



Qualoss

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QualOSS Bibliography and Event Organization

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Title: QualOSS Bibliography and Event Organization

Executive Summary:

This deliverable presents the bibliography including abstracts of published work since 2007. The numbers per year shows 6 articles were published in 2007, 9 in 2008 (including 2 articles not directly used by QualOSS but related to Open Source and published by QualOSS members), and 12 in 2009 (including 1 article whose reviews will only be delivered in January 2010). This gives a total of 27 peer-reviewed articles over the 3-year period of the QualOSS project.

The QualOSS consortium was also involved in the organization of 2 annual workshops over three years, 2007, 2008 and 2009. These two workshops are: 1. Workshop on Public Data about Software Development (WoPDaSD) and 2. Workshop on "libre software research meets libre software developers" @ FOSDEM. In consequence, QualOSS was behind the organization of 5 events (3 WoPDaSD and 2 research room at FOSDEM). As presented in Deliverable D6.5b, these events provided a platform to collaborate with other research projects studying the F/OSS phenomenon, including, FLOSSMetrics and SQO-OSS.


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1. YEAR-1 PUBLICATIONS


Dissemination Year1 – Publication 1
Title: Defining Software Evolvability from a Free/Open-Source Software Perspective
Authors: J-C Deprez et al.
Event: 2 nd Workshop on Software Evolution, Paris, France
Dates: Oct 1 st 2007
<p>Brief description : (Abstract of paper)</p> <p>This paper studies various sources of information to identify factors that influence the evolvability of Free and Open-Source Software (FLOSS) endeavors. The sources reviewed to extract criteria are (1) interviews with FLOSS integrators, (2) the scientific literature, and (3) existing standard, norms as well as (4) three quality assessment methodologies specific to FLOSS , namely, QSOS, OpenBRR and Open Source Maturity Model. This effort fits in the larger scope of QUALOSS, a research project funded by the European Commission, whose goal is to develop a methodology to assess the evolvability and robustness of FLOSS endeavors.</p>

Dissemination Year1 - Publication.2
Title: FLOSS Managed Data Sources Maturity Level: An attempt
Authors: Frédéric Fleurial Monfils and J-C Deprez (CETIC)
Event: 2 nd Workshop on Software Evolution, Paris, France
Date: Oct 1 st 2007
<p>Brief description : (Abstract of paper)</p> <p>Many organizations have started to integrate Free (libre) Open Source Software and are currently faced to the problem of selecting the components that meet their quality needs, in particular, regarding evolvability and robustness. Their assessment, is often performed via ad-hoc investigations on a few publicly available data sources such as newspaper and the internet because of a lack of time and methodology. This paper carefully identifies and describes the major electronic data sources and the information that can be extracted in order to help in the assessment of the evolvability (and maturity) level of FLOSS Projects.</p>

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<p>Dissemination Year1 – Publication 3</p>
<p>Title: « Etude de la maintenabilité et de l'évolutivité du logiciel libre : Cas de PhpMyAdmin et du serveur Apache »</p>
<p>Authors: Naji Habra and Flora Kamseu (FUNDP)</p>
<p>Event: 12th Conference of AIM (Association Information et Management):</p>
<p>Dates: June 18-19th 2007</p>
<p>Brief description : Une des inquiétudes des utilisateurs des logiciels libres est liée à la durée de ce type de produit dans le temps. Les interrogations portent notamment sur la maintenabilité et l'évolutivité du produit. Aussi, cet article propose une analyse multicritères de ces deux caractéristiques pour les cas des logiciels PhpMyAdmin et Apache. Nous analysons plusieurs critères pouvant influencer ces caractéristiques tels que le processus de développement du produit, les activités des membres du projet, le type de management et de support mis en place, l'accessibilité du code source, la documentation ainsi que les différents services liés au produit. Notre analyse montre que les activités de développement de PhpMyAdmin et de Apache contribuent à une meilleure maintenabilité et évolutivité du produit. Ceci nous donne de bonnes bases pour établir une méthodologie d'analyse des logiciels libres du point de vue de leurs maintenabilité et évolutivité. Ceci contribuera à l'élaboration d'un modèle de qualité spécifique aux logiciels libres qui fait l'objet du projet QualOSS.</p>

<p>Dissemination Year 1 – Publication 4</p>
<p>Title: A stakeholder-centric quality model for Open Source Software</p>
<p>Author: Flora Kamseu</p>
<p>Publication Type: Diplome d'Etudes Appliquées in Computer Science (~Master Thesis)</p>
<p>Date: September 7th 2007</p>
<p>Brief description : There are several quality models used to evaluate software systems in general; however, none of them is dedicated to Open Source Software applications. The aim of this work is to propose a model for Open Source Software system. The proposed model is a stakeholder-centric model. We also analyze and study several existing software quality models namely : McCall's, ISO Standard, Dromey and, the QSOS model, the Capgemini Open Source Maturity Model and the Open Business Readiness Rating. We present limitations found in the existing models such as the trend to ignore certain quality feature like functionality or the failure to describe how the quality measurement in these models has been carried out.</p>

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Dissemination Year 1 – Publication 5
Title of the paper : Towards a theoretical model for software growth
Authors: Israel Herraiz, Jesus M. Gonzalez-Barahona, Gregorio Robles
Event: International Workshop on Mining Software Repositories (colocated with the International Conference on Software Engineering)
Date: May 7 St 2007
Brief description : (Abstract of paper) Software growth (and more broadly, software evolution) is usually considered in terms of size or complexity of source code. However in different studies, usually different metrics are used, which make it difficult to compare approaches and results. In addition, not all metrics are equally easy to calculate for a given source code, which leads to the question of which one is the easiest to calculate without losing too much information. To address both issues, in this paper present a comprehensive study, based on the analysis of about 700,000 C source code files, calculating several size and complexity metrics for all of them. For this sample, we have found double Pareto statistical distributions for all metrics considered, and a high correlation between any two of them. This would imply that any model addressing software growth should produce this Pareto distributions, and that analysis based on any of the considered metrics should show a similar pattern, provided the sample of files considered is large enough.


Dissemination Year 1 – Publication 6
Title: Forecasting the number of changes in Eclipse using Time Series Analysis
Authors: Israel Herraiz, Jesus M. Gonzalez-Barahona, Gregorio Roble
Event: International Workshop on Mining Software Repositories (colocated with the International Conference on Software Engineering)
Date: May 7 St 2007
Brief description : (Abstract of paper) In order to predict the number of changes in the follow ing months for the project Eclipse, we have applied a statistical (non-explanatory) model based on time series analysis. We have obtained the monthly number of changes in the CVS repository of Eclipse, using the CVSAnalY tool. The input to our model was the filtered series of the number of changes per month, and the output was the number of changes per month for the next three months. Then we aggregated the results of the three months to obtain the total number of changes in the given period in the challenge.

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Dissemination Year 1 – Submitted but unpublished
Title: Correlation among size and complexity metrics
Authors: Israel Herraiz, Jesus M. Gonzalez-Barahona, Gregorio Robles
Published In: IEEE Transactions on Software Engineering
Dates: October 15 th 2007
<p>Brief description :</p> <p>Several studies have tried to answer the question of what metric is the best predictor to find out the number of defects in a software product. The results of many of these studies are in conflict. While some defend that some complexity metrics can predict accurately the number of defects, some other argue that those metrics are not better predictors than very simple size metrics such as lines of code. Therefore it seems that the problem of characterizing the attributes of software is still open. Actually, some authors refuse to compare their results with other empirical studies arguing that different metrics were used. In order to reply to these questions we have studied a huge sample of source code files written in C. We have measured different size and complexity metrics, and performed correlations among the different metrics. We have found that most of the metrics under study were strongly correlated, supporting the idea that no metric would be a better predictor variable than any other. The equations that correlated these metrics were power laws in all the cases. Additionally, we have found that both size and complexity statistical distributions follow a double Pareto distribution. This finding has implications for develop a model to explain how software changes. We describe some of the characteristics of this model in this paper.</p>


2. YEAR-2 PUBLICATIONS

Dissemination Year 2 – Publication 1
Title: Tools for the Study of the Usual Data Sources found in Libre Software Projects
Authors: Gregorio Robles, Jesus M. Gonzalez-Barahona, Daniel Izquierdo-Cortazar, Israel Herraiz
Published In: International Journal on Open Source Software and Processes 2008
Ref: Volume 1 – Issue 1 – pages 24-45
<p>Brief description : (Abstract of paper)</p> <p>Due to the open nature of Free/Libre/Open Source software projects, researchers have gained access to a rich set of development-related information. Although this information is publicly available on the Internet, obtaining and analyzing it in a convenient way is not an easy task and many considerations have to be taken into account. In this paper we present the most important data sources that can be found in libre software projects and that are studied by the research community: source code, source code management systems, mailing lists and bug tracking systems. We will give advice for the problems that can be found when retrieving and preparing the data sources for a posterior analysis, as well as provide information about the tools that support these tasks.</p>

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Dissemination Year 2 – Publication 2
Title: Assessing Process Maturity of Open Source Projects
Authors: Marcus Ciolkowski and Marin Soto
Event: International Conference on Product Focused Software Process Improvement (PROFES) <9, 2008, Monte Porzio Catone>
Date: June 23-25
<p>Brief description : (Abstract of paper)</p> <p>For traditional software development, process maturity models (CMMI, SPICE) have been long used to assess product quality and project predictability. For OSS, on the other hand, these models are generally perceived as inadequate. In practice, though, many OSS communities are well-organized, and there is evidence for process maturity in OSS projects. This position paper presents work in progress on developing a process maturity model specific for OSS projects.</p>

Dissemination Year 2 – Publication 3
Title: Towards a Process Maturity Model for Open Source Software
Authors: Marcus Ciolkowski and Marin Soto
Event: 32nd Annual IEEE International Computer Software and Applications Conference 2008 - Turku, Finland
Date: July 28-August 1
<p>Brief description : (Abstract of paper)</p> <p>For traditional software development, process maturity models (CMMI, SPICE) have long been used to assess product quality and project predictability. For OSS, on the other hand, these models are generally perceived as inadequate. In practice, though, many OSS communities are well-organized, and there is evidence of process maturity in OSS projects. This position paper presents work in progress on developing a process maturity model specifically for OSS projects.</p>

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Dissemination Year 2 – Publication 4
Title: Towards a Comprehensive Approach for Assessing Open Source Projects
Authors: Marcus Ciolkowski and Marin Soto
Event: International Conferences on Software Process and Product Measurement – Munich, Germany
Date: Nov 18-19, 2008
<p>Brief description : (Abstract of paper)</p> <p>Open Source Software (OSS) has an increasing importance for the software industry. Similar to traditional (closed) software acquisition, OSS acquisition requires an assessment of whether quality is sufficient for the intended purpose. This includes assessing a software component's intrinsic quality, as well as its supplier's maturity (i.e., ability to deliver high quality) and sustainability (i.e., whether the supplier will continue to exist). For traditional software acquisition, established procedures are available for evaluating these aspects. These procedures need to be adapted for OSS projects, because they have no traditional supplier, but an underlying OSS community. The openness of OSS development presents both challenges and opportunities for project evaluation. In particular, a variety of data sources are available that potentially allow for in-depth analysis, but it is not clear how to use them effectively.</p> <p>In this paper, we present an approach toward a comprehensive measurement framework for OSS projects, developed in the EU project QualOSS. This approach takes into account product quality as well as process maturity and sustainability of the underlying OSS community.</p>

Dissemination Year 2 – Publication 5
Title: Who is afraid of OSS? Best Practices in Implementing OSS in the Regulated Industries
Authors: Markus Kaufmann, Stefan Mûnch, Marcus Ciolkowski, Martín Soto, Erwin Kruschitz, Till Jostes, Karl-Heinz Menges
Published In: journal "Pharmaceutical Engineering" by International Society of Pharmaceutical Engineering
Date: Nov./Dec. 2008 Issue
<p>Brief description : (Abstract of paper)</p> <p>Differences between Open Source Software (OSS) and Commercial-Off-The-Shelf (COTS) software are smaller than many stakeholders perceive. This article outlines the particularities of Free and Open Source Software (OSS) in contrast to commercial software and the resulting approach to qualification and operation of OSS in GxP-regulated areas. Commercial software is generally assumed to be traditionally developed and marketed by a company and often requires royalties. Typically, source code is not disclosed and the customer has no right to modify the software. Free and Open source software are terms for software which comes with certain rights, or freedoms, for the user. The rights vary dependent on the chosen licence. They typically allow access to and modification of source code and free redistribution. This Guide discusses benefits and risks of using OSS in place of or side by side with commercial off-the-shelf (COTS) from the perspectives of major parties involved as well as some technical and legal aspects. Parties involved include OSS community, commercial software firms, system integrators, consultants, users / health care industries and regulators.</p>

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<p>Dissemination Year 2 – Publication 6</p> <p>Title: Comparing Assessment Methodologies for Free/Open Source Software: OpenBRR & QSOS</p> <p>Authors: Jean-Christophe Deprez and Simon Alexandre</p> <p>Event: 9th International Conference on Product Focused Software Process Improvement (PROFESS 2008),</p> <p>Date: Monte Porzio Catone, Italy, June 23-25, 2008</p> <p>Brief description : (Abstract of paper) Many organizations using Free/Open Source Software (FIOSS) are dealing with the major problem of selecting the most appropriate software product corresponding to their needs. Most of these companies are currently selecting FIOSS projects using ad-hoc techniques. However, in the last couple of years, two methodologies for assessing FIOSS project have emerge, namely QSOS and OpenBRR. The objective of this work is, through a detailed and rigorous assessment methodology comparison, to allow companies to have a better understanding of these two assessment methodologies content and limitation. This work compares both methodologies on several aspects, among others, their overall approaches, their scoring procedures and their evaluation criteria.</p>

<p>Dissemination Year 2 – Publication 7</p> <p>Title: An Operational Approach for Selecting Open Source Components in a Software Development Project</p> <p>Authors: Annick Majchrowski and Jean-Christophe Deprez</p> <p>Event: EuroSPI 2008 in Dublin, Ireland.</p> <p>Date: September 3-5th, 2008</p> <p>Brief description : (Abstract of paper) Many organizations have started to integrate Free/Open Source Software (FIOSS) components in their applications. It is therefore crucial for these companies to select the most appropriate FIOSS components in terms of functional and non-functional needs. Although FIOSS selection methods have appeared in the last few years, they lack an operational description. In turn, this has slowed their use in software development project. This work presents an operational approach for selecting FIOSS components where the client, the development team and their respective quality assurance teams are involved in the selection process. Although the case study applying the FIOSS selection approach is left to future work, this article already describes an industrial case where the approach presented in this paper has been approved for use by the various partners, i.e., the client, the development firm and their respective quality teams.</p> <p>This work is partly funded by QUALOSS (#33547), a research project funded under the FP6 programme of the European Commission.</p>
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These last two paper are worth citing as they were authored by URJC staff who participates to QualOSS.

Israel Herraiz, Gregorio Robles, Rafael Capilla, Jesus M. Gonzalez-Barahona, Managing Libre Software Distributions under a Product Line Approach In Proceedings of The IEEE International Workshop on Quality and Architectural Concerns in Open Source Software (QACOS 2008), Turku, Finland, Jul 2008.


Israel Herraiz Tabernero, Rafael Rodríguez Galván, Manuel Palomo Duarte, *The need of libre software research in Europe*, ISSN 1684-5285 Publication vol. IX, issue 6 – 6—8 Jan 2008, UPGRADE, CEPIS

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3. PERIOD-3 PUBLICATIONS


Dissemination Year 3 – Publication 1
Title: On the Analysis of Contributions from Privileged Users in Virtual Open Communities
Authors: Felipe Ortega, Daniel Izquierdo-Cortazar, Jesús M. González-Barahona, Gregorio Robles
Event: 42st Hawaii International International Conference on Systems Science (HICSS 2009) in Waikoloa, Hawaii, USA
Date: 5-8 January 2009
<p>Brief description : (Abstract of paper)</p> <p>Collaborative projects built around virtual communities on the Internet have gained momentum over the last decade. Nevertheless, their rapid growth rate rises some questions: which is the most effective approach to manage and organize their content creation process? Can these communities scale, controlling their projects as their size continues to grow over time? To answer these questions, we undertake a quantitative analysis of privileged users in FLOSS development projects and in Wikipedia. From our results, we conclude that the inequality level of user contributions in both types of initiatives is remarkably distinct, even though both communities present almost identical patterns regarding the number of distinct contributors per file (in FLOSS projects) or per article (in Wikipedia). As a result, totally open projects like Wikipedia can effectively deal with faster growing rates, while FLOSS projects may be affected by bottlenecks on committers who play critical roles.</p>

Dissemination Year 3 – Publication 2
Title: Using Software Archaeology to Measure Knowledge Loss in Software Projects Due to Developer Turnover
Authors: Daniel Izquierdo-Cortazar, Gregorio Robles, Felipe Ortega, Jesús M. González-Barahona
Event: 42st Hawaii International International Conference on Systems Science (HICSS 2009) in Waikoloa, Hawaii, USA
Date: 5-8 January 2009
<p>Brief description : (Abstract of paper)</p> <p>Developer turnover can result in a major problem when developing software. When senior developers abandon a software project, they leave a knowledge gap that has to be managed. In addition, new (junior) developers require some time in order to achieve the desired level of productivity. In this paper, we present a methodology to measure the effect of knowledge loss due to developer turnover in software projects. For a given software project, we measure the quantity of code that has been authored by developers that do not belong to the current development team, which we define as orphaned code. Besides, we study how orphaned code is managed by the project. Our methodology is based on the concept of software archaeology, a derivation of software evolution. As case studies we have selected four FLOSS (free, libre, open source software) projects, from purely driven by volunteers to company-supported. The application of our methodology to these case studies will give insight into the turnover that these projects suffer and how they have managed it and shows that this methodology is worth being augmented in future research.</p>

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Dissemination Year 3 – Publication 3
Title: Survival Analysis in Open Development Projects
Authors: Ortega, F., Izquierdo-Cortazar, D.
Event: ICSE Workshop on Emerging Trends in Free/Libre/Open Source Software Research and Development Vancouver, Canada.
Date: May 18, 2009
<p>Brief description : (Abstract of paper)</p> <p>Open collaborative projects, like FLOSS development projects and open content creation projects (e.g. Wikipedia), heavily depend on contributions from their respective communities to improve. In this context, an important question for both researchers and practitioners is: what is the expected lifetime of contributors in a community? Answering this question, we will be able to characterize these communities as an appropriate model can show whether or not users maintain their interest to contribute, for how long we could expect them to collaborate and, as a result, improve the organization and management of the project. In this paper, we demonstrate that survival analysis, a wellknown statistical methodology in other research areas such as epidemiology, biology or demographic studies, is a useful methodology to undertake a quantitative comparison of the lifetime of contributors in open collaborative initiatives, like the development of FLOSS projects and the Wikipedia, providing insightful answers to this challenging question.</p>

Dissemination Year 3 – Publication 4
Title: What Does It Take to Develop a Million Lines of Open Source Code?
Authors: Daniel Izquierdo-Cortazar, Juan Fernandez-Ramil and Tom Mens
Event: 5th International Conference on Open Source Systems (OSS '09) in Skövde, Sweden.
Date: 3-6 June 2009
<p>Brief description : (Abstract of paper)</p> <p>Little seems to be known about productivity in large, long-lived Free/Libre/Open Source Software (FLOSS) projects. This article presents a preliminary and exploratory study of the relationship between size, on the one hand, and effort, duration and team size, on the other, for 11 FLOSS projects with current size ranging between between 0.6 and 5,3 million lines of code (MLOC). The extracted data does not fit well the cost estimation model COCOMO 81 for proprietary software, motivating the need for FLOSS-specific productivity models. As a first approximation, we evaluated 16 linear regression models involving different pairs of attributes. The major finding of this article is that, if one removes large jumps, a linear model of development (e.g., by expressing effort in contributor-months as a linear function of the number of files) can fit most of the FLOSS projects we analysed. The best effort model we found, had a coefficient of determination $R^2 = 0.79$. One of the more complex FLOSS projects we analysed, namely Eclipse, behaved rather differently than the others, suggesting that different sets of models may be needed for different categories of FLOSS projects. As a by-product of this study, for individual FLOSS projects, we were able to identify growth models with a high degree of accuracy ($R^2 \geq 0.98$).</p>

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Dissemination Year 3 – Publication 5

Title: Assessing FLOSS Communities: An Experience Report from the QualOSS Project

Authors: Daniel Izquierdo-Cortazar, Gregorio Robles, Jesús M.González-Barahona, Jean-Christophe Deprez

Event: 5th International Conference on Open Source Systems (OSS '09) in Skövde, Sweeden.

Date: 3-6 June 2009

Brief description : (Abstract of paper)

The Project aims at building a methodology and tools to help in the assessment of the quality of FLOSS (free, libre, open source) software endeavors. In particular, we introduce the research done to evaluate the communities around FLOSS endeavors. Following the Goal-Question-Metric paradigm, QUALLOSS describe goals, the associated questions and then metrics whose measurement helps answer the questions. After applying the QualOSS methodology to four FLOSS projects, namely, Plone, JavaCC, Swallow, and Maemo, we saw which conclusions about our approach could be drawn.

Dissemination Year 3 – Publication 6

Title: Adoption Of Open Source Software: Is it a Matter of Quality or Maturity?


Authors: Flora Kamseu and Naji Habra

Event: 3rd FLOSS International Workshop on Free/Libre Open Source Software, University of Padua, Italy

Date: 2/3 July 2009

Brief description : (Abstract of paper)

In the past few years, the use of Open Source Software (OSS) attracted a growing number of users. The fast growth use of OSS increased the interest in studying the adoption of this kind of software. The goal of this paper is to analyze the different factors that potentially influence the adoption of an OSS. We identified factors related to quality (of the product, the process and the community) and the interaction between these factors. To achieve our analysis, we define a framework of quality in open source context. Then, we proposed an analysis based on a structured survey which shows that those software quality factors have significant effects on OSS adoption. We finally present how these factors influence each others. This research aim at contributing to increase the knowledge about the criteria useful for make easy the adoption of an OSS.

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Dissemination Year 3 – Publication 7

Title: The QualOSS Process Evaluation: Initial Experiences with Assessing Open Source Processes

Authors: Martín Soto and Marcus Ciolkowski

Event: 16th European Conference on Systems & Software Process Improvement and Innovation (EuroSPI 2009) in Madrid, Spain

Date: 2-4 September 2009

Brief description : (Abstract of paper)

For traditional software development, process maturity models (CMMI, SPICE) have long been used to assess expected product quality and project predictability. For the case of OSS, however, these models are generally perceived as inadequate. In practice, though, many OSS communities are well-organized, and there is evidence of varying levels of process maturity in OSS projects. This paper presents work in progress—performed as part of the EU project QualOSS—on developing a process evaluation framework specifically aimed at OSS projects. We present a first version of our evaluation procedures, and discuss some lessons learned during its preliminary application to a small number of OSS projects.

Dissemination Year 3 – Publication 8

Title: Measuring Open Source Documentation Availability


Authors: Matulevičius R., Kamseu F. & Habra N.

Event: 12th International Conference on Quality Engineering in Software Technology (Conquest '09), Nuremberg, Germany

Date: 14-15 September, 2009


Brief description : (Abstract of paper)

Software quality is rather a necessity than an option. And although there exists a number of quality models for the general software, little is done for the quality of the open source software (OSS). To support stakeholders with proper software products, these have to contain a high-quality documentation. In addition, this documentation quality should be assessable to allow well-founded decision-making. However, this is not always the case, and especially not for OSS. A lack of documentation results in a poor understanding, application, and resource consumption when using, developing, and evaluating OSS. In this paper we consider how we could assess the quality of the OSS documentation. We present a quality model that supports assessment of availability of the OSS documentation. Our model provides the means to assess documentation availability by fulfilling different stakeholders' goals addressing OSS acquisition, usage, and development. Once the information on the available documents is collected it can be used for comparing different OSS before acquiring them to organisation's purposes, or when estimating the overall quality of the organisation's work processes. We have applied our proposal on two OSS projects, namely Findbugs and k3b. Our investigation resulted in a number of learnt lessons presented in this paper.

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<p>Dissemination Year 3 – Publication 9</p>
<p>Title: The QualOSS Open Source Assessment Model: Measuring the Performance of Open Source Communities</p>
<p>Authors: Martín Soto and Marcus Ciolkowski</p>
<p>Event: 3rd International Symposium on Empirical Software Engineering and Measurement (ESEM 2009), Lake Buena Vista, USA.</p>
<p>Date: October 15-16, 2009</p>
<p>Brief description : (Abstract of paper) Open Source Software (OSS) has an increasing importance for the software industry. Similar to traditional (closed) software acquisition, OSS acquisition requires an assessment of whether its quality is sufficient for the intended purpose, and whether the chances of being maintained and supported in the future, as well as of keeping certain quality standards over time, are sufficiently high. In this paper, we present an approach toward a comprehensive measurement framework for OSS projects, developed in the EU project QualOSS. This approach takes into account product quality as well as process maturity and sustainability of the underlying OSS community.</p>

<p>Dissemination Year 3 – Publication 10</p>
<p>Title: Measuring the Performance of Open Source Development Communities: The QualOSS Approach</p>
<p>Authors: Martín Soto, Daniel Izquierdo-Cortazar, Marcus Ciolkowski</p>
<p>Event: Software Metrics and Effort Estimation (Metrikon 2009), Kaiserslautern, Germany.</p>
<p>Date: November 16 2009</p>
<p>Brief description : (Abstract of paper) Free and Open Source Software (F/OSS) has an increasing importance for the software industry. Similar to traditional (closed) software acquisition, F/OSS acquisition requires an assessment of whether its quality is sufficient for the intended purpose, and of whether the chances of being maintained and supported in the future, as well as of keeping certain quality standards over time, are sufficiently high. The first one of these aspects is strictly product related, and can be assessed using techniques that are not specific to F/OSS. The last two aspects, however, are related to the community developing the software, and require novel approaches to be evaluated properly. In this paper, we present an approach toward a comprehensive measurement framework for F/OSS projects, developed in the EU project QualOSS. Although this approach takes into account product quality as well as process maturity and sustainability of the underlying F/OSS community, we concentrate here on its community-related aspects. After describing our quality model and assessment techniques in some detail, we close with a description of our ongoing evaluation effort and a discussion of lessons learned.</p>

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		Status : Final Confid : Public

Dissemination Year 3 – Publication 11

Title: Evaluating Maintainability-Related Risks of Free/Open Source Software Component Integration

Authors: Frédéric Fleurial Monfils, Jacque Flamand, Nicolas Devos, Jean-Christophe Deprez


Event: 8th BELgian-NEtherlands software eVOLution seminar (BENEVOL '09), Louvain-la-neuve, Belgium

Date: December 18, 2009

Brief description : (Abstract of paper)

The Software Industry gives an increasing attention to free/open source software (F/OSS). However before integrating a F/OSS component in its software product, a company wants to determine its quality. From a business viewpoint, an interesting approach to assess quality is to capture the risks of integrating a F/OSS component in a software product. Incidentally, companies augment their their benefits of a F/OSS based development approach if they learn to fully collaborate with the existing F/OSS endeavor, that is, not simply fork the code but learn to interact with the existing F/OSS community and follow its software processes. In such a case, a fair risk assessment should not be limited to source code analysis of a single snapshot in time but also study the past behavior of the F/OSS community on its F/OSS component.

An important cost item in software development is maintainability hence assessing risks related to maintainability is of great interest to software companies. Maintainability of a F/OSS component has a different meaning to each role involved in the integration of the open source piece of code inside a larger application. Certain roles are concerned about the short term such as the developer who needs to integrate the select F/OSS component version in the application while other roles are more concerned with the mid and long terms. In this paper, we focus on the mid and long term concerns of the product manager, the project manager and the developers. In particular, we used the Goal-Question-Metric methodology to identify role relevant questions related to the evolution of certain software metrics. Subsequently, indicators specify metrics thresholds and a risk color is inferred for each indicator from a 4-color scale. In practice, based on the definition of these indicators, the needed software metrics are computed on the main data sources managed by the F/OSS endeavor such as the bug tracking system or the version control system. The risk indicators presented have been calibrated on a set of 4 open source Java projects.

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The following article was submitted but not reviewed yet. The review results will be communicated on Jan 17th 2010.

Dissemination Year 3 – Publication 12
Title: FLOSS Communities: Analysing Evolvability and Trustworthiness from an Industrial Perspective
Authors: Daniel Izquierdo-Cortazar, Jesús González-Barahona, Gregorio Robles, Jean-Christophe Deprez and Vincent Auvray
Event: The 6th International Conference on Open Source Systems in Notre Dame, IN, USA
Date: 30 May - 2 June 2010
<p>Brief description : (Abstract of paper)</p> <p>Plenty of companies try to access Free/Libre/Open Source software (FLOSS) products, but they find a lack of documentation and responsiveness from the libre software community. But not all of the communities have the same capacity to answer questions. Even more, most of these communities are driven by volunteers which in most of the cases work on their spare time. Thus, how active and reliable is a community and how can we measure their risks in terms of quality of the community is a main issue to be resolved. Trying to determine how a community runs and look for their weaknesses is a way to improve themselves and, also, a way to obtain trustworthiness from an enterprise point of view. This paper presents work done in the QualOSS project, which aims at building a methodology and tools to evaluate the communities around FLOSS products (among other quality attributes). Following the Goal- Question-Metric approach, QualOSS describes goals, the associated questions and then metrics whose measurements helps answer those questions. In order to have a statistical basement, around 1400 FLOSS projects have been studied to create thresholds which will help to determine a project's current status compared with this initial set of FLOSS communities.</p>

4. EVENT ORGANIZATION

FOSDEM 2007, Brussels Belgium Feb 24-25, 2007

Joint workshop on "libre software research meets libre software developers", sponsored by the QUALLOSS, SQO-OSS, QUALIPSO, FLOSSMETRICS and FLOSSWorld.

WoPDaSD 2007 - Limerick Ireland June 14, 2007

2nd International Workshop on Public Data about Software Development (WoPDaSD 2008)

<http://www.qualoss.org/dissemination/limerick>

FOSDEM 2008 Brussels Belgium Feb 23-24, 2007

Workshop on "libre software research meets libre software developers"


The "Research Room" will host a workshop with participants from the academia and the libre (free / open source) software community. The workshop will be organized in collaboration with the EC-funded, FLOSSMetrics and QUALLOSS projects.

<http://archive.fosdem.org/2008/schedule/tracks/researchroom>

WoPDaSD 2008 - Milan (Italy) September 7-10, 2008

3rd International Workshop on Public Data about Software Development (WoPDaSD 2008)

<http://libresoft.es/activities/wopdasd-2008>

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WoPDaSD 2009 - Skövde (Sweden) June 6th , 2009

4th Workshop on Public Data about Software Development; co- located with the 5th Open Source Systems Conference.

<http://libresoft.es/activities/wopdasd-2009-4th-workshop-on-public-data-about-software-development>