

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 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

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)

SMEs and large companies that are interested in using the FLOSSMETRICS results should keep to 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 Melquiades 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>).

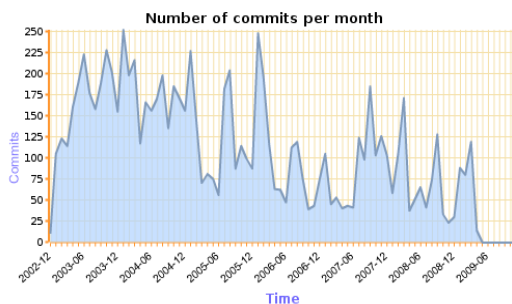


Figure 1: Number of commits from Epiphany project

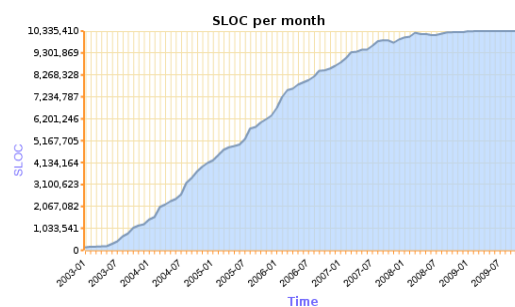


Figure 2: Source lines of code from Epiphany project

- 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 both FLOSSMetrics and Melquiades websites 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.
- If needed, decide what you can do in order to enhance the information quality (e.g. by running tests on the code that have not been done before) or if you want to employ third parties (e.g. a software services company) for this purpose.
- 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.
- The guide generally addresses two strands information
 - Companies interested in start using an FLOSS tool should consult chapters 1, 2, 4, 5.
 - Companies interested in starting a business based on FLOSS: chapters 3, 4, 6, 7.
- The following list of common questions will help you further navigate the guide and get an idea of what issues and information the guide can assist you with:
 - *What is open source?* → Section 1.1 "What is open source software?"
 - *Do I have to pay to use FLOSS? Is it really free?* → Section 1.1 "FLOSS as a licensing model".
 - *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".
 - *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.

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.
- 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 terms of quality, maturity, security, amongst others.