Willingness to Cooperate Within the Open Source Software Domain

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Abstract. Open Source Software (OSS) is an increasingly hot topic in the business domain. One of the key benefits mentioned is the unlimited access to the source code, which enables large communities to continuously improve a software application and prevents vendor lock-in. How attractive these benefits may be, the market for OSS however remains limited. In the Netherlands research consisting of 7 interviews and a survey among 206 Open Source Software Service providers (with a 34% response rate) was done to determine whether service providers wanted to cooperate in an Association that will set quality levels and guarantees to its members and their customers.

Keywords: Open Source Software, Communities, Quality

1 Introduction

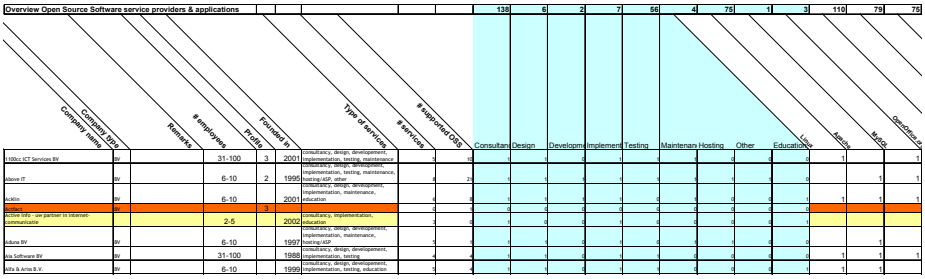
In the last decade open source software (OSS) initiatives have been steadily growing, resulting in more and more companies that provide services, support and certification around open source applications. From a user perspective some of the most important reasons for the use of OSS are: cost effectiveness, improved flexibility, expiration of maintenance, availability of support through both software vendors and service providers, independence from software vendors, increased technical requirements, increased interoperability, security aspects and improved reliability (Ghosh et al. (2005). Probably the most important of these characteristics is the independence from software vendors which means there is no or limited vendor lock-in (Pavlicek, 2000; Raymond, 2001; Wichmann, 2002b; Goldman et al., 2005). Vendor lock-in implies that it is very hard to switch to other software and/or service providers due to high switching costs or the usage of legacy and non-standard software that is available only through the network of one vendor. Because open source software is normally based on open standards and open interfaces (Varian et al., 2003) it becomes easier to migrate to different software products. Normally communities evolve around open source software that then adapt and further develop the applica-

tions and services. Although users of open source software are not dependent on a single vendor or service provider to deliver updates with new functionality, in practice an emotional binding with one supplier still seems to exist.
Contrary to the reasons that are found for end-user adaptation, the trigger for many software providers to open sourcing their offerings are mostly internally motivated (Wijnen-Meijer and Batenburg, 2007) and based on market position, the capability for product innovation (or lack thereof) and the degree of customer independence. This seems to be supported by Cusumano (2004), who in his book The Business of Software describes several product characteristics that may be relevant for the decision of open sourcing such as (1) the fundamental difference between intended audiences: enterprises and home users (2) the difference between niche and mass audiences, and software with a horizontal or a vertical functional scope (3) the market position of a software product. This can be leading, complementary or following. Also some software providers start with using open source software internally because of its perceived cost effectiveness (Grand et al., 2004) before considering open sourcing their own offerings. Finally governments are an important trigger to vendors to provide open source software due to the value they give open source software for its conformance to open standards that help to ensure accessibility of governmental information (Varian et al., 2003).
To bridge the gap between the motivation given by end-users versus software vendors and service providers on why to adopt the open source paradigm, Rijke (2005) suggests that open source software vendors and service providers should cooperate in a more structured way to provide improved flexibility, maintenance, availability of support, increased technical requirements, increased interoperability, improved reliability and higher quality to end-users. This suggestion is based on the fact that a large majority of the open source vendors and service providers in the Netherlands are small office and home office companies. Contrary to the numerous studies on the reasons for OSS (Ghosh et al., 2005; Wichmann, 2002a), very little research is available on the cooperation between organizations and what the triggers for such cooperation are in the OSS domain. This research tries to find an answer to the question if organizations within the open source domain are willing to cooperate with their peers to improve the different aspects as mentioned with a focus on the improvement of maintenance, support, reliability and quality.
The following section elaborates further on the market for open source products and services in the Netherlands. Then the research methodology that was used is described and the results from both the interviews and the survey are given. In the final section the limitations of this research will be mentioned and some suggestions for future research are given.

2 Open Source Software Market in the Netherlands

At the start of this research only part of the Dutch market of open source software and service providers was known. This meant that the first activity was to exten-

sively map the entire market. This was done by looking at different available resources such as the governmental Program for Open Standards and Open Source Software, lists of delegates to different Open Source conferences that were available and the Internet. Besides creating an overview of the organizations that are active in the Dutch market we also determined the involvement of these organizations within the open source communities that already existed. The rate of involvement is measured on a 3 point scale (low, average and high score) and was determined based on the number of times delegates of these organizations attended conferences (e.g. Holland Open), were active speakers or were involved in professional publications.
The final result of this part of the research was an extensive overview of 222 organizations that are active in the open source domain in the Netherlands during 2006. Of each organization information was collected. Figure 1 shows a small part of the matrix that was the end result.



Overview Open Source Software service providers & applications									138	6	2	7	56	4	75	1	3	110	79	75
Company name	Company type	Remarks	# employees	Profile	Founded in	Type of services	# services	# supported OSS		Consultan	Design	Developm	Implement	Testing	Maintenan	Hosting	Other	Education	Linux	Apache	MySQL	OpenOffice.o
1100cc ICT Services BV	BV		31-100	3	2001	consultancy, design, development, implementation, testing, maintenance			1	1	1	1	1	1	1	0	1	1	1	1
Above IT	BV		6-10	2	1999	consultancy, design, development, implementation, testing, maintenance, hosting/ASP, other			1	1	1	1	1	1	1	1	1	1	1	1
Acklin	BV		6-10		2001	consultancy, design, development, implementation, maintenance, education			1	1	1	1	1	1	1	0	1	1	1	1
Active 8	BV			3					1	1	0	0	0	0	0	0	0	1	1	1
Active Info - sw partner in internet-communicatie			2-5		2002	consultancy, implementation, education			1	1	1	0	1	1	1	0	1			
Adona BV	BV		6-10		1997	consultancy, design, development, implementation, maintenance, hosting/ASP			1	1	1	1	1	1	1	1	1		1	
Ala Software BV	BV		31-100		1988	consultancy, design, development, implementation, testing			1	1	1	1	1	1	1	0	1	1	1	1
Alfa & Arte B.V.	BV		6-10		1999	consultancy, design, development, implementation, testing, education			1	1	1	1	1	1	1	0	1	1	1	

Fig. 1. Example of data collected on open source organizations in the Netherlands

3 Research Methodology

Based on the open source market overview it was determined to first do several interviews followed by a survey because by gathering data from different angles a clearer picture of the real world can be modeled and validated (Baarda et al., 2001). The interviews were semi-structured and resulted in a validated list of research questions to be used in the survey.
The interviews had two goals, first they provided us with a validation on the market overview and secondly the outcomes were used to validate and broaden the list of research topics that made up the survey. Seven organizations were sent a first draft of the survey questions to fill out and return, after which an interview was held. The interview was based on the answers the respondents provided before hand and lasted approximately for 2 hours.
The final survey consisted out of 23 questions, some of which had several sub questions. Both open and closed questions were used. Where respondents had to answer on a scale, we used a 4 point scale ranging from completely agree to completely disagree. The survey was sent to 206 mail addresses out of the 222 organizations available in the market overview (some e-mail addresses were missing), and after a re-

minder (two weeks after the first participation request a total of 70 surveys were returned. The final response rate was around 34%.

4. Results

The question that this research tries to answer is: *Are organizations within the open source domain willing to cooperate with each other to improve (amongst others) the maintenance, support, reliability and quality of open source services and software?*
Based on the interviews this is not the case. According to our findings organizations are only willing to cooperate with others when this results in direct financial gains for their own company. Only two respondents also mentioned higher quality of their service or software offering important enough to consider cooperation. But the interviews were mainly used to validate the survey questions and the outcomes can not be considered as the general opinion for the entire sector. The survey however shows a more diverse outcome in the reasons to cooperate.
It is important to know what organizations within the open source domain find to be the strong and weak points of open source software. Therefore we asked what the respondents thought the characteristics of open source software versus closed source software are. Not the strongest points were: no vendor lock-in (89%), everybody is able to improve the software (82%) which results in a higher rate of innovation (84%), and no licensing costs (78.5%). Asked if there were any weak points in open source software there was a large difference in answers with 44% of the respondents stating that the quality of open source is lower than closed source software (with a small majority of 56% who think otherwise), while 40% of the respondents also thought open source software to be less safe than closed software (a small majority thinks it is better). This means that the open source community in general finds their software to be superior to closed software solutions. Of course the outcomes in this research are clearly biased because of the population that was surveyed.
To determine whether close cooperation between organizations within the open source domain is needed, several questions and propositions were part of the survey. When asked 'Which of the following 6 reasons would get your organization to cooperate with other companies in the open source domain?' more than 75% of the respondents of the survey said their primary reason to cooperate is to exchange information between peers to further improve their software (see figure 2).

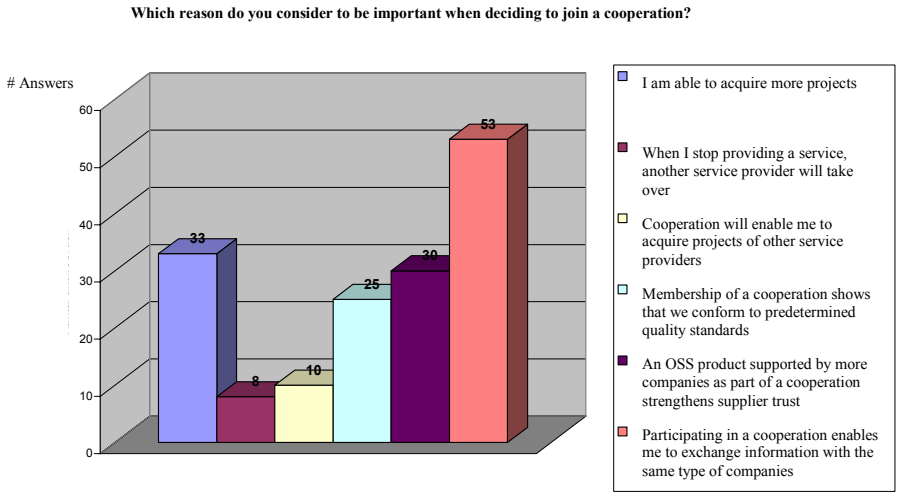


Fig. 2. Reasons to cooperate within the open source domain

The second most important reason (with 47%) is the financial gains organizations hoped to receive in the form of new projects. The continuity of services like maintenance and support that could be guaranteed by cooperating only received support of 11.4% of the respondents and although acquiring new projects is the second most important reason to cooperate not many respondents actually expect to get many new projects (only 14.5% do). The two reasons that have to do with the perceived reliability and quality of an organization by customers get respectively 43% and 35.7% of the respondents approval.

Based on this it seems that the sharing of information (with a focus on software development) is the only trigger to start cooperating. This is to be expected because it is the primary foundation of the open source community. However there is not very much support for cooperation between open source vendors and services suppliers regarding improvement of aspects like maintenance, support and quality. In these topics it seems that organizations in the open source domain stick to their existing business models in which they try to do everything themselves.

The perceived advantages of cooperation (see figure 3) show a similar result.

Although financial gains by acquiring projects via cooperation is perceived as an advantage (69%), a majority of the respondents (74%) do not expect their customers to be willing to pay a premium for such a cooperation. Still when they were asked if cooperation within the open source domain could improve the continuity and reliability of support to their customers, 78.5% agreed. When a cooperation takes the form of an organization that is responsible for maintaining quality levels (of member organizations) a large majority of the respondents (91%) stated that the trust in open source and thereby the use would be much higher. In conclusion, we can state that while organizations do think that cooperating is perceived by their customers as an added value, they are not really willing to start such cooperation because they don't

perceive any benefits for themselves and can't direct any costs towards their customers.

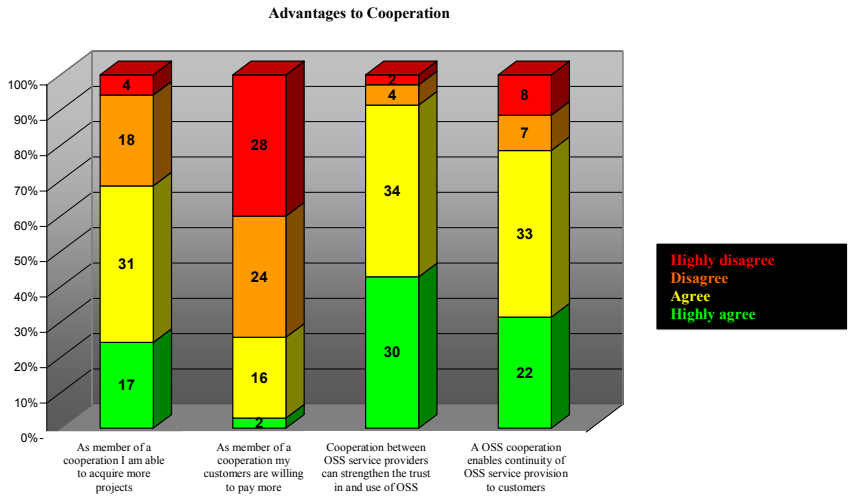


Fig. 3. Perceived advantages of cooperation within the open source domain

5. Discussion and Future Research

This paper describes the outcomes of a multi method research approach to determine if organizations within the open source domain are willing to cooperate. While such cooperation is perceived beneficial there is no positive attitude towards starting such cooperation. However the outcome of this research knows some limitations. First the respondents all are situated in the Netherlands, which makes that the findings may not be applicable to other countries or regions. Second the research is conducted solely at software developers and services providers in the open source software domain; the customers of these organizations have not participated. This means that the perceived value for customers of cooperation as seen by the respondents might be non existent. Finally this research is focused on the willingness to cooperate to improve maintenance, support, reliability and quality of the services and software, other forms of cooperation are out of scope. Therefore the results can't be interpreted as a complete unwillingness of organizations to cooperate with each other. The amount of research done on cooperation between organizations in the open source domain is limited. The findings from this research need further validation at open source users. A next step is research on cultural differences and finally in-depth studies are needed to determine whether perceived advantages and disadvantages are different depending on the type of organization or its maturity.

6. References

Baarda, DB, de Goede, MPM & Teunissen, J 2001, Basisboek: Kwalitatief Onderzoek (in Dutch), Groningen, Stenfert Kroese.

Cusumano, M.A. (2004). The Business of Software. Free Press. ISBN 0-7432-1580-X.

Ghosh, R. & Glott, R. (2005). FLOSSPOLS Deliverable D3: Results and policy paper from survey of government authorities [http://flosspols.org/deliverables/]

Goldman, R. & Gabriel R. (2005). Innovation happens elsewhere. Open source as business strategy

Grand, S., Krogh, G. v., Leonard, D. & Swap, W. (2004). Resource Allocation Beyond Firm Boundaries: A multilevel model for Open Source Innovation. Long Range Planning 37 (2004) 591–610.

Pavlicek, R.C. (2000). Embracing Insanity. Open Source Software Development. Sams. ISBN 0-672-31989-6.

Raymond, E.S. (2001). The Cathedral and the Bazaar: Musings on Linux and Open Source By an Accidental Revolutionary. O'Reilly & Associates. ISBN 0-596-00108-8.

Rijke, H. de (2005). Continuïteit in Open Source diensten. In: Holland Open.

Varian, H.R. & Shapiro, C. (2003). Linux Adoption in the Public Sector: An Economic Analysis. [http://www.sims.berkeley.edu/~hal/Papers/2004/Linuxadoptioninthepublicsector.pdf]

Wichmann T. (2002a) Use of Open Source Software in Firms and Public Institutions. Evidence from Germany, Sweden and UK. Berlecom Research GmbH [http://www.berlecon.de/studien/downloads/200207FLOSS_Use.pdf]

Wichmann T. (2002b) Firms' Open Source activities: motivations and policy implications. Berlecom Research GmbH [http://www.berlecon.de/studien/downloads/200207FLOSS_Activities.pdf]

Wijnen-Meijer, M. and R. Batenburg (2007). To open source or not to open source: that's the strategic question. Results from a Survey among eight leading software providers. In Proceedings of ECIS 2007. St. Gallen, Zwitserland.