Aim and Objectives

The aim for this dissertation is to present the development of roles, and how these roles interact and influence each other in a specific OSS eco system. The study will be conducted with a specific focus on the development of the user role and how it may develop for a new user in a specific OSS ecosystem.

For the aim to be reach, following objectives must be fulfilled.

Determine participants for the research

Earlier studies have focused on the business model of OSS and on a general eco system for OSS (Qualipso, 2008). This dissertation will present a characterisation of the communication in a specific OSS eco system rather than a general one. *In meeting this objective I will describe the different roles in an Open source eco system and identify an Open source project, a Professional Open-source company and user/organization for this research.*

The development of roles in a specific open source software eco system

It is of great interest to evaluate how different roles in an OSS eco system evolve over time and how the user role develop for a new user in a OSS eco system. One example is the focus on support. Can an organization only relay on the support available for free e.g. support from the community and support available from user forums and other sources of support available on the internet? It is also interesting to see what companies using the professional open source business model can offer compared to the free support available. A third interesting aspect is how the user role develop for a new user to open source software and the business model of professional open source. *In meeting this objective I will get information and experience about the development of the user role and how it may develop for a new user in a specific OSS ecosystem.*

3.3 Expected outcome and limitation

The result of this report will give a more implicit understanding for the relationship between the different roles in a specific open source eco system: The open source project, the professional Open-Source company and the user, with focus on the development of the user role and how it may develop for a new user within the eco system. It is important to mention that the result will present an understanding for one specific eco system between three specific roles. The result will not show a result in general but how an eco system around these three types of roles can be. An understandable picture of an open source eco system can lead to that more organizations are aware of how an eco system for OSS looks like and what the user's role is in it. This information can also show the maturity level of the eco system and that the overall quality can be at least as good as in proprietary software.

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Chapter 4

Research approach

This part of the report will describe the research approach. Because of the nature of the aim, the research is divided into two different objectives. Meeting these two objectives will result in the possibility to meet the aim presented in 3.2 Problem specification. Each of the objectives will include a specific research method for that objective. Part 4.1 and 4.2 will describe the different methods used to meet each of the objectives. A short description of the method will be presented together with a motivation why the methods are most suitable to reach the aim for each of the objectives.

4.1 Determine participants for the research

To identify suitable participants for the research a literature study was conducted in parallel with expert interviews.

The first step was to establish the requirements for the participants suitable for this study. The study will analyze an eco system for professional open source software and requirements to identify a project of that type must be established. When the requirements are identified, studies to find participants that fulfill the requirements are carried out. The result of this study is a set of different OSS eco system that is suitable for the research. One specific eco system will after that be chosen for the research. The research will as expressed in the aim, study one specific open source eco system therefore one unique eco system must be picked.

A literature study must be conducted to find the answer for the goal for the objective. The literature study was used to create a list of professional open source software that suits the requirements identified in the first step of the objective. The second step is to identify suitable participants. It exist a set of all existing OSS. This set is huge because it exist a lot of open source project today. A subset of all OSS are software that has a professional open source company supporting the system, this is the set of all the *professional open source software*. The study identified a part of the set of professional open source software, from this part professional open source software are picked. The literature study has a quantitative approach so the third step will be used to verify that the identified eco system indeed suits the project. Literature study together with expert interviews with the concerned participants verifies that.

4.1.1 Literature study

Literature analysis is a common research method. The idea is to analysis published information concerning the subjects within the area of interest (Berndtsson et al., 2004).

The literature study will fulfil one purpose for this objective. A literature study was used to identify possible open source project for the research. The focus of the research is the eco system for professional open source and thereby literature that concerned the phenomenon of professional open source software was used. *The literature study resulted in a list with possible OSS for this research and thereby fulfils the goal for the first objective.* The study will include searches in databases of published research material and names on famous OSS and related terms have been used as search expressions. Global internet search engines were also used to further more identify suitable OSS. The searches did not only lead to possible open source project but also lists of OSS that furthermore was used to identify suitable OSS.

The literature study is needed to find suitable OSS for the research, but to identify more specific information about the identified eco system more methods are needed.

4.1.2 Interviews

A second method used was interviews. The literature study laid a foundation of knowledge about the eco system, but the interviews contributed with first hand information about the specific eco system, how the different participants look at them self as a part of the eco system and how they look at the other participants. The interviews must be conducted to first give more information about the software identified but also to gain information about the professional open source company. The interviews for the first objective will focus on the professional open source company and their expression about the OSS. The interviews can be seen as a compliment to the literature study and presents information that is not published. Semi-structured interviews were conducted. The semi-structured interview form is a combination of both the structured and the unstructured interview form and contains a mixture of specific question and more open topics (Seaman, 1999).

4.2 The development of the user role in a specific open source software eco system

An action case study was conducted to consider the development of the user role and how it may develop for a new user in a specific OSS ecosystem. The method was chosen because it gives the possibility to both present a solution that may change a part of an organisation but also to study the effect of the change. This part of the research focuses more on the user of the OSS. The study is conducted over a short period of time and it may be hard to see any major changes in an open source project or a professional open source company. However a change on how a new user develops in the eco system may be noticed.

The method Action case study was coined by Braa and Vidgen (1999), and is a hybrid between the action study and the case study. While action study is a more practical method with the purpose to direct change something is the focus on the case study to understand a specific phenomenon.

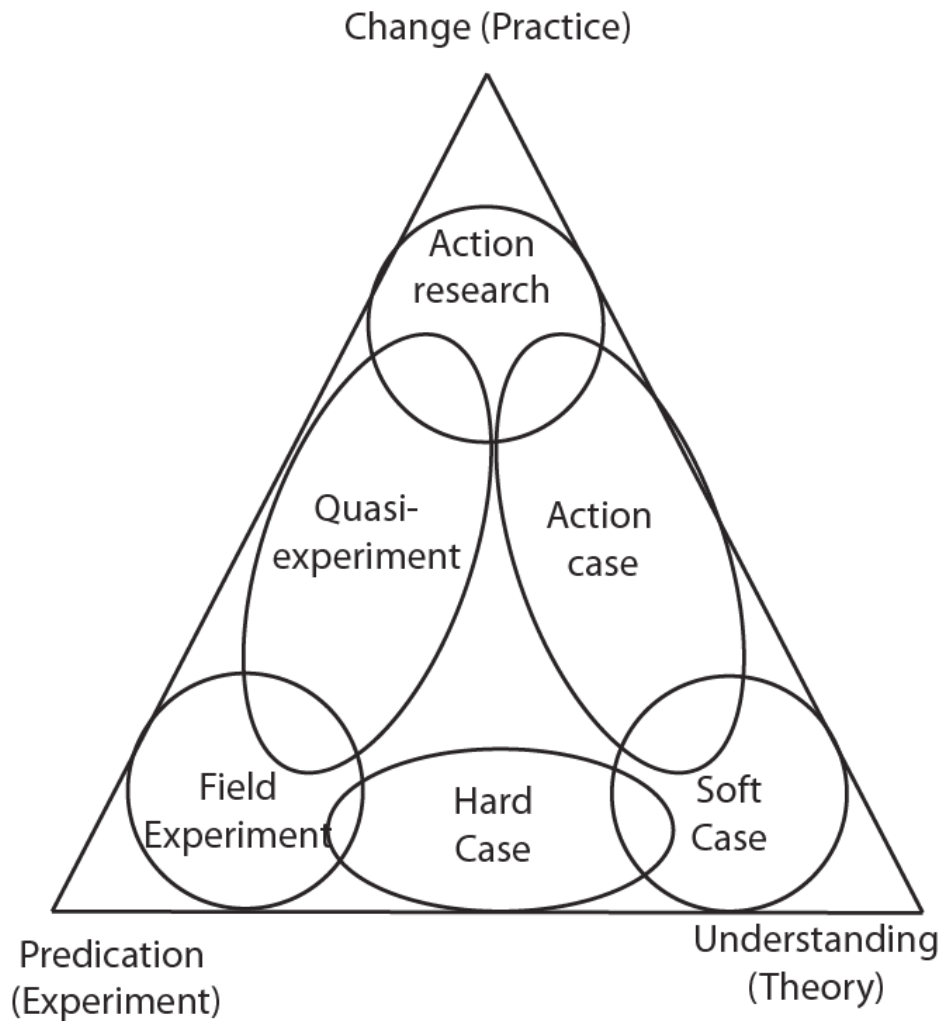


Figure 1 Method description, (Braa and Vidgen, 1999)

The triangle showed in figure 5 is an illustration created by Braa and Vidgen and shows how different research methods stand in relation to each other. The corners of the triangle illustrate research methods with different primary goals. The action research can be found in the upper corner. The action research method promotes changes and inventions. The soft case research method is placed in the right corner. Soft case research study is about finding understanding compared to action research method that is more of a practical research method. The following chapter will describe the different methods around the action case method. Understanding these research methods is fundamental for the understanding of the action case study. The following chapter will introduce the case study, the action research method and finally the hybrid, action case study.

Applied method

Action case study

The *action case research* method was coined by Braa and Vidgen (1999) and is a hybrid of the action research method and the soft case study. The *action research* method is a method that advocates changes in an organization. *Action research studies* focus on doing research *in* the action instead of doing the research *about* the particular action. The *action research study* is also an iterative process and each iteration includes steps like, planning, taking action and evaluates the action. A case study is a method used to explore a specific phenomenon in its natural environment (Braa & Vidgen., 1999; Berndtsson et al., 2004). An example could be to analyse an individual in a specific organization. The aim with the case study can then be analyse how this type of individual interact with a specific system with the focus on usability.

The action case research advocates both changes and understanding of a phenomenon. Action case studies do often start with some type of case study and during the iteration implement some changes. One main difference between the action case study and the action research study is that the researcher doing a action case study does not force changes in an organization in such a way as in action research study. Changes are however desirable but not without the support and understanding from the organization itself. The action case study is used to receive first hand information mainly about the relationship between the user and the open source project. A company implement a prototype in their organization using the OSS. Their experience over time using the software and the community is of interest. The action case study is suitable for this study because the study is focused on a specific OSS eco system and this type of eco system are a new phenomenon and all material interesting for the research may not yet be published. To work in the eco system and during the same time analyse the result will give a good understanding for the eco system and specific from the eyes of the user.

The action case study will be conducted through the following steps

- I. Each action case study will start with an introduction. The introduction will be a meeting with the one responsible for the research and the participated user. The introduction will include a presentation of the research, the aim for the dissertation and the user's role in the research. A short interview will also be conducted to gain knowledge about the user's earlier experience with OSS. It is important to as soon as possible gain information about the user's relationship and his opinion about open source, because these can change during the study. That part of the study is also an important part of the aim "... how roles evolve...".
- II. The next step will be to introduce the user to the OSS. This introduction to the system will be conducted through some sessions. Part two will take a more action research approach and the user together with the interviewee will do something with the system. E.g. configure the system after some requirements or upload a file in the system.
- III. This step will analyse what have been done in step II. How where the result achieved and the reaction and opinions from the user? This will end one session's cycle and another will start from step II. This will continue through some iteration until enough information is collected.

The overall result will later on be analysed to receive information, mainly from the user's point of view, of how he look at the eco system and how the different part of it interact and influence each other.

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Chapter 5

Determine participants for the research

The following chapter will present result for the applied methods for the first objective. The chapter will be divided in the following sections. The first section will present the requirements for the participants suitable for this study. The section will be subdivided into three parts, the requirements for the open source project, the professional open source company and the user. The next section will introduce the OSS identified as a suitable participant in the study. Section three will present the professional open source company identified. The forth section will then present the user for the study.

5.1 Identify properties for candidates of the OSS - eco system

This section will present the identified requirements for what will be classified as a suitable participant for the research.

5.1.1 The open source project

The term open source project will be used to describe one of the roles in the eco system presented in the problem description. By open source project I refer to the application itself and the community creating it and other open source projects affecting the open source project in the eco system must also be taken into consideration. Source forge is the largest sites for hosting OSS development projects and has around 169 000 open source projects and over 1 700 000 registered users (Source forge, 2008). However, many of these projects are inactive or have large quality problems (Michlmayr, 2004). Because Open Source project do not have a budget many unsuccessful projects do not come to an end, the result will be that it is hard to identify projects that has failed (Michlmayr, 2004). This amount of inactive projects demands a good study to identify a healthy and suitable for the needs of this research. To evaluate the health of an open source project the criteria's from the text *Assessing the Health of Open Source Communities* by Kevin Crowston and James Howison(2006) will be used.

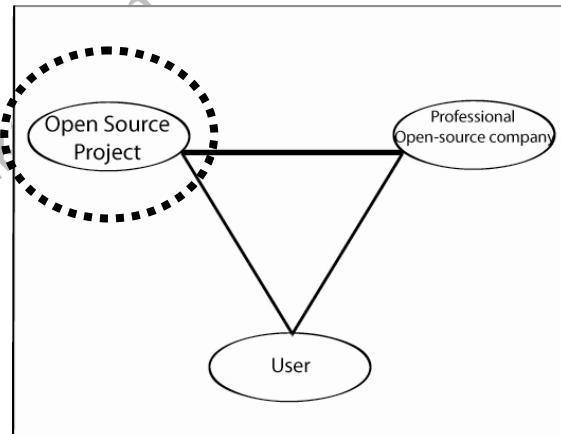


Figure 2 Open source project

Healthy Open Source communities are in general union shaped included clear roles for the leaders, developers and the users (Crowston and Howison, 2006). The union model includes some specific roles in an open source community, such as the founder, the core developer,

codeveloper the active and the passive users. The size of the community is also one thing that affects the overall health of it (Crowston and Howison, 2006).

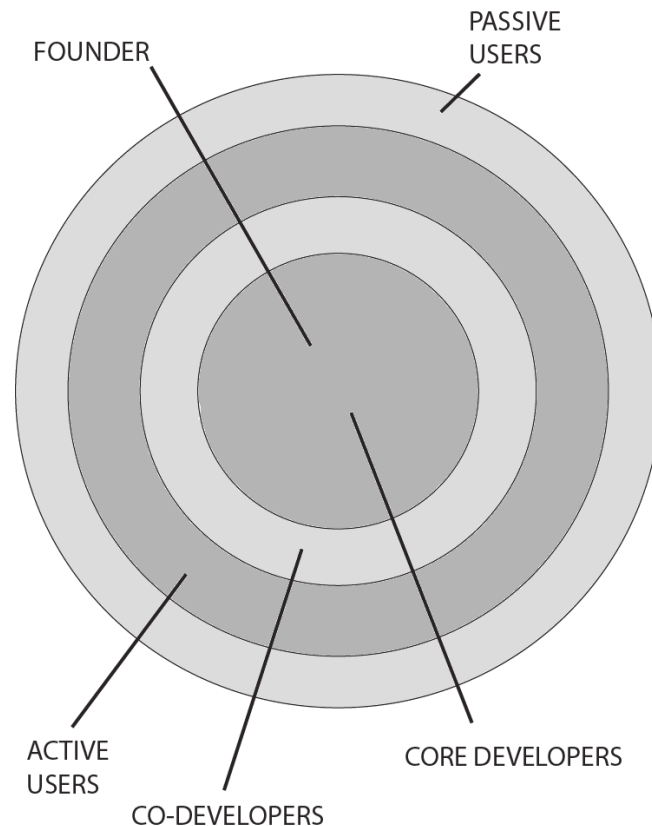


Figure 3 “A healthy FLOSS community is onion-shaped, with distinct roles for developers, leaders, and users.” (Crowston and Howison, 2006)

5.1.2 The professional open source company

The term Professional open-source company will be used in this thesis for the company selling services and support for OSS and use the business model, professional open source presented in the chapter 2.3 Business model, in this dissertation. The professional open source companies does not just take advantage of making money on high quality OSS, they also support the open source project and the community behind it e.g. the open source project can get assistance from paid programmers from the professional open source company to support them.

For this research it is important to identify a professional open-source company for an open source project because it is an important part of the eco system presented in the problem specification. It is also beneficial if the company is geographical close to the research to enable possible expert interviews to gain knowledge about how they look at their relationship with the Open source project

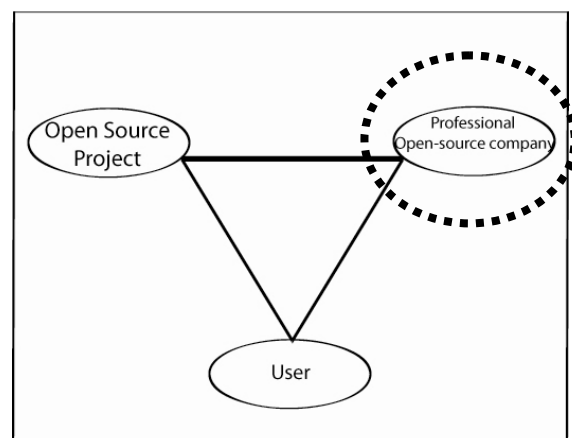


Figure 4 Professional open-source company

5.1.3 The potential user/organization

The third role in the eco system is the user or the organization. The user/organizations earlier experience is of interest, a user/organization with little to non earlier experience with OSS and the business model for open source could have one impression of OSS in the early stage of the project and another in the end of the research. The research is open for a user with development experience and also for a future potential user to open source software as well as for an experienced user of OSS. The choice

between a potential user and an experience user will however affect the result of the research and must be taken into consideration in the conclusion of this dissertation.

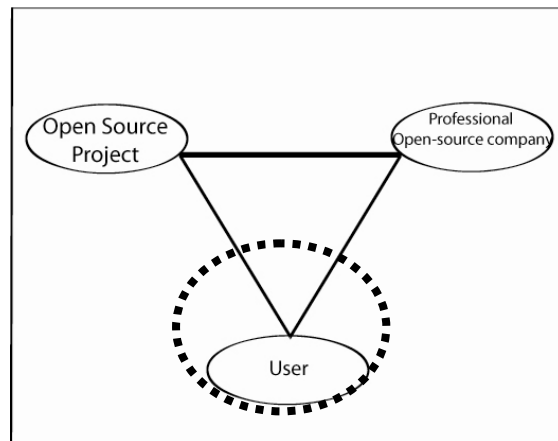


Figure 5 The user

5.1.4 Requirements

The list below concludes the different requirements identified and motivated in the previous section.

Open source software:

- Should be of the type professional open source
- Must have stable releases
- Must have a healthy open source community.

Professional open source company:

- Must offer support for the OSS
- Have some type of relationship with the open source project.
- Must contribute to the project in some way
- Beneficial if the project is geographical close to the research

User/Organization:

- The user / organization must have a need of the OSS or have a problem that the OSS fully or partly can solve.
- The user / organization must also be willing to use and test the OSS and be able to answer question about the software and the eco system.

5.2 Literature study

A literature study was conducted to identify suitable open source project and connected professional open source companies. Identification of the user is not possible during the literature study. The search engines used was search engines for research publication and global internet search engines. The literature study was conducted in a few steps. The first step used internet search engines like Google⁶ to identify open source project. Keyword used in the search engines was combination of the words - "Open source software" "Professional" "Service" "Support" "Popular" "Quality" "Consulting" "Company" "Community". The first search gave a list of possible open source projects, the next step was to validate that the projects was indeed professional open source software's and had companies supporting the project and uses the business model of professional open source. The literature study was extended after the first search and search terms on the name of specific open source projects was used in both global internet databases and search engines for research publications. Information collected was information published in research papers, published on web pages and lists of companies connected to the open source projects published on their websites. A group of possible open source projects and connected companies were later identified (Appendix 3) as possible candidates for this research.

5.3 Motivation

5.3.1 Open source software

Alfresco is professional open source software. The software exists both an enterprise edition that can be obtained for a fee and also as a free community edition that is freely available to download. Alfresco have several companies that support the software and contribute in different ways for a more qualitative and stable software.

Must have stable releases. The current version of alfresco is 2.9. Before this release several other versions of the software has been released. 14 developers are registered on the sourceforge version and the project has a high activity grade (Sourceforge, 2008). Except for the community developer several developer has been identified within the alfresco company.

Must have a healthy open source community. The activity rate on source forge speaks for a active community and roles like project manager, support manager, developer and testers can easily be identified. Something that characterize a healthy community according to Crowstone and Howison, (2004).

5.3.2 Professional open source company

Redpill is a Swedish company that offers support for alfresco. They have just started the service but have earlier experience by offering this type of support for other OSS.

Redpill has a stable relationship to alfresco and the relationship between Redpill and the developer did as a matter of fact, started before the actual development of alfresco. (Appendix 4.3).

⁶ <http://www.google.se>

Redpill is not yet committed to the alfresco project but they think that they will be able to do so in the near future. *They contribute to the alfresco project with support and service to the users and also with bug reports and proposal of improvements.*

The last requirement specified in 5.1.4 was that it is beneficial if the company is geographically close to the research. Mainly for two reasons, it would simplify the collaboration between the company and the researcher. Another point is to study if it exists any differences in how the business model of professional open source is used over geographical and socio cultural distances. This is nothing that this study will handle but may be an opportunity for future research.

5.3.3 The potential user

The potential user has a need for a solution of how they handle important documents, both internally but also externally between themselves and their customers. Alfresco may be an application that could solve this problem for the potential user.

The user's organization is currently evaluating different solutions to solve their problem. They are currently just evaluating proprietary but are willing to evaluate the alfresco application. The application they will evaluate will be the free community developed version.

5.4 The identified roles for the OSS eco system

This part presents the eco system identified for this project. A brief description of each part is presented. The description is a result of both the literature study and expert interviews with the concerned participants.

5.4.1 Alfresco

Alfresco is an open source enterprise content management (ECM) system. ECM can be seen as a solution to manage information. E.g. managing text-documents. Other similar application exists; one of the most popular is Documentum⁷.

History of Alfresco

The development of Alfresco started in January 2005 and the product was released in October 2005. The project was founded by John Newton, a co-founder of Documentum and John Powell, a former COO from the company Business objects.

The Alfresco was not completely open source at the beginning but became 100% open source in May 2006 and became GPL in February 2007.

Functionally of Alfresco

Alfresco is an application with a lot of functionalities. This dissertation has mainly focused on the content management part, in particular, document management. The most common interface in Alfresco is the web-interface. The web-interface has functions for uploading documents, navigating to different type of document, change information, metadata, content

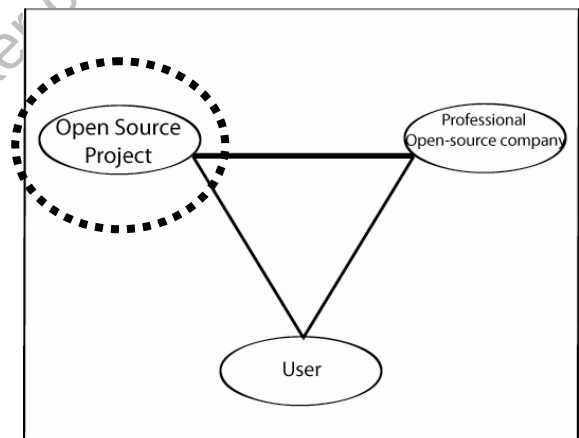


Figure 6 Open-source project

⁷ <http://www.documentum.com/>

and much more. The web interface also includes settings to add different users and user groups. You can turn on the version handling for each document and also tie a workflow to the document, for example so that the document must be approved by someone before it is published. Another function worth mentioning is the powerful rule function. The user can create rules for Alfresco that takes different actions on different events. For example, a word document can be converted into .pdf automatically when being moved to a specific space.

5.4.2 Redpill

Redpill is a Swedish company that was founded May 1, 2003. The founders of the company didn't see any other company that could deliver trust and reliability in OSS. Other companies did focus on technical solutions including OSS. The focus for Redpill became to offer support and training around the OSS's. The company has a business model that can be described as professional open source; they sell open source solutions to customers, applications they are supporting are for instance JBoss, sugarCRM and Alfresco. (Redpill, 2008)

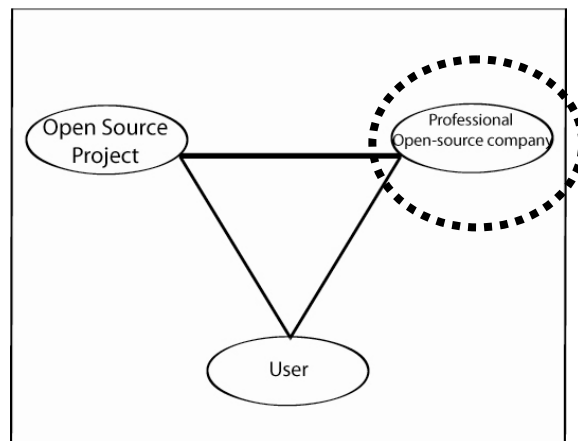


Figure 7 Professional open-source company

Redpill's business concept

- Offer their customers the possibility to gain the full effect of open source.
- Better products
- Better service
- Lower monetary costs

By offer

- Local support
- Training
- Expert knowledge

Alfresco started their operation with offering support for JBoss. When the company became larger Redpill started to offer support for more open OSS. When the Alfresco project started was people from JBoss recruited and some of these people had earlier collaborated with Redpill so the contact between Redpill and Alfresco was natural and for Redpill to start offering support for Alfresco.

Redpill describes the interest for Alfresco here in Sweden as big and they have received many questions about Alfresco. It also seems that Alfresco is more known as a web content management than a content management system. Redpill also suspect that many companies have started to evaluate and test Alfresco on their own and may contact Redpill in the near future for better support. Redpill thinks that these companies have recently started their evaluation when they noticed that Redpill offers support for Alfresco. For earlier product launches it had take around a year from the launch before the big interest starts and all factors points that this is the same thing for Alfresco.

Geographical close

Redpill can be found in three different cities in Sweden, these are Stockholm, Gothenburg and Karlstad. The research will be conducted from Gothenburg and Skövde and that makes Redpill geographical close to the research itself.

Offer support for Alfresco

Redpill offers support for different OSS. They recently started to offer support for Alfresco which is the application this research will focus on.

5.4.3 The organization

The user that attended to the research has a leading role in a project team at the IT-department in one of Sweden's largest companies. The person is working on an IT department for development and support for systems used in the company. His role in the company is a manager role but he still has great contact with the actual developers.

The people present during the interview were the user and an interviewer. No tape recorder was used so key points was written down on a computer

during the interview. The result was later on rewritten and the new result was sent to the interviewee for confirmation.

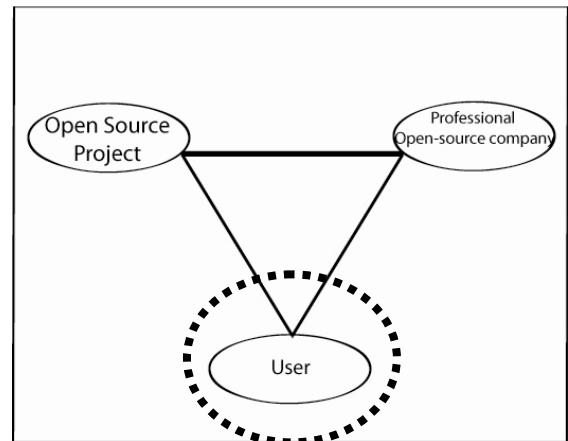


Figure 8 The user

The first interview was conducted as an introduction to the task and presentation of the project. The interview was semi-structured. The goal with the first part of the interview was to get a picture of the company's current situation, what type of IT environment they were working in. e.g. type of web servers, database servers, server operating system and other questions that was important to know before the use cases with Alfresco was created. Information about their environment helped to create a platform and a prototype suited for their systems. During the first part of the interview the person mentioned a possible change between two different solutions regarding document handling. Proprietary software was used but the company had plans to change this product to a solution with external network disks. The reason for this change was the lack of support for searching in the earlier product and that the use of network disk would give better search possibilities.

The next parts of the interview were about the person's earlier experience with OSS and the work in an OSS eco system. The person had no earlier experience with OSS but mentioned that other people within the organization had tried different OSS; Linux was mentioned as an example. The person stated that he was neutral in the question to initial thoughts about open source and the use of OSS within the organization but also said that he needed to be more convinced to use an OSS compared to proprietary software.

The company had service agreement with software vendors and support question in the company went first to their own support department, this department was divided in different subsection. One part was more focused on contact with the customers and another more focus on knowledge about the system. The support department in their turn contacts with the support departments for the proprietary software. One support agreement mentioned during the interview was Microsoft gold account.

An interesting side note during the interview was that the user did not had much knowledge about the support and service available for OSS, he also stated that he put more trust in proprietary software package than OSS.

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Chapter 6

The development of roles in a specific open source software eco system

The following chapter will present the result from the conducted action case study, the second objective. A couple of iterations were made in the system. Example of the goal for the iterations were, add user to the system and upload a file. The goal was to introduce the user to the functionality of the system and start working with it. More information about the different iterations can be found in appendix 4. The overall result was positive and it felt like the user became interested in the system. After the meetings the user had some knowledge about the system and was able to continue using the system by himself.

The iteration was conducted on two different installations but the result of each iteration was not in any way different between the two installations. The difference between the servers was only in term of performance and security. More information about the different servers and the installation and setup of these can be found in appendix 5.1 and 5.2.

6.1 Iteration 1: Add user

Goal

Add a new user to the Alfresco system

Overview

As soon as you choose to share a system with different users, it is always a good idea to have different user accounts. Before this iteration the Alfresco server was installed and it existed a admin account. The user was informed about the goal with the procedure and the expected outcome.

Procedure

The first iteration had as goal for the user to add a user in the Alfresco system. Having different users are fundamental in the system to keep track on who did what and who is suppose to do what. The user had access to the administration account and added a new user from the administration panel. The user had no problem to carry out the task. The response from the user was that it was really easy to carry out the task and no extra documentation was needed.

Analysis

The outcome of the iteration was a new user account created in the system. The user has earlier worked with other similar systems and pointed out the similarities between this system and the other system he has worked with.

More information about this iteration is presented in Appendix 5.3 Iteration 1: Add User.

6.2 Iteration 2: Add user to a user group

Goal

Add the user to a specific user group

Overview

Larger organizations or project teams are often split into different sub groups or sections. By adding different users into different groups in Alfresco the system can sort out the, for the user, irrelevant information. Before this iteration the user was informed of the goal and the expected outcome. The user that was previously added into the system should be placed into a user group. The server was running and the test starts at the login page of the Alfresco server.

Procedure

The second iteration had as goal for the user to add his newly created user to a user group. User groups will be very important in a larger organization to give some user groups access to documents and restrict the access for other groups. Two larger groups could be two different companies that have some type of relationship e.g. producer and consumer. The user had no problem at all to add his user to a user group.

After the iteration the user had ideas of using user groups to create different groups to their customers. Something that will suit the Alfresco application well. The use of different user groups between the users company and their customers would make it possible for a more interactive communication around e.g. the development of the requirement specification.

More information about this iteration is presented in Appendix 5.4 Iteration 2: Add user to a user group.

6.3 Iteration 3: Upload a document

Goal

Upload a document, using the web interface, to the Alfresco server

Overview

The two previous iterations were pre-operations to make this iteration possible. Uploading a document from the admin account would have been needless because the traceability and other functions would not work because the administrator of the system should not be a part of the main user group. The user was informed about the goal with this procedure and also about the expected outcome. The test starts at the login page of the Alfresco server.

Procedure

The goal for the user in the third iteration was to successfully upload a file. This can be seen as the most fundamental function in a content management system. The user was able with some help to successfully upload the file. The user disliked that he was forced to go through so many steps to just upload a file. Except for that he was pleased with the procedure and no obstacles occurred during the process.

Analysis

After the iteration the file was uploaded on the server. This procedure was done using the web interface of Alfresco. It also exists other ways to achieve the same result. For example, the CIFS interface could have been used or by uploading the files using FTP. The CIFS interface makes it possible for the user to add his home directory on Alfresco as a mapped network drive in the Windows operating system and upload files using drag and drop. This procedure may have been easier but the same result was achieved using the web interface. The web interface would also be the most suitable method for uploading files if the users are outside the local network, for security reasons.

More information about this iteration is presented in Appendix 5.5 Iteration 3: Upload a document.

6.4 Iteration 4: Version handling

Goal

Activate the version handling function on a document, update the document so that two different versions of the document exists.

Overview

For this iteration to work the three previous iterations must be conducted. It is also very important that a user account is created and that the admin account are not used. The version handling is one of the strong functions of Alfresco and something that could help the users during the development of documents. Version handling has been used for code creation for some time but is not as ordinary in the creation of documents. The user was informed about the goal of the procedure and the expected outcome. The test starts at the login page of the Alfresco server.

Procedure

The goal with the forth iteration was for the user to use the in build version handling in Alfresco. The user had to upload a file, activate the version handling on the document, check out the document make a change and then check in the new version of the document. The user did manage to succeed in the procedure and he was very pleased with the result. The version handling system is a very important function. One specific function it could fill is during the development of a specification of requirement.

Analysis

The version handling is a very important function for the user's organization. The function makes it possible to develop documents together with their customers and for example develop a requirements specification.

More information about this iteration is presented in Appendix 5.6 Iteration 4: Version handling.

6.5 Iteration 5: Create a project

Goal

Create a new project in the Alfresco system

Overview

This iteration has some pre defined requirements. A user must exist on the server and it would also be good if the user was a part of a user group. The project template in Alfresco is a good function to create a standard project space. The space contains functions like forum, blogs and calendars. This could be a good template for the user when setting up a project between the company and its customers. The user was informed about the idea of creating a project and why it could help them He was also informed about the goal with the procedure and the expected outcome. The test starts at the login page of the Alfresco server.

Procedure

The goal with the fifth iteration is for the user to successfully add a new project to Alfresco. The project function is a good function that create a pre configure space for documents and other spaces that could be important for the project.

Analysis

The user did like the project template and was interested in the different functions available e.g. the forum and the blog function. Two different projects was created and used for a time to evaluate the project function and Alfresco.

More information about this iteration is presented in Appendix 5.7 Iteration 5: Create a project.

6.6 Iteration 6: Create a blog

Goal

Create a new blog within an existing project

Overview

The user showed particular interest in the project template so the two last iteration evaluated two functions in this template. The blog function is one of the in build function and makes it possible for the user to blog about the project. This function could be a good function to present information about how the project proceed and inform the customer about the current status. The user was informed about the goal with the procedure and the expected outcome. The test starts at the Alfresco login page.

Procedure

The goal with the sixth iteration was for the user to create a blog-site to a project in Alfresco. If you create a new project in Alfresco you will also be able to create e new blog connected to that project. A blog could be good to communicate with for example the customers to the project and other people of interest that are not directly connected to the development of the

project. The user had no problem creating the blog and liked the whole idea of having a blog for the project for the reason presented above.

Analysis

The user liked the blog function and saw the possibility to use the function to inform stakeholders about the current status of the project in a less detailed level. The function could be good for the project leader to inform the customer about the status of the project without presenting too many details about the project.

More information about this iteration is presented in Appendix 5.8 Iteration 6: Create a blog.

6.7 Iteration 7: Create a forum

Goal

Create a new forum within an existing project.

Overview

The last iteration, like the previous one, explores the function within the project template. The previous blog function turns to brief the stakeholders and other people about the current situation of the project. The forum could suit as a information platform for the developer and other people that are direct connected and involved in the development. The user was informed about the goal with the procedure and the expected outcome. The test starts at the login page of the Alfresco server.

Procedure

The goal with the seventh iteration was for the user to create a new forum to the project. The blog could be a good way to communicate with the customers but the forum could fill the function as a communication platform for the development team. Information that concern the project could be presented in the forum and the developers could also start threads about concerns or questions during the project. The user had no problem to create a forum into the existing projects.

Analysis

The user liked the idea of using the forum as a communication platform between the developer and use the blog function for the communication with the stakeholders. The project leader could easily present information that concerns the developer and the developer can also start threads about questions about the development. This information can also stay hidden from the customers.

More information about this iteration is presented in Appendix 5.7 Iteration 7: Create a forum

Chapter 7

Analysis

7.1 Alfresco

Alfresco can both be identified as an open source project and as a software company. It exists two different versions of the Alfresco software. One that can be bought for a fee and one that is free and developed by the community. A complete list with the differences between these two versions can be found on the Alfresco homepage.⁸

7.1.1 Alfresco's relationship to the user

Alfresco exists as mentioned before both as a company and as an open source project. Alfresco has two different types of users, the one that uses the enterprise version of the Alfresco and thereby has the right to receive support from the Alfresco team and the user that uses the free community developed version of Alfresco and do not have the same privilege as the enterprise users. Alfresco also has an open bug report site where users can log in and report bugs in the system. The user can after that follow the process of the correctness of the bug and see how and when the bug will be fixed and implemented.

7.1.2 Alfresco's relationship with Redpill

With the success of Alfresco more demands on support has arise and Alfresco need support companies to support them in their work. Redpill is one of these support companies that offers 1st line support for their customers. In that way many questions can be answered and problem can be solved without the involvement of the Alfresco team.

7.2 Redpill

7.2.1 Redpill's Relationship to the user

Another type of relationship

Redpill describe another type of relationship to their customers compared to the relationship a support company for proprietary software has. They describe the relationship as more open. They are not treated as a company that is coming to sell a product and then leave as soon as the deal is done. They are selling support and need a good and stable relationship with their customers. The fact that they are selling support for OSS avoids many unpleasant discussions about who has the right to do what and that Alfresco don't cost extra for extra functionality, for example the workflow function. One employee at Redpill discuss that he has been in a proprietary software project where only the discussion about the price for implementing a workflow function took 2 – 3 months, a problem that is easily avoided with Alfresco and OSS.

⁸ <http://www.Alfresco.com/products/networks/compare/>

Redpill sells Alfresco as a safer alternative to proprietary CMS. The source code is open so maintenance and troubleshooting are easier to accomplish. The database of the bugs in Alfresco is also open so customers can by themselves see what the problems are right now. The documentation of Alfresco is also open for everyone to see. Even the documentation for future releases. Redpill argues that this type of motivation often works if people from the IT-department are present but this is often not the case. More ordinary is it for business representatives that are in charge for the import of a new software and they do not care so much if the software is open source or not. In this case the motivation for Alfresco is the low cost and the ability to test and evaluate the software for no cost at all, except the cost for the evaluation project. This makes it possible for the customers to see if the application fulfill their requirements and have the functionality they need. For instance one unique function in Alfresco so far is the CIFS interface, with makes it possible to add the users home space as a network drive in the Windows operating system.

7.2.2 Redpill's relationship to the Alfresco project

Redpill has a solid relationship to the Alfresco project. A relationship between Redpill and people in the JBoss project led to the business decision to support Alfresco when these people moved from JBoss to Alfresco. Redpill are active in the different forums around the Alfresco software and support users that are in need. They have not yet committed any code to the project but this is something that they believe can change in the future. Around the time for the writing of this dissertation, Redpill has only offered support for Alfresco for seven months and with more knowledge about the system Redpill thinks that they will support the Alfresco project with code contributions as well.

Today Redpill offers 1st line support for Alfresco and in that way solves many problems before it reaches the Alfresco team. In the cases where Redpill are not able to solve the problem they have collected information about the problem and can send this information to the Alfresco team. In that way Redpill and the Alfresco team are collaborate. Redpill collect the information needed so that Alfresco can focus on the important part of the problem and don't waste time on collecting important information about the problem.

7.3 The user

7.3.1 The user's relationship to the Alfresco project

What differs the user of a professional open source software and a user for a proprietary software is that the user for the professional open source software has a relationship to two different roles that provides them with the software, service and support. The conducted literature study showed a very active community around Alfresco. A new user to Alfresco could need a lot of documentation and support to learn how to install and configure Alfresco and also how to work with it. The community around Alfresco has created a wiki to collect all information about how to install and configure Alfresco. More information can also be found on their web page that could be accessed for all members. The membership is free. The documentation found on these two locations was identified both by the literature study that was conducted and also by personal at Redpill.

7.3.2 The users relationship to Redpill

Redpill is a company that offers support for Alfresco. The user in this research mentioned in the interview (appendix 4) that they have all support in-house and does not use external support companies. However they also mentioned that they will need education on the application before they can take the support role by themselves and this is something that Redpill offers. This is an interesting aspect because this may somehow change the eco system. We have the company red pill that offers support and maintenance for their customer. What do they think about educating a company with the overall goal to make the company independent of Red pill in the future; this may be a threat to the eco system or just another business opportunity for Redpill? In the long term this could mean that the company previously educated by Redpill could be a competitor to Redpill, something that will strengthen the marketplace around Alfresco but also something that may weaken Redpill's position in this marketplace.

7.4 The possible OSS adopter

As noticed in this study and also supported by interviews (appendix 4) it exists a lack of knowledge about the user's role in the eco system. The user still does not see OSS as an alternative to their proprietary software's and this is a direct threat to the OSS eco system. Industrial associations can be seen as one attempt from the industry side to inform organizations about the open source alternative and Redpill was one of the initiatives for the creation of Open Source Sweden but more information and knowledge is needed. The user used in this research was new to open source and had before the start of the research no earlier experience of using OSS or working in an OSS eco system. This also opens the question, what is necessary to overcome the obstacles of becoming a first time open user in a open source eco system.

The user used in this study had no early relationship to OSS before the study. He did not see OSS as an alternative to proprietary software, something that changes during the process. This change is obvious in these two quotations freely translated from Swedish

Before the action case study

What is your first reaction to open source software?

I am neutral to open source software, but it will take more to convince me to use open source software instead of proprietary software's

After the action case study

You have now used open source software for some week, even if the time is short, has your impression of open source software changed?

I would say, yes. The result was more positive than I would have hoped. The system is more stable and secure than I

believed. The functionality is great and the fact that the software is free with all this functionality is amazing.

What was achieved during the action case study to accomplish these radical changes? First of all the user had an initial problem with his current CMS system. The system did not fulfill the user's need to search in the repository in a way that satisfied the user. This opened an opportunity to demonstrate the powerful search engine in alfresco, something that directly caught the user's interest. After this the study was focused on how to impress the user, show something that they never had seen before, one example is the powerful rule manager. The user was able to upload a document and this event triggers other events. like directly converting the document to .pdf, move it to a public area and notify user about the new public document, and this process is totally automatic. The third subject was to show the user how alfresco could solve problem they had in their organization. While the previous two subjects were touched during the introduction of alfresco, the third subject is reflected in the conducted action case study (appendix 5). The user was lead through a couple of functions that may partly or mainly fill a function in the user's organization. One example is the use of the version handling function during development of the specification of requirements.

A fourth subject that was touched during the process was to show the user the stability and reliability of alfresco. A subject that was of great importance for the user.

Why do you think large companies in Sweden are slow to adopt open source software?

I would say that it is because of security issues. We need safe and stable applications and what I have heard OSS are not. Rumors also say that OSS is unstable. I think more information is needed about OSS and how organization can use them in their processes. The installation time is also an issue. We don't have time for long implementation; we need our software to get up and running as soon as possible. (Appendix 4)

This is something that is hard to prove during a short period of time but the server running alfresco showed proof of great performance and never went down. This was also reflected in the overall impression from the user after the study.

... The system is more stable and secure than I believed.(Appendix 4)

These four steps that were conducted could be seen as some type of framework or guide of how to transform a previous skeptical user into a potential user in an OSS ecosystem.

- Some type of early payback
- Impressive functions
- Can solve an internal problem
- Stability, security and reliability

7.5 Limitation

The study focused on a user new to OSS. The aim was to study experience developers and the users earlier experience to open source was not important. The study was focused on a potential OSS user and his experience working with open source software. The result may however have been different if an experience user was used in the research. An experience user may already be familiar with how to work in an OSS ecosystem and the development of the user-role in the ecosystem may not have been that great. An experience user may also already have overcome the obstacles of becoming a first time user, something that the potential user still must overcome.

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Chapter 8

Conclusion

This chapter will discuss the result of the dissertation and conclusions from the result and also about future works related to the dissertation.

8.1 Project conclusion

This dissertation has presented a study on a new trend within OSS. OSS has previously been seen as software developed by skilled computer hackers for their own interest. Fitzgerald described this new trend as OSS 2.0 and other writers have referred to it as professional open source software. The company RedHat may be the first company that coined the term professional open source software for JBoss, but traces can still be found back to the eighties where Cygnus introduced the trend by selling support for OSS. The new trend of OSS (OSS 2.0) has presented a new eco system where an OSS project works together with both the user of the software and a professional open source company.

The aim with the study was to present the development of roles, and how these roles interact and influence each other in a specific OSS eco system. The study was conducted with a specific focus on the development of the user role and how it was developed for a new user in a specific OSS ecosystem. The specific eco system was between a user, the professional open source company Redpill and the Alfresco community. To reach the aim two objectives were created, one to find a suitable eco system and one to collect information about how the user works in the eco system. The findings of this project were a well developed interaction between the Alfresco project and Redpill. Both these roles support each other with support for the users and information that will help to create even better software. One example of this interaction is how Redpill offers first line support for Alfresco and in that way unburden these types of questions from the main developer of Alfresco. If Redpill however cannot solve the problem they send the necessary information that they collected from the customer to the people in the Alfresco group. The user can during the whole process follow up the status of their question and how and when it is solved. Redpill is not yet a code contributor to Alfresco but according to them; this will change in the future.

The study also identifies a user more or less unaware of how the interaction works in the eco system. Both the Alfresco project and Redpill have good knowledge about how to interact both between them but also with the user but the user is still unaware of the possibility of working in these types of eco system. The eco system used in the study was recently created and this may also be the reason for the unawareness, this thought is also shared by Redpill see *Appendix 4.3*.

The knowledge this report has presented is crucial for continued development of the eco system. The eco system must adjust more for the user and inform them about the possibilities OSS gives them and the simplicity and security using them. The creation of a new business friendly open source movement opens a lot of new possibilities, but information about what it is and how to work in these types of eco system are crucial for the overall survival of the business model of OSS. Companies still refer to OSS as products developed according to the FOSS model (Fitzgerald, 2006) and rumors about how unsafe and how insecure OSS is still spread over organizations.

The result of this study is however not unique. Other studies have come up to the same result in other OSS eco system. Example of other projects making studies in the area is OpenTTT and FLOSSMERICS and the catalog they presented can be seen as an effort to inform people about the choice of OSS and the existents of safe and secure software under a less restricted license than for proprietary software. Other attempts to inform the user of the open source alternative are from the creation of different industrial associations within OSS. Open source Sweden is one example of these associations. But more information is still needed to inform the user about different options to the proprietary software.

The possible OSS adopter was presented in the analysis and four topics was mentioned on how to transform a sceptical user into a potential OSS adopter. These four topics were

- Some type of early payback
- Impressive functions
- Can solve a internal problem
- Stability, security and reliability

However, these four steps were used to try to convince one possible OSS adopter and the process will be more complicated when the focus is on how to convince a company or organization to adopt OSS. One step to achieve this can actually be to have one person within the organisation that drives the question about adopting OSS, a person convinced by the benefits of Open Source. A Open Source Software Champion.

8.2 Future work

The result of the study presents a problem within the OSS eco system. The study did analyze a specific eco system but this type of problem could also be similar for other cases. It would be interesting to analyze another eco system and look for similarities to this one. Is the problem with the unaware users in the eco system a recursive phenomenon within other OSS eco system as well?

Another project could be to try to find a solution for the problem with unaware users in the OSS eco system. Try to find a solution for how to inform the user of the open source alternatives and how to get a user to adopt OSS in their organization. How to get a user to become a possible adaptor of OSS and to get one user within an organization to consider adopting OSS is a start, however more factors will arise when try to get a whole organization to adopt OSS.

A third project would be to retake this study after a while and see how the roles have evolved. One purpose with this study was to see how the roles evolve in the eco system. The timeline for the study was too short to notice changes in the Alfresco project and in the company Redpill, but the user did evolve and his view of OSS changed during the study. It would be of great interest to study how the roles evolve over a greater time span. The study changes one users' perception of OSS and it would be interesting to see what this user has managed to achieve within his organization.

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Appendix 1: The open source definition

Open source definition

1. Free Redistribution	The license should not restrict free distribution of the software, anyone should have the possibility to sell or distribute the software for free.
2. Source Code	The source code for the application must always be available and represented in a form that allow modification of the application
3. Derived Works	It must be allowed to modify the software and to distribute it under the same license.
4. Integrity of The Author's Source Code	The license can restrict new source code from being distributed only if the source code is available in distributed patch files. The license may demand that the modified version is released under another name or version number.
5. No Discrimination Against Persons or Groups	The license for the software must not discriminate any person or any group of persons.
6. No Discrimination Against Fields of Endeavor	The license must not restrict the use of the software for any specific purpose.
7. Distribution of License	The rights that are attached for the software must affect for all whom the application is distributed too without need of extensions or extra additional licenses
8. License Must Not Be Specific to a Product	The rights that are attached to the application must not be depended of the rights of the program package of which the application is a part of. The same rights must exists for the package as for the part of the package of which the application is a part of.
9. License Must Not Restrict Other Software	The license cannot include restriction of other software that is distributed along with the software. E.g. the license must not claim that all other software's that is distributed on the same medium to be open-source software.
10. License Must Be Technology-Neutral	The license cannot restrict the software to only be used on specific hardware.

Rewritten from Open Source initiative, (2008)

Appendix 2: Four types of freedom

The four types of freedom, stated by free software foundation

Freedom 0	The freedom to run the program, for any purpose.
Freedom 1	The freedom to study how the program works, and adapt it to your needs.
Freedom 2	The freedom to redistribute copies so you can help your neighbor.
Freedom 3	The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

(GNU project, 2008)

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Appendix 3: Literature study of suitable open source software

Mysql

URL: www.mysql.com

Community URL: <http://sourceforge.net/projects/mysql/>

Mysql is the world's most popular open source database. It is used all over the world. Mysql is used by many world leading enterprises and is used on large websites such as Google, Yahoo and Youtube. (FLOSScatalog.pdf) Mysql is available to download under the GPL license but customers can also buy the software under other less 'free' licenses (mysql, 2008). Support can be achieved through different companies authorized from Mysql to sell support. (mysql, 2008)

Professional open source companies

MySQL / Sun

JBoss

URL: www.jboss.org/

Community URL: <http://sourceforge.net/projects/jboss/>

JBoss is a free open source Java (Enterprise Edition) application server. Is said to be the first professional open source software (Watson et al. ,2005). Support for the JBoss application can be achieved from many companies, these companies has also often received certificate from the JBoss company also called JBoss Authorized Training Partners (JATPs) to guarantee their knowledge about the application and their competence to offer support(http://www.jboss.com/partners/partners_auth_train, 2008).

Professional open source companies

JBoss

Redpill

Alfresco

URL: <http://www.Alfresco.com/>

Community URL: <http://sourceforge.net/projects/Alfresco>

Alfresco is a open source enterprise content management system. ECM be seen as a solution to manage information. E.g. managing text-documents. The development of Alfresco started in January 2005 and the product was released in October 2005. The project was founded by John Newton, a co-founder of Documentum and John Powell, a former COO from the company Business objects.

Professional open source companies

The current list is over some companies in Europe that offers training and education on the Alfresco software (Alfresco, 2008).

Redpill – Stockholm

Sourcesense - London

Tetralogyx - Frankfurt

Tetralogyx - Paris

Tetralogyx - Amsterdam

Tetralogyx - Paris

Intecna - Madrid

Postgresql

URL: <http://www.postgresql.org>

Community URL: <http://sourceforge.net/projects/pgsql/>

Postgresql Database server is similar to mysql. Its an open source database widely distributed and used over the world. Postgresql have both paid contributors and contributors from the community. Postgresql has been developed for over 15 years. Support and training can be achieved from both companies selling these services and from the community itself.

Professional open source companies

2nd Quadrant

AG - IT Consulting

Alanta

Command Prompt, Inc

Curalia AB

Network Expertise Sweden AB

OpenOffice.org

URL: <http://www.openoffice.org/>

Community URL: <http://www.openoffice.org/>

Openoffice.org is a productivity suit. It includes applications like a word processor, a spreadsheet application a presentation application and more. The suit can be compared to proprietary software's like Microsoft office. The suit is open source and are freely available for download. Service can be found both from the community, different forums, tutorials, documentation projects and more. Service can also be bought from companies.

Professional open source company

These are just a sample of companies that offers service and support for OpenOffice.org. Over a hundred different companies were identified. The companies below are not just companies that sell service to the given product, the also contribute to the project itself.

Agenda Open Systems

Square Mile Consulting Ltd

The Learning Machine
Netproject

Ubuntu

URL: <http://www.ubuntu.com>

Community URL: <http://www.ubuntu.com/community/>

Ubuntu is one of the most popular Linux distributions. It is based on Debian and exists in many different edition, for example a desktop-edition and server-edition. The distribution comes with a lot of open source software and has a goal to have all the basic applications already installed with the installation of the operating system. Support for Ubuntu can be achieved from different forums, mailing lists and home page. Support is also available from professional companies for a fee.

Professional open source company

Canonical is the commercial sponsor of Ubuntu and delivers support and service for the operating system. Canonical are also deeply involved in the community developing Ubuntu and sell training and certificate to other companies so they also can sell support.

Canonical

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Appendix 4: Interviews

4.1 The user initial interview 1 april 2008

What type of database servers do you use?

- We are using the database system created by oracle

What type of web server do you use?

- The person are not sure but thinks it is Microsoft IIS server
(Confirmed using netcraft)⁹

What type of server operating system are you using?

- We have mainly two different environments. We are using windows servers and Unix servers.

Have your company used any type of open source solutions

- Not that I'm aware of, we are only using proprietary software's.

What is your earlier experience with open source software?

- I have only used proprietary software's but other employees has tried open source software, Linux for example.

What is your first reaction to open source software?

- I am neutral to open source software, but it will take more to convince me to use open source software instead of proprietary software's

4.2 The user interview 24 april 2008

How do you and your organization look at yourself in the presented eco system?

My organization needs a tool to organize our documents. We can successfully use an external disk for over internal organization but we need a system to share documents with our external contacts, partners and customers. We don't care so much if the software is open source or not.

How do you look at Alfresco in the eco system?

Alfresco is the company that develops the application. If we are about to use the software we would choose the Enterprise edition because safety and stability is critical. The community driven version is nothing for us, we need guaranties.

How do you look at Redpill in the eco system?

Redpill are a company that offers support for Alfresco. I am afraid that our company would not use a company as Redpill for support and service only, maybe as a partner. Our company is used to have all knowledge in the house and we educate and use our own personal to offer

⁹ <http://news.netcraft.com/> 25 may 2008

support. So a relationship between us and a company that offers support for a software would change over time, we could need education at the beginning but later, handle the support for our user by our self.

Use for Alfresco

A great function that Alfresco could fill in our organization is to handle documents between us and our customers. One example could be during the development of a requirement specification. The process includes documents that are passing between the developer and the customer. Alfresco has functions that makes it possible for people to review and approve the documents, a function that is suitable for the task with the requirement specification.

Why do you think large companies in Sweden are slow to adopt open source software?

I would say that it is because of security issues. We need safe and stable applications and what I have heard OSS are not. Rumors also say that OSS are unstable. I think more information is needed about OSS and how organization can use them in their processes. The installation time is also an issue. We don't have time for long implementation; we need our software to get up and running as soon as possible.

You have now used open source software for some weeks, even if the time is short, has your impression of open source software changed?

I would say, yes. The result was more positive that I would have hoped. The system is more stable and secure than I believed. The functionality is great and the fact that the software is free with all this functionality is amazing.

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4.3 Interview Redpill 20 april 2008 (Swedish)

Lite bakgrundsinformation om Redpill först, sedan mina svar nedan.

Du kommer säkert ha lite följdfrågor, inga problem.

Redpill grundades 2003 den 1 Maj, och firar alltså nu snart 5 år.

Grundarna såg att det inte fanns något företag som fokuserade på att leverera trygghet i att använda öppen källkod. Konkurrerande företag fokuserar på tekniken, användandet av öppen källkod i sina lösningar. Redpill erbjuder tryggheten med sitt erbjudande av support, utbildning och kompetens kring produkterna.

Vår affärsidé

Erbjuda våra kunder möjligheten få ut den fulla effekten av Öppen Källkod

Bättre produkter

Bättre Service

Lägre kostnader

Via vårt erbjudande:

Lokal support

Utbildning

Spetskompetens

Se även <http://Redpill.se/about.html>

Inledande frågor

Varför valde ni att sälja service på just Alfresco?

Redpill startade sin verksamhet med att erbjuda support på Middleware produkter i vårt affärsområde MSS och specifikt JBoss. När verksamheten växt har fler produkter kommit in i det affärsområdet, som i sin natur är väldigt teknikinriktat. Vårt andra affärsområde är BAS, Business Application Services, som vänder sig till verksamhetsfolk och affärsapplikationer. Där fanns från början Eventum och SugarCRM. När Redpill skall växa, vilket är ambitionen och ägarnas önskemål, så kan det inte bara göras med hjälp av befintliga produkter. Då företaget Alfresco startades så rekryterades flera personer från JBoss, några av dessa hade sedan en tid samarbetat med Redpill och erbjudandet kring JBoss. Så det var naturligt för Alfresco att hålla en kontakt med Redpill och föreslå att Redpill gör en satsning på Alfresco. De personerna hos Alfresco kände ju till Redpills förmåga att leverera tjänster och support, men även viktigt i sammanhanget att få in en produkt på marknaden. I oktober 2007 så föll den sista pusselbiten på plats då jag kom in i bilden med lång erfarenhet av Enterprise Content Management och som kan leda satsningen. Redpill är sedan dess Alfresco Gold Partner och Training Partner sedan årskiftet.

Hur är intresset för Alfresco i Sverige?

Det är stort, vi får in flera förfrågningar om Alfresco. Väldigt många gäller Web Content Management, Alfresco verkar mer känt för den delen än för dokumenthanteringsdelen. Sedan fungerar det så med öppen källkod att det finns ett flertal organisationer som påbörjat utvärdering och användning av Alfresco på egen hand som vi inte känner till (men det kan säkert tolkas som önskemål och gissning från min sida). Dessa har med all sannolikhet

påbörjat användningen relativt nyligen då Redpill tagit Alfresco till svenska marknaden, så relativt snart tror jag dessa kommer ta kontakt med oss då de vill ha mer support. Vi har sett vid tidigare produktlanseringar att det tar cirka 1 år innan det tar riktig fart, och det verkar stämma med Alfresco också.

Relation till användare

Hur marknadsför ni Alfresco? Hur får ni användare att använda en Open source-programvara som Alfresco istället för ett kanske enligt dem mer 'säkrare' alternativ såsom proprietära produkter?

Vi säljer faktiskt in Alfresco som det säkrare och tryggare alternativet. Och jag tycker att jag kan argumentera för det. Källkoden är öppen naturligtvis, vilket underlättar anpassning och felsökning. Men även buggdatabasen är öppen, vilket gör att kunderna själva kan hålla koll på vad som är problem just nu. Och all dokumentation är öppen, även vad som komma skall, se min blog <http://loftux.se/2008/04/13/oppen-kallkod-mer-an-koden/> Och den införsäljningen kan fungera när vår kontakt är med IT-avdelningen som har det perspektivet. Ofta är det dock verksamhetsrepresentanter som vi pratar med. De vill bara ha en lösning på sitt formulerade problem och struntar i om det är öppen källkod eller inte. Då kan den lägre kostnaden vara ett argument, men även möjligheten att faktiskt testa produkten utan kostnad (mer än egna kostnader för projektet) och säkerställa funktioner faktiskt finns där och inte är något som säljaren bara utlovat. Skall man prata om en unik funktion i Alfresco som konkurrenterna saknar är det CIFS interfacet, det är riktigt bra.

Påverkar er affärsmodell runt open source att ni har en annan relation till era kunder än vad kanske support-företag för proprietära produkter har till sina kunder, isåfall hur? Jag tycker att det gör det. Själva har jag jobbat både med proprietära programvaror och open source. Redan vid införsäljning av öppen källkodsprodukter så möts man inte som någon som kommer för att kränga en produkt och sedan dra så fort affären är i hamn. Vi säljer ju support och måste ha en relation framåt i tiden. Även för kunder som då valt att teckna supportavtal så är relationen mycket öppen. Vi behöver ju aldrig diskutera sådant som koddeposition. Anpassningar som görs blir öppen källkod om kunden så vill, vi slipper diskussioner om vem som har rätt till vad. Och det faktum att Alfresco inte kostar extra för nya funktioner tex arbetsflöden (vilket ofta är fallet för proprietära produkter, de tar betalt för varje liten modul) gör att man slipper ta avtals och prisdiskussioner när kunden vill utveckla sin lösning. Snabbt kan vi istället fokusera på att implementera och hjälpa kunden. Jag har i fallet arbetsflöden varit med om att det tagit 2-3 månader för leverantörer av proprietära produkter innan man varit överens om pris, först därefter kan arbetet påbörjas.

Vad kan ni erbjuda kunder i form av support och service jämfört med den support som kostnadsfritt finns tillgänglig på internet?

Vi ser till att hålla Alfresco certifierad personal som är kunniga. I och med att vi kan jobba direkt med ett flertal olika kunder samlar vi på oss kunskap som kan komma andra kunder till del. Vi har också ett direkt ansvar för att medverka till en lösning på ett problem som uppstått, i ett forum kan svar utebli eller dröja.

Vi kan också komplettera, när den egna personalen blir sjuk eller tar semester kan vi finnas tillgängliga, vilket gör att det finns en extra trygghet för kunden.

Vi gör också detta på heltid, vilket för att vi kan hålla oss ajour med utvecklingen av Alfresco

jämfört med ansvariga hos kunden som ofta har andra arbetsuppgifter.

Vi erbjuder dels via Alfresco en Alfresco kundportal, där ytterligare information finns och de senaste certifierade och buggfixade enterprise versionen finns för nedladdning, dels en egen portal (Trac) där vi kan hantera alla konfigurationsfiler och anpassningar som görs för kunden.

Supportmässigt så anmäler kunden sina ärenden hos oss, vi tar 1st line support. Där kan kunden bevaka sitt ärende i issue trackern eventum. Vi samlar in logginformation och påbörjar felsökning. Krävs att Alfresco blir inblandat så har vi samlat in nödvändigt information och skickar den vidare. Detta är inte alltid så lätt för kunden att göra själv då de inte har den erfarenheten av felsökning.

Relationen till Alfresco

Ställs det några krav på er ifrån företaget Alfresco för att ni skall få sälja support, krävs tex. speciell utbildning?

Ja det krävs att vi genomgått deras kurser, vi måste med andra ord ha certifierade konsulter. Men det är samma kurser som de publika.

Hur bidrar ni till Alfresco-projektet?

- Jag har t.ex. sett ditt namn på flertalet forum hos Alfresco och även i bugg-rapporter?
- Har ni någon hos Alfresco som är medlem i communityn eller commitar kod?

Jag försöker vara verksam i forum. Dels så lär jag mig, men så är det även en del i marknadsföringen, vi vill ju visa vad vi kan så att kunderna får förtroende för oss framöver. Och så är det ett sätt att ge tillbaks, nästa gång är det jag som får svar.

Vi har i dagsläget ingen som bidragit med kod, men det är jag säker på kommer att ske framöver när vi varit verksamma med Alfresco längre, vi har bara hållit på i 7 månader. Med ökat antal kunder och projekt blir det en naturlig utveckling.

Framtid

Vad tror ni om utvecklingen för företag som er. Är försäljning av service och support här för att stanna och kommer det komma i allt större utsträckning?

Jag tror oerhört starkt på den här affärsmodellen och därmed Redpill. Redpill är i en unik position och är mig veterligt det enda företag som har supporten för öppen källkod som primär affärsidé. Offentlig sektor har sett att de kan spara massor, och även om många kommer ha en "microsoft strategi" lång tid framöver så kommer många att satsa på öppen källkod. Även privat sektor har fått upp ögonen för öppen källkod och att det finns verksamhetsapplikationer, att det inte bara är Linux som är öppen källkod.

Vad tror ni om utvecklingen av Alfresco, kommer marknaden att öka?

Jag tror det. Det beror på Microsoft. Jag har skrivit en debattartikel om detta som jag hoppas få in i computer sweden, vi får se. Men i korthet: Microsoft Sharepoint följer med som "gratis"-licens i ms server i form av Sharepoint services. Kunderna påbörjar projektet och sedan är sharepoint good enough men tvingas köpa licenser för att det verkligen skall fungera. Vad som händer är att Microsoft tar marknad från etablerade proprietära leverantörer genom att "kortsluta" införsäljningen. Enda sättet att möta det är med Öppen källkod och att du antingen kan välja köra Community edition eller utvärdera enterprise edition med vår hjälp. En annan affärsmodell än den proprietära krävs för att möta hotet, och det har Alfresco. Så jag tror Alfresco tar marknadsandelar från Documentum, Filenet, Stellent mfl, men inte från Microsoft Sharepoint. Än på ett tag...

Sedan har Alfresco den klart bästa arkitekturen bland alla produkter på marknaden, den klart bästa utbudet av ingående funktioner kontra pris.
Biased point of view, men det är min uppfattning.

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Appendix 5: Action case study iterations

5.1 Installation 1: The Windows server

The first installation of Alfresco may be most simple one available. The computer chosen for the first installation was a Pentium 4, 1.8 ghz with only 512 Mb of RAM. The Alfresco version running was Alfresco 2.9b. The Alfresco server was running on a windows xp machine and was using the in build database HSQL. The goal with the first installation was not to create a secure and stable server but to as fast as possible have a system that the user could interact with. The installation took around 20 minutes and no problem occurred during the installation. One main drawback with the installation was however the performance and that was something that started discussion about a second installation later on. This installation will be referred to as 'Server 1'.

5.1.1 Specification

Processor

Intel Pentium M 755 / 1.86 GHz

Data bus speed: 400 MHz

Cache Memory

Type: L2 cache

Cache size: 2 MB

RAM

Installed Size: 512 MB

Technology: DDR II

Storage Controller

Storage controller type: IDE

Hard Drive: 40 GB - 4200 rpm

OS and Software

Operating system: Windows XP sp2

Alfresco version: 2.9b

Database: HSQL

5.2 Installation 2: The Linux Server

The second installation can be seen as a natural reaction to the bad performance and insecure installation on server 1. Much has been learned from the previous installation of Alfresco and the knowledge was used during the creation of the second server. The second server is a Pentium 4 2.0 Ghz with 1 Gb of RAM. The computer is running the Ubuntu 7.10 server edition. The same Alfresco version was used during this installation except that this version was created to run on the Linux operating system instead of Windows. The bad performance noticed on Server 1 was mainly because the in build HSQL database was used. For this installation the Mysql database was used. Server 1 had no support for document transformation and the other functions that demanded OpenOffice, that support was however implemented in this installation. The installation of server 2 was slightly more complicated and one of the reasons for that what the integration part between Alfresco and openoffice.org. The content in some files was change to make Alfresco start and to get openoffice.org to run headless, without any graphical interface. Alfresco is not an easy system to setup and configure and people without any deeper computer experience will have a hard time get it up and running.

5.2.1 Specification

Processor

Intel(R) Pentium(R) 4 CPU 2.00GHz

Data bus speed: 400 MHz

Cache Memory

Type: L2 cache

Cache size: 512 Kb

RAM

Installed Size: 512 MB

Technology: SDRAM

Storage Controller

Storage controller type: IDE

Hard Drive: 520Gb – 7200 rpm

OS and Software

Operating system: Ubuntu 7.10

Alfresco version: 2.9b

Database: Mysql 5.0

5.2.2 Alfresco startAlfresco.sh

// This script was created to start the Alfresco server. We had a problem to start the listener for
// open office so the script start this part before starting Alfresco

StartAlfresco.sh

/usr/lib/openoffice/program/soffice "-accept=socket,host=localhost,port=8100;ur\$
/opt/Alfresco/Alfresco.sh start

5.2.3 Alfresco Alfresco.sh

// Most of the function that starts with this script has no direct use for our system. We
start the // open office daemon before this script
Alfresco.sh

```
#!/bin/sh
# Start or stop Alfresco server
# Set the following to where Tomcat is installed
APPSERVER=/opt/Alfresco/tomcat
# Set any default JVM values
export JAVA_OPTS='-Xms128m -Xmx512m -server'
# Following only needed for Sun JVMs before to 1.5 update 8
export JAVA_OPTS="${JAVA_OPTS} -
XX:CompileCommand=exclude,org/apache/lucene/ind$
#
if [ "$1" = "start" ]; then
    "$APPSERVER/bin/startup.sh
# if [ -r ./virtual_start.sh ]; then
#   sh ./virtual_start.sh
# fi
# if [ -r ./start_oo.sh ]; then
#   sh ./start_oo.sh
# fi
elif [ "$1" = "stop" ]; then
    "$APPSERVER/bin/shutdown.sh
# if [ -r ./virtual_start.sh ]; then
#   sh ./virtual_stop.sh
# fi
# if [ -r ./start_oo.sh ]; then
#   killall soffice.bin
# fi
fi
```

5.2.4 Create the database

```
//This script creates the database for the system. Pretty straight forward.
create database Alfresco;
grant all on Alfresco.* to 'Alfresco'@'localhost' identified by 'Alfresco' with
grant option;
grant all on Alfresco.* to 'Alfresco'@'localhost.localdomain' identified by
'Alfresco' with grant option;
```

5.2.5 Alfresco properties

```
// Alfresco is preinstalled with the HSQL database, to change this we have to activate the
drivers for the mysql database and deactivate the drivers for the HSQL
#####
## Common Alfresco Properties #
#####

#
# Sample custom content and index data location
#
dir.root=/opt/Alfresco/alf_data
dir.indexes=/opt/Alfresco/alf_data/lucene-indexes

#
# Sample database connection properties
#
#db.username=xxxx
#db.password=xxxx
#db.pool.initial=10
#db.pool.max=100

# Property to control whether schema updates are performed automatically.
# Updates must be enabled during upgrades as, apart from the static upgrade scripts,
# there are also auto-generated update scripts that will need to be executed. After
# upgrading to a new version, this can be disabled.
#
#db.schema.update=true

#
# HSQL connection
#
#hsql#db.driver=org.hsqldb.jdbcDriver
#hsql#db.url=jdbc:hsqldb:file:alf_data/hsql_data/Alfresco;ifexists=true;shutdown=true;

#
# MySQL connection (This is default and requires mysql-connector-java-5.0.3-
bin.jar, which ships with the Alfresco server)
#
#db.driver=org.gjt.mm.mysql.Driver
#db.url=jdbc:mysql://localhost/Alfresco

#
# Oracle connection (requires ojdbc14_g.jar or equivalent jar in shared libraries location)
```

```
#
#oracle#db.driver=oracle.jdbc.OracleDriver
#oracle#db.url=jdbc:oracle:thin:@localhost:1521:Alfresco

#
# Sybase connection (requires jconn2d.jar or equivalent jar in shared libraries location)
#
#sybase#db.driver=com.sybase.jdbc2.jdbc.SybDriver
#sybase#db.url=jdbc:sybase:Tds:localhost:2638/Alfresco

#
# SQLServer connection (requires jtds-1.2.jar or equivalent -
http://jtds.sourceforge.net/)
#
#sqlserver#db.driver=net.sourceforge.jtds.jdbc.Driver
#sqlserver#db.url=jdbc:jtds:sqlserver://localhost/Alfresco

#
# SQLServer connection using Microsoft JDBC driver
#
#db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
#db.url=jdbc:sqlserver://localhost;DatabaseName=Alfresco

#
# PostgreSQL connection (requires postgresql-8.2-504.jdbc3.jar or equivalent)
#
#postgresql#db.driver=org.postgresql.Driver
#postgresql#db.url=jdbc:postgresql://localhost:5432/Alfresco
```

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5.3 Iteration 1: Add User

Goal

Maybe the most fundamental function in Alfresco and in every shared information system is the ability to have different accounts. The goal with the first iteration is for the user, to add a new user to the system.

Description

The Alfresco system was already installed on a Windows XP machine, running HSQL. The installation was for evaluation only and was not intended to run in any sharp situation.

Result

The user had no problem at all to add a new user to the system, the interface was simple and the user was able to navigate to the administration interface without any help.

Analysis

The user pointed out the need for different user account. They need to keep track on who does what and also place different accounts in different groups. More information about the need of different user group will be described in iteration 2. It is not just important with different accounts within the organization but also for external customers.

5.4 Iteration 2: Add user to a user-group

Goal

The goal with the iteration was to add the user to a suitable user group

Description

Having user in user groups make it possible to for example give certain groups access to certain documents, a function that is valuable in almost all types of organizations.

Result

The user had no problem at all to add he's newly created user-account to a group. The procedure was straight forward and no external help was needed.

Analysis

It is important for the organization to have different user accounts. For example you can use user groups to differ people within the organization and external partners, such as customers. Using different user groups can help the organization to work together with their customers on the same platform. One example could be for the consultant part of the company to in a simple and secure way, serve their customers. It is also possible to place different users into project specific groups, to sort out all irrelevant information for a specific user and only focus on the information important for the user.

5.5 Iteration 3: Upload a document

Goal

The goal with the third iteration was to upload a document to the server.

Description

To reach the goal the user has to do a few things. First navigate to the company's home space. Create a new space(folder), navigate to the new folder and upload a file.

Result

The user did manage to do this with a little support from the interviewer. The procedure to upload a file includes a few step and the lack of support during these steps resulted in that the user missed the last one with the result that the file wasn't uploaded. A second try however was a success.

Analysis

The organization can use the system to communicate with their customers. Their customers could upload a specification of requirements to the organization. The organization could then review the document and start planning for the project. The planning documents could then be sent back to the customers for them to review. The system could in this way support the relationship and there will be no more need to attach documents in email and sending back and forth. The email function in Alfresco also makes it possible to notice the evolved users for updates in the system.

5.6 Iteration 4: Version handling

Goal

The goal with the iteration was to use the inbuilt version handling and update an uploaded file.

Description

The procedure includes steps like, upload a file, activate the version handling for that file, check out and download the file, check in and upload the new version.

Result

The result was a success and the user uploaded a file, checked it out and uploaded a new version of it. The result was presented and two different versions of the file existed in the system.

Analysis

The version handling and possibility to update the documents are very important. It is extremey important to keep track of earlier versions of a document and have the complete history of the creation of them. As it is now, the user are using marker functions in the text editor to separate the old text from the new one.

5.7 Iteration 5: Create a project

Goal

The goal with this iteration was for the user to create a project in Alfresco

Description

The procedure includes step to navigate to the project interface and add a new project. The add a new project function will start a guide to create a project.

Result

The result was successful and the user created a project. Files was later added in the new project

Analysis

It is great to have a preconfigured structure when you create a project. This makes it easy to navigate in the hierarchy and users will have no problem finding the documents if all projects are using the same structure. It is very important to have a constant structure for the document in a project so that the user doesn't feel lost in the hierarchy. Having the same structure will make it possible for the user to directly find the document needed and publish documents in the correct space.

5.8 Iteration 6: Create a blog

Goal

The goal with this iteration is to create a new blog within a project

Description

To succeed in this goal the user must first create a project in Alfresco. The project gives the user the possibility to create a blog for the project.

Result

The result was a success and the user managed to create a blog in the previously created project.

Analysis

The blog function is great to present brief information about the project. One example could be for the project manager to weekly present information about the proceeding of the project. The blog function could be good to inform the customer about the status of the project. I don't think it would be suitable as an information platform for the developer, the forum part would be better for that.

5.9 Iteration 7: Create a forum

Goal

The goal with the iteration is for the user to create a new forum for the created project.

Description

To create a forum, the user must first create a project. When a new project is created will the user be able to create a new forum for the project

Result

The result was a success and the user did manage to create a new forum for the project without any extra help.

Analysis

The forum would be great to present more details about the project. The information that is not so important for the customer but for the developers and the other members of the project that are directly involved. This can also be a good place to ask detailed questions about the development of the system.

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