



# Free/Libre and Open Source Software Metrics

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The FLOSSMetrics Consortium consists of: Universidad Rey Juan Carlos, University of Maastrich, Wirtschaftsuniversitaet Wien, Aristotle University of Thessaloniki, Conecta s.r.l., Zea Partners and Philips Medical Systems PMS Nederland B.V.

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## Exploitation Plan

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### **Deliverable: D10.1**


#### **Title: Exploitation Plan**

#### **Executive Summary:**

This document describes the activities undertaken in order to guarantee the continuation of FLOSSMetrics after the end of the project grant. Based on industrial and SME inputs (WP8 and WP9), a comprehensive exploitation strategy has been developed on how both research results and tools can best be used and exploited within the FLOSS industry and community: by large firms, by SMEs, by the broader open source developer community, by academia. Synergies with other research projects have also been explored. Further, the importance and possibilities of the tools and the FLOSSMetrics infrastructure itself are highlighted, as well as the dissemination and exploitation potential of the SME guide.

This exploitation plan includes specific recommendations and guidelines about how the outputs and results of the FLOSSMetrics project could be used by the software industry in general, and by those industries involved, or planning to be involved, in FLOSS development.

In order to enhance the usability of this exploitation plan for the target groups, the final part of this document provides a booklet with specific recommendations and guidelines, distributed under a Creative Commons license.


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## 1. INTRODUCTION

### 1.1 ABOUT THE PROJECT


FLOSSMetrics stands for Free/Libre Open Source Software Metrics.

The main objective of FLOSSMetrics was to construct, publish and analyse a large scale database with information and metrics about free/libre open source software (FLOSS) development coming from several thousands of software projects, using existing methodologies, and tools already developed. The project also provides a public platform for validation and industrial exploitation of results.

The main results of FLOSSMetrics are:

- Sources of data properly identified, and a comprehensive database structure.
- Integration of available tools to extract and process such data into a complete platform.
- Database of empirical data about thousands of FLOSS projects.
- Complete platform offering that database in a form suitable for researchers.
- Visualisation methods and analytical studies and methodologies, especially relating to benchmarking, identification of best practices, measuring and predicting success and failure of projects, productivity measurement, simulation and cost/effort estimation.
- Dissemination of the results, including data, methods and software.
- Guide on FLOSS for SMEs.
- An exploitation plan, validated with the project participants from industry especially from an SME perspective.

These are the results and resources that should be exploited. For further details see [www.flossmetrics.org](http://www.flossmetrics.org) or the project description on the the CORDIS website: [ftp://ftp.cordis.europa.eu/pub/ist/docs/directorate\\_d/st-ds/flossmetrics-project-story\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/ist/docs/directorate_d/st-ds/flossmetrics-project-story_en.pdf)

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The FLOSSMetrics database itself is publicly available in Melquiades (<http://melquiades.flossmetrics.org>), a website designed with the objective of making more accessible the data generated by the project to researchers and other end-users.

## 1.2 ABOUT THIS DOCUMENT

This deliverable presents the exploitation plan for the FLOSSMetrics project. The exploitation plan draws on input from WP8 - “SME Exploitation and Validation” and WP9 - “Industrial Exploitation and Validation” to complete Track 3 of the project, overall being the “exploitation and validation”.


The purpose of the exploitation plan is to guarantee a continuation after the end of the project and, therefore, to identify potential markets and channels for the data and tools that are resulting from work packages 1-6.

Section 2 is focused on exploitation strategies. First it identifies the target audiences that can benefit from and utilize FLOSSMetrics results and/or infrastructure. The section provides an overview of various potential sustainability plans based on the data and the tools. It covers exploitation strategies for industry (including SMEs as well as large firms), FLOSS projects/communities themselves, academia, as well as synergies with other research projects.

Section 3 of this document presents a list of specific recommendations and guidelines about how the outputs and results of the FLOSSMetrics project can be used by the software industry in general and by those industries currently involved or intending to be involved in FLOSS software development. This is based on the experience of the partners of the consortium, and specifically on the outputs of WP 9.

Section 4 outlines the plan for sustainability of FLOSSMetrics infrastructure and the web-site.

The appendix contains a booklet based on the recommendations and guidelines, entitled “Exploiting FLOSS research results for industry”.

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## 2. EXPLOITATION STRATEGIES – USING AND DISSEMINATING KNOWLEDGE

### 2.1 EXPLOITATION OBJECTIVES

The objectives for the exploitation plan are:

- To report on the validation of the project's research results and tools within an industrial open source development environment.
- To develop a comprehensive exploitation strategy how the research results and tools can best be used and exploited within the open source software industry: by large firms, SMEs and the broader open source developer community.

Both main objectives draw on inputs from industry, including the SME perspective.


### 2.2 FLOSSMETRICS TARGET GROUPS

We have identified four main areas/target groups for exploitation:

- Software industry
- FLOSS projects and communities
- Academia
- Other Research Projects

#### 2.2.1 Software industry – SMEs and large industry

Many large European industrial players expect that FLOSS will become increasingly important, not only in the primary but also in the secondary software sector, covering strategic areas such as telecommunication, automotive, aeronautics and aerospace, large equipment industries, energy, and health. This implies that the need for reliable and comprehensive information on existing FLOSS projects and products will also become more important.


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There is a wide range of FLOSS-based or FLOSS-related business strategies. However, companies, and especially SMEs, are often insecure about which strategy best fits their strategies. The FLOSSMetrics SME Guide [1] has identified 3 thematic axes that determine the factors to be considered when a business strategy developed:

- **Software model axis:** define the share of control to have over the software, and determine how much and which parts of it should be FLOSS
- **Development model axis:** determine the degree of collaboration to be achieved, and the constraints
- **Business model axis:** determine the revenue model for the software, being the main options:
  - Training
  - Services
  - Integration
  - Custom development
  - Subscription models
  - “Commercial Off The Shelve” (COTS),
  - “Software as a Service” (SaaS)

In order to tap this potential, companies will benefit from using FLOSSMetrics data and applying techniques such as statistical analysis (correlations, temporal series, etc) or artificial intelligence (machine learning, data mining, stream mining, etc). This can form the basis for companies to offer services like:

- **Evaluation and benchmarking of their own software developments:** The FLOSSMetrics data can be used by the companies for comparing, benchmarking and evaluating their own software developments and software processes, and hence provide information and insight.
- **Reducing software evaluation and development time:** The FLOSSMetrics database provides an overview of thousands of existing FLOSS projects. Examining this rich source


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of information can help firms when they have to deal with "make-or-buy" decisions. Even if a "buy" decision is made, the FLOSSMetrics database provides information on FLOSS projects and products that can be utilised as components for firms' own software projects, thus reducing development time. According to feedback from industry, one of the key advantages provided by FLOSSMetrics is seen in the estimates and evaluation of quality, especially for complex and large scale packages. By providing an opportunity to automating most of the code-related evaluation that firms have to perform on the OSS packages that they support, FLOSSMetrics helps lowering significantly the effort and costs that are aligned with these tasks. Another advantage for industry provided by FLOSSMetrics is the opportunity to measure the performance of the development project, and of the people involved, and to track the rates of change in the different software packages, provides a substantial advantage for companies, plays also a role for the "inner-source" cases. In addition, FLOSSMetrics provides the industry with tools that improve the daily workflow. Overall, we expect that industry's interest will largely focus on the software-related measurements provided by FLOSSMetrics, i.e. SCM data, issue tracking data, and mailing lists data. Other results, such as publications, will probably be of secondary value for industry and consulted only in case of uncertainty about general issues like overall development directions or community characteristics that could threaten the long-term employability of a certain FLOSS project or product.

- **Consultancy for third party companies:** in the same way of the previous point, companies could provide advise or consulting services to third parties about FLOSS development, software engineering, and create new SMEs based on FLOSS.

The FLOSSMetrics data can generally be used for these purposes. More concretely, URJC is preparing various proposals for the "Plan Avanza" [2], a programme funded by the Spanish government. The objective of this programme is to support companies that "develop new products, processes, applications, contents and services" for the Information and Communications Technologies (ICTs). Some action lines are specific for FLOSS based technologies.

These specific proposals are:

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- **OSSM - Open Software Smart Management**

The main goal of this project is the optimization of development and maintenance processes in medium/large size FLOSS projects. FLOSSMetrics data will be used in conjunction with Information Architecture (IA) techniques for obtaining quality metrics, facts and patterns to improve and automate developing tasks. The industrial partners of the consortium are "Telefónica I+D" (TID) [3] and "Yaco" [4].

- **Memento**


The purpose of Memento is to monitor FLOSS projects using techniques based on software evolution, mashups (web applications that combine data from one or more sources into a single integrated tool) and social networking mining tools. FLOSSMetrics will be used in this context as input to the data mining tasks. The companies involved in this proposal are "Atos Origin" [5], "Germinus XXI" [6] and "Paradigma Tecnológico" [7].

Other companies and industry-based initiatives that have already shown interest in utilizing FLOSSMetrics data:

- **Software Improvement Group [8]**

Software Improvement Group (SIG) is specializing in software evolution and relies heavily on information about characteristics of FLOSS products and development processes. FLOSSMetrics data and tools provide an effective source of this information and will significantly ease a part of the Software Improvement Group's work.

As comments Joost Visser, SIG's head researcher, the collaboration with FLOSSMetrics *"have helped us to understand better the challenges in retrieving, storing, analyzing, and sharing high volumes of data on open source projects. The interactions with FLOSSMetrics have stimulated our internal research on project metrics for commercial software projects. Partly due to the interactions with the FLOSSMetrics team, we have now, in the course of a couple of months, come into the position where we are able to visualize and quantify project data in a meaningful way. We have also been able to achieve preliminary results on*

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*the correlation of product and project metrics. Our first experiments indicate that the product ratings of the TÜViT/SIG software product quality model are positively rank-correlated with aggregated scores for defect solution throughput time. We are looking forward to broadening these experiments under the conviction that their empirical results will constitute a break-through in the area of software quality.”*

- **FOSSology** [9]

FOSSology is a project created by Hewlett Packard Company (HP). Its objective is the study of FLOSS in order to provide firms and communities with information on key characteristics of FLOSS projects and products. The FLOSSMetrics database and the tools developed, integrated and provided by this project will be largely deployed for the purposes of FOSSology.

- **ZEA Partners** [10]


ZEA Partners is working on making the data and results more accessible for SMEs and to help bridging the gap between FLOSS research and FLOSS communities. For this purpose, ZEA Partners, together with the University of East London, has established the Free/Open Source Software Open Research Initiative (FOSS-ORI) [11]. FOSS-ORI will be used in order to help disseminating and deploying the results of FLOSSMetrics within the European and global FLOSS communities.

- **Antelink**

Antelink is a recent start-up delivering tools for software development activities. This company has shown interest in the FLOSSMetrics platform, and there are plans to further explore how to use it in combination with the tools it provides.

### **2.2.1.1 Industry feedback**

Overall, feedback from industry provided that FLOSSMetrics results are considered to be useful for helping in decision-making related to following aspects:

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- quality assessment of open source software
- selection of the right package in the large search space of possible solutions
- ownership and control issues – how to ensure own requirements are met
- how to keep own differentiating (IPR-related) software separated from open source
- how to guarantee quality to clients and regulatory bodies
- what kind of company policies are sensible
- introduction of open source and spreading it in the organization
- training of the people involved
- Interoperability with legacy solutions
- Cohabitation of open source and legacy software
- How to find a community for software that you want to open and initiate an open source community around
- Policies on company people to get involved in open source communities


## 2.2.2 FLOSS projects/Communities

Consultancy for FLOSS projects themselves, or for companies relying on a community or software, is a form of exploitation. It can either be companies in interaction with communities, or communities themselves.

### 2.2.2.1 Business models interacting with communities

FLOSSMetrics results are available to the public, and as time is passing a broader take-up of its database and tools by both FLOSS projects and companies is happening. The dissemination, usability and applicability of FLOSSMetrics results are becoming more mature, and reaching a wider industrial scope. Further, due to the general orientation of FLOSSMetrics towards industrial and SME's needs, the FLOSSMetrics results are ready to serve a number of business models and markets. Some examples of those are offered below.

One business model would be to extend the current metrics as available from the web site and to create pre-computed metrics for software selection and software stability that can be used by

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firms. This can be used as a basis for services like OpenLogic, which uses custom and human-based methods for selecting which version to use or install. A potential market for this kind of service is seen for system integrators that may have to select among different version of the same package. The fact that mailing lists are also indexed is very useful in this sense, as activity after a release is a good measure of quality (e.g:too many mail messages usually are a symptom of release problems).


A second business model for a company providing a commercial service could be to include project-specific pages in the database, maybe accessible as a subscription service, that provides one-stop search of information. For commercial-backed projects, a more strict focus on "quality" may be useful to detect regression. It can be also offered to project hosting services like CollabNet as a value-added feature. In this sense, the main offer should be an automated engine that provide code quality and regression estimation.

Especially SMEs with limited man-power and budgets to spend in systematic research, analysis and comparison of existing FLOSS solutions would benefit from both business models described above. A major benefit, in this sense, will be that SMEs are offered improved opportunities for integrating software.

#### ***2.2.2.2 FLOSS Communities directly utilising FLOSSMetrics resources***

Turning directly to FLOSS communities and projects themselves, without the intermediate of companies, is also a target of FLOSSMetrics. Currently, there are some contacts with FLOSS projects , exploring the opportunities for joint developments, and also how those communities could benefit from FLOSSMetrics. Of those there are three project with which conversations are in a more advanced state: Apache, Mozilla and GNOME (detailed below). The objective is to provide data of interest to the communities, and working with them enables and eases the data collection.

- **Apache.** The project is already interested in gathering and providing statistics about itself. FLOSSMetrics infrastructure could be used in the future for a part of this service.

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- **Mozilla.** The project is interested both in fostering initiatives related to the improvement of FLOSS development, and to understand how it could benefit from FLOSSMetrics.
- **GNOME.** There are specific conversations on how to streamline the retrieval of data from GNOME repositories, and how to offer back to the project enough value so that GNOME members find it interesting the collaboration.

### 2.2.3 Academia

Other research groups have shown interest in using FLOSSMetrics data. One of these groups is the "ELSE working group" [12]. The ELSE informal consortium aims at bringing together researchers from several European universities who share an interest in developing a virtual laboratory for studying the co-evolution of software-intensive systems with society. ELSE is strongly interested in data as created and provided by FLOSSMetrics in order to carry out software evolution studies. Given this orientation of ELSE, the relationship with FLOSSMetrics and the perspective for interesting and promising follow-up projects of FLOSSMetrics are evident. Therefore, the project team has started to collaborate with ELSE in order to develop new projects that aim to advance and broaden what has been built up by FLOSSMetrics.

Other channels of exploitation could be similar or the same as we have been doing along the duration of the project. For instance, we will further fostering the use of our data in events like Mining Software Repositories (MSR) Challenge, where it was used in the 2009 challenge, the Workshop on Public Data about Software Development, where it was used in the 2008 and 2009 editions, and in other workshops and conferences.

The consortium is also working on providing Digital Object Identifier<sup>®</sup> (DOI) tags [13] for the database dumps. DOI is used for identifying content objects in the digital environment, allowing the unambiguous identification of data sets. Thus, researchers can more easily identify data that have been used by other researchers in their analyses. FLOSSmole is including DOIs in their databases. The obvious synergy effects between these initiatives and FLOSSMetrics will be examined and utilised in order to foster the use of the FLOSSMetrics database.

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## 2.2.4 Other Research projects

The results of FLOSSMetrics can also be used in other research projects, benefiting from synergy effects. The consortium has already worked together with Vulcano [14], Qualoss and Qualipso [15] as described below.

- **Vulcano**

One of the goals of this project is create a new-generation forge. The collaboration with FLOSSMetrics will consist on integrating the developed tools (such as the retrieval system, cvsanaly, bicho, etc) for providing valuable data and analyses to developers and users of the forge.


- **Qualoss**

Qualoss works on quality models for FLOSS development. In this context, the project has used (partially) some of the FLOSSMetrics tools and data for analysis and benchmarking purposes. In addition, FLOSSMetrics is providing some of the QUALOSS quality metrics as a part of the data provided for analysed projects.

- **Qualipso**

FLOSSMetrics can be of potential use for the Qualipso Competence Centers, as well as other Competence Centers on Free/Libre software in general. Qualipso specifically is focusing on:

*"The Qualipso consortium is aimed at helping industries and governments to fuel innovation and competitiveness by stimulating the use of low-cost, flexible, open source software to develop innovative and reliable information systems. In order to do this, it intends to define and implement the technologies, practices and policies that facilitate the*

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*development and use of such software, with the same level of accuracy and trust traditionally offered by proprietary software."*

FLOSSMETRICS is collaborating with Qualipso, by mainly focusing on two lines:

- Integration with the Qualipso's forge (similar to the Vulcano project)
- Consultancy, as was described in the companies section (section 2.3 of this document), offering data to enterprises for estimating the maturity and reliability of their projects.


The entities in charge of this in Qualipso are the "Morfeo Competence Centres of The Qualipso Network". FLOSSMetrics partner GSyC/LibreSoft research group at the Universidad Rey Juan Carlos (URJC), together with the CETTICO research group at the Universidad Politécnica de Madrid (UPM) joined efforts to create the "Spanish QualiPSo Open Source Competence Centre" [16], who are planning to use the FLOSSMetrics data.

The goal of the competence centre is twofold: firstly, to take advantage of the results of QualiPSo both in technical terms (tools, platforms, etc.) and project experience, and secondly, to provide resources and support for open source software users, producers and consumers on quality-related topics, offering a set of basic services based on the results of QualiPSo consortium's works.

Furthermore, URJC and other FLOSSMetrics partners are continuously exploring the integration of our tools and results in other forges (preparing other Avanza projects) or contexts. This will be a permanent objective of all FLOSSMetrics partners in all future research activities that offer an opportunity for this way of disseminating and exploiting the FLOSSMetrics results.

### **2.3 TOOLS AND INFRASTRUCTURE**

The FLOSSMetrics infrastructure can be set up and used by companies interested in performing their own analysis. FLOSSMetrics infrastructure is divided in three main systems:


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- **Retrieval system.** The retrieval system is a software package that automates the retrieval (and partially, analysis) of data from public repositories about libre (free, open source) software development. It actually is mainly a front-end that organises and schedules the execution of a set of third party retrieval and analysis tools, which can easily be integrated into the system as plug-ins. Some examples of tools supported by the retrieval system are: CVSanaly2, that analyses source code management systems; MLStats, that retrieves information from mailing lists; Bicho, which obtains information from several types of issue trackers.
- **Database.** The structure of the FLOSSMetrics database has been designed to cover the various needs of the public, such as researchers or developers. For this reason the database is divided in several levels, according to the various studies that can be performed. The first level contains data extracted by the tools integrated into the retrieval system; the second level unifies the data of the previous level based on several criteria; the third level will contains analyses and statistics.
- **Melquiades:** Melquiades is the name of the website interface designed with the purpose of making more visible and accesible the different results stored in the FLOSSMetrics database. In addition to a user interface designed for end-users, it also provides an extensive API for automated consultation of data.

All these software tools are available public under GPL license and included into the librosoft-tools package (<http://tools.librosoft.es>), and can be easily incorporated into company workflows.

## 2.4 THE SME GUIDE

The SME guide was adopted and used in a wide variety of contexts, in a sense going far further than expected when drafting the original FLOSSMetrics Description of Work. As it stands, the guide has been used by:

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- Companies interested in using open source software; especially using the software catalog as a tool to narrow the search for available software and for discovering available tools
- Associations, to spread information on open source software and its applicability for commercial use; for example, the Italian Industry Association (Assindustria, Friuli regional chapter) distributed a CD copy of the guide to all its associates as a way to improve visibility and take-up of open source. A similar purpose has been done in South-East of Asia by several public bodies, to facilitate the adoption of legal alternatives to pirated software
- Open source vendors, that are using the guide as a marketing tool
- Universities, that are using the guide as part of their courses on open source software
- Non-profit associations, that are using the guide as a toolbox for introducing new IT systems in volunteer organizations.


Some of the materials in the guide have been used and referenced in other research projects, and by advisors such as the 451 group.

Regarding the continuous maintenance of the guide, the consortium plans to open up more of the wiki to external participants, and use the blog as a tool to aggregate comments on new material.

## 2.5 FLOSSMETRICS IN NEW RESEARCH INITIATIVES


The FLOSSMetrics database and infrastructure forms the foundation for new research and has been incorporated in new FP7 proposals. Specifically, some proposals were submitted to the FP7-ITC-2009-5 call:

- **FLOSSEvol:** The main outcome of the project will be a highly innovative evolution dashboard that will significantly advance the state of the art in this area. This dashboard, to be used by different actors in FLOSS development communities, will extract information from the development repositories of the corresponding FLOSS projects, analysing and visualising it, and resulting in concrete guidelines of how development, communication, and

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coordination practices, and other aspects of the project can be improved. This way, the project will become more effective, sustainable and competitive, and will be informed of what is required for the healthy functioning of its supporting ecosystem. The dashboard will also allow FLOSS projects to compare themselves against others, assessing them on how they are performing, letting them learn from the experience of others, and assisting them in the prediction of likely future problems. As such, FLOSSEvol will help companies and communities developing or relying on FLOSS projects to collaboratively manage their project both on detailed and strategic levels.

- **ALERT:** Due to its open nature, the communication/collaboration in the open source software development has become the most critical issue for the whole open-source production, since “un-coordination“ can lead to many drawbacks, starting from the inefficiency in the development process, till the vulnerability in the delivered software. In many cases, product vendors (or other developers) have made changes to open-source packages without even attempting to contact the "upstream" developers. This approach significantly increases both the risk that new vulnerabilities will be introduced into open-source code and the likelihood that upstream fixes for other vulnerabilities will cause later problems with the vendor-modified modules. The main goals of ALERT are (i) to increase the quality of the real-time communication regarding software development within the open source community members as well as with other communities that are interested in or depend on the code; (ii) increase the responsiveness of the open source development environment to attempts to change the software in an undesired way.
- **AwareDev:** AwareDev aims to support the development, management, evolution and take-up of Open Source projects by improving the awareness of developers, managers and end users of the relationships between the software assets and the potential problems. In addition, we aim to improve the visibility and maturity of the OS community and the contribution acceptance policy.

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### 3. RECOMMENDATIONS AND GUIDELINES ON HOW TO USE FLOSSMETRICS RESULTS AND INFRASTRUCTURE

SMEs and large companies that are interested in using the FLOSSMetrics results should follow the following three steps in order to maximise the efficiency of the information collected from the FLOSSMetrics repository and to increase its quality:

#### 1. Define what you are looking for and make a list of the information you need

- If you are interested in a FLOSS product or a FLOSS component, FLOSSMetrics can provide you with code as provided by source code management repositories of thousands of FLOSS projects and helps you to decide which package would be the one serving best your particular needs. Searching the FLOSSMETRICS website can thus considerably shorten your searching time.
- If you are interested in information about the quality of a certain FLOSS product or component, the FLOSSMETRICS database provides you with a number of metrics that help you to make a quality assessment (e.g. the number of bugs and bug fixes, the speed in which bugs are usually fixed, the evolvability and robustness of the code, and the like)
- If you are interested in information about the sustainability and reliability of a FLOSS project, the FLOSSMETRICS database provides you with measures that help you to assess the community's vitality, the number of committers, the release schedule, and the like.

#### 2. Make yourself familiar with the FLOSSMetrics website and database

- Check the FLOSSMetrics information sources (via the Melquiades web site) and get an overview of what is available. For example, the figures below, taken from the website, show histograms of the developing activity (Figure 1) and the number of source lines of code (Figure 2) from the Epiphany project (<http://projects.gnome.org/epiphany>).

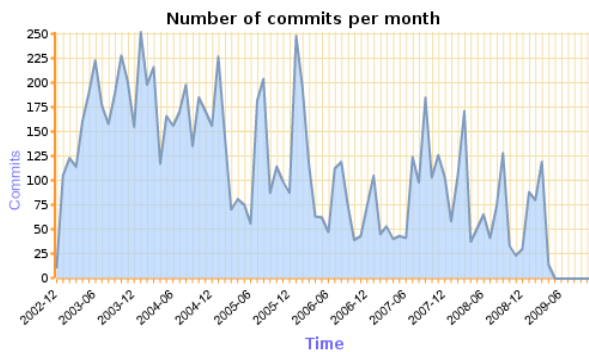


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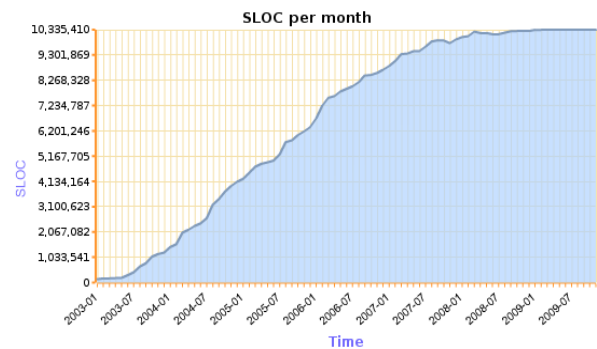



Figure 2: Source lines of code from Epiphany project

- Collect the information you need.
- Be aware that besides the graphs and data showing trends of general and common interest, there are independent, detailed and open information (in raw data format, not necessarily in graphical form) of the inner life and characteristics of the projects. This is a rich source of information which could give you even deeper insight into projects you are interested in and help you in decision processes.
- Make a list of what information is not provided and inform the maintainer of the FLOSSMetrics website and database about these gaps – this will help to continuously increasing the scope and quality of the information that is provided to companies and SMEs. You can do that using our issue tracking system: <http://melquiades.flossmetrics.org/support>

### 3. Evaluate the information you collected from the FLOSSmetrics website and database and give feedback


- Check whether the information that you collected meets your demands
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- Decide whether or not to use / implement the code / information you have retrieved from FLOSSMetrics
- Consider to feedback your results to the community and the FLOSSMetrics website and database. Please consider to use, as a good place for sharing them, the Melquiades wiki (<http://melquiades.flossmetrics.org/wiki>), where other users can view, comment and discuss your results.

#### 4. Consult the the Small/Medium Enterprise (SME) guide to Open Source Software

- The SME guide is a rich resource that has already been used in a wide variety of contexts and by various actors, including companies, associations, open source vendors, universities and non-profit associations.
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  - *How is it possible for FLOSS to be free?* → Section 2.8 "Myth #8: There is no money to be made on FLOSS".
  - *Someone told me that FLOSS is not reliable, and is not good enough quality for use by companies.* → section 2.2 "Myth #2: FLOSS is not reliable or supported", and section 2.3 "Myth #3: Big companies don't use FLOSS".
  - *I just want to know what kind of software is available.* → see Software Catalogue
  - *There is too much software! How can I choose?* → chapter 4, "Finding and selecting software".

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- *What are the licensing constraints? If I use OSS, what happens?* → chapter 1 "What's Free/Libre/Open Source Software?".
- *I decided to use OSS inside of our company/institutions. What is the best way to proceed?* → chapter 5, "Best practices for FLOSS adoption".
- *How can I decide if it is convenient to use OSS inside of a product?* → chapter 7, "R&D sharing".
- *I want to sell services or products based on an open source component. What should I do?* → chapter 3, "Basic FLOSS adoption models", chapter 6, "FLOSS-based business models" and chapter 7, "R&D sharing".

## 6. Check the Research Community for Resources

- FLOSSMetrics is an enabler of research, and the research community is using FLOSSMetrics data and delivering results and benchmarking that could be of interest to industry.
- FLOSSMetrics provides a metrics dictionary which translates the available metrics from a software engineering point of view to a socio-economic one.
- FLOSSMetrics has performed two studies as good examples of how these data could be helpful to industry: the first one investigates the productivity of FLOSS developers in socio-economics terms; the second one estimates the cost/estimation study based on substitution costs for FLOSS. FLOSSMetrics is an enabler of research, and the research community is using FLOSSMetrics data and delivering results and benchmarking that could be of interest to industry.

## 7. Tools and Infrastructure


- FLOSSMetrics infrastructure is based on a tool (the retrieval system) that automatizes the analysis of public developing repositories using third party tools as plug-ins. The results are stored in a database and later are accessible via a web site interface named Melquiades.

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- Both retrieval system and Melquiades interface are included into the libresoft-tools package: <http://tools.libresoft.es>
- Other tools used in FLOSSMetrics to analyse repositories such as source code management systems (CVSAnalY tool), mailing lists (MLStats tool) or issue trackers (Bicho tool) are also available in the libresoft-tools package.
- All the tools used and developed during the FLOSSMetrics project - our own and third party ones -, are FLOSS.
- Consider the cost and benefits of installing the FLOSSMetrics tools and/or infrastructure stand-alone to do your own analysis.
- Get inspired by looking at how the tools and data is used in development forges, such as the Open Source Observatory and Repository (OSOR) <http://forge.osor.eu/plugins/metrics/index.php?id=13&type=g>

## 8. Consider to submit your project for evaluation


If you do not wish to install the tools and/or infrastructure, an independent, vendor-neutral FLOSS Competence Center can perform an evaluation of your project. Decide whether the cost is larger than the benefit of performing the analysis yourself. Such an analysis could be useful for the project to evaluate in in terms of quality, maturity, security, amongst others.

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#### 4. PLAN FOR SUSTAINABILITY OF THE FLOSSMETRICS INFRASTRUCTURE AND WEB-SITE


Obviously the FLOSSMetrics infrastructure and the web-site needs to be maintained and updated for FLOSSMetrics results and resources to be successfully exploited and reach it's full potential and usefulness for the various stakeholders. URJC is the consortium partner who is currently running the infrastructure and who will maintain it in the future. The cost in terms of maintaining the FLOSSMetrics infrastructure for URJC is relatively low, both in terms of effort and funding. The current estimation is that about one person-year per year will be needed, with responsibilities on the administration, including also incorporation of new projects into the system. They are working on obtaining a relatively small amount of extra funding to allow for continued exploration of various ways to improve the database and infrastructure, and offer new features to users. Additional funding will allow for further development of the FLOSSMetrics infrastructure rather than only maintaining the system, which is the minimum requirement.

The potential sources of the extra funding are national support plans for ICT, such as as the Spanish Avanza plan, or European sources such as FP7 [17], COST [18] and possibly the European Science Foundation [19].

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- [3] <http://www.tid.es>
- [4] <http://www.yaco.es>
- [5] <http://www.atosorigin.com>
- [6] <http://www.germinus.com>
- [7] <http://www.paradigmatecnologico.com>
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## 6. ANNEXES - “EXPLOITING FLOSS RESEARCH RESULTS FOR INDUSTRY”

The annex contains the booklet: “Exploiting FLOSS Research results for Industry”.

Exploiting FLOSS Research  
Results for Industry - Booklet



FLOSSMetrics stands for Free/Libre Open Source Software Metrics. This project has been established because Free/Libre Open Source Software (FLOSS) is becoming increasingly important not only in the primary but also in the secondary software sector, covering strategic areas such as telecommunication, automotive, aeronautics and aerospace, large equipment industries, energy, and health. This booklet provides you with reliable and comprehensive information on existing FLOSS projects and products. It thus helps you to find, evaluate and implement the right software for your needs.

The main objective of FLOSSMetrics was to construct, publish and analyse a large scale database with information and metrics about libre software development coming from several thousands of software projects, and to provide a public platform for validation and industrial exploitation of results.

**The main results of FLOSSMetrics are:**

- Sources of data properly identified, and a comprehensive database structure.
- Integration of available tools to extract and process such data into a complete platform.
- Database of empirical data about thousands of FLOSS projects.
- Complete platform offering that database in a form suitable for researchers.
- Visualisation methods and analytical studies and methodologies, especially relating to benchmarking, identification of best practices, measuring and predicting success and failure of projects, productivity measurement, simulation and cost/effort estimation.
- Dissemination of the results, including data, methods and software.
- Guide on FLOSS for SMEs.
- An exploitation plan, validated with the project participants from industry especially from an SME perspective.

For details see [www.flossmetrics.org](http://www.flossmetrics.org) or the project description on the the CORDIS website:

[ftp://ftp.cordis.europa.eu/pub/ist/docs/directorate\\_d/st-ds/flossmetrics-project-story\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/ist/docs/directorate_d/st-ds/flossmetrics-project-story_en.pdf)

The FLOSSMetrics database itself is publicly available in Melquiades (<http://melquiades.flossmetrics.org>), a website designed with the objective of making more accessible the data generated by the project to researchers and other end-users.

**FLOSSMetrics contributes significantly to**

- Easing the evaluation and benchmarking of your own software developments
- Reducing software evaluation and development time
- Facilitating the evaluation of the quality of FLOSS by automating this task through tools
- Lowering the effort and costs that are aligned with product research and quality assessment
- Facilitating the measurement of project performance and of the people involved and to track the rates of changing in the different software packages
- Opening new business opportunities, e.g. in the form of consultancy for third party companies

### **FLOSSMetrics will help you to decide on**

- Quality assessment of open source software
- Selection of the right package in the large search space of possible solutions
- Ownership and control issues – how to ensure own requirements are met
- How to keep own differentiating (IPR-related) software separated from open source
- How to guarantee quality to clients and regulatory bodies
- What kind of company policies are sensible
- Introduction of open source and spreading it in the organization
- Training of the people involved
- Interoperability with legacy solutions
- Cohabitation of open source and legacy software
- How to find a community for software that you want to open and initiate an open source community around
- Policies on company people to get involved in open source communities

Especially SMEs with limited man-power and budgets to spend in systematic research, analysis and comparison of existing FLOSS solutions would benefit from both business models described above. A major benefit, in this sense, will be that SMEs are offered improved opportunities for integrating software.

There is a wide range of FLOSS-based or FLOSS-related business strategies. However, firms are often insecure about which business model fits best to their strategies. The FLOSSMetrics SME Guide (available on the project website) has identified 3 thematic axes that determine the factors to be considered when a business strategy developed:

- Software model axis: define the share of control you want to have over your software and determine how much and which parts of your software should be FLOSS
- Development model axis: determine the degree of collaboration you want to achieve, and the constraints
- Business model axis: determine your revenue model for the software, the main options are
  - Training
  - Services
  - Integration
  - Custom development
  - Subscription models
  - “Commercial Off The Shelf” (COTS)
  - “Software as a Service” (SaaS)

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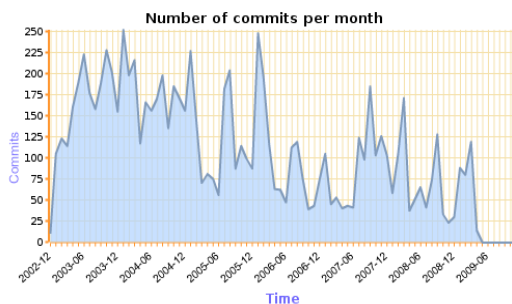


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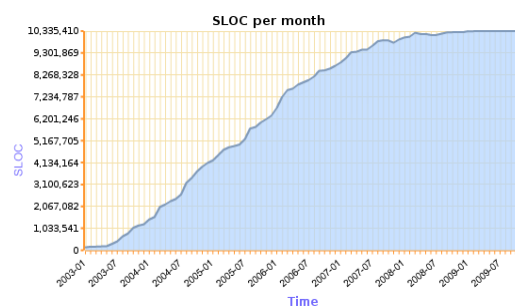


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