What, Why, How Open Source

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Introduction

This note begins with a brief review of the generic principles of Open Source, as intended for newcomers. It will be followed by discussions between experienced users of Open Source softwares.

What is Open Source

The full name is Free/Libre Open Source Software, FLOSS, but the short colloquial name is simply “open source”. The idea is to share software knowhow in the public domain. Knowhow includes the full documentation and the source code.

http://en.wikipedia.org/wiki/Free_and_open-source_software

The main freedoms includes:

- The freedom to use the software.
- To study how it works,
- To modify,
- To re-distribute.

The authors of open sources keep the formal license on their work, but choose an open licence. The most typical license is the GNU, General Public Licence, http://en.wikipedia.org/wiki/GPL , but there are many other flavors more or less permissive about proprietary concepts.

A related concept is “Open Data” i.e. here free access to medical knowledge.

Why Open Source in Heathcare

Since healthcare software requirements are similar everywhere in the world, international communities can exchange ideas and share development efforts.

The transparency allows to control what software is really doing and not doing. Quality control by means of peer review.

To have the freedom to modify software in function of local requirements.

To avoid exclusive dependency on any single provider, what could become a sustainability problem.

Since healthcare is a societal issue of common interest, the goal is to provide affordable software in developing regions, allowing to make any number of copies, without licenses costs.

How to manage Open Source

Many software modules are already freely available in the public domain at 2 levels.

(1) Generic repositories provide the infrastructure, as distributions of the Linux operating systems, database systems, software development tools, etc... This is an environment on which specialized applications can be installed.

(2) Many medical applications are already available as open source. The MEDFLOSS data base provide a large inventory of medical applications, http://www.medfloss.org . Healthcare modules can be retrieved by popularity, by application type, by enterprise function or by standards.

Sharing know-how means that all up to now existing software components in open source are available and may be modified.

Development Communities

The users having a good understanding of the current situation, are continuously asking for more and more software. New development tasks are mandatory for the sustainability of a system. They can be distributed between the members of large communities.

The question is to define the specifications as far as possible in such a generic way that it can cover common interests of diverse groups of users.

Since the documentation is free, severals teams can build additional extensions and improvement.

Proposed new versions can be accepted by the coordinators of the community. As far as possible inclusion in the central trunk of development is very recommended because future common maintenance will become easier.

However it remain possible to make very specific and arbitrary developments, but then at own costs and without support of partners.

Interoperability

In a multidisciplinary environment, doctors need to move easily in all the aspects of a global patient record, including information from different origins as specialist reports, laboratory, radiology, etc... They do not mind about technical issues like file formats. Therefore interoperability is very important and the openness of the open source approach is a great factor of integration since developers can talk to each other. However this may sometimes remain a challenge when definition and granularity of concepts may be a little divergent in different contexts.

Support Services

Good support services are critical for the success of any projects. New users may need help for installation. At any time in case of any problem, medical users need the possibility to call for technical assistance.

Economic model

The open source economic model is based on a clear distinction between development and support services.

(A) At one side pure developments should be supported by donations, welfare foundations and public authorities. A good use of their resources since the development results are made available to a large audience at international level.

(B) At the other side support services remain a kind of traditional business at regional level, in principle to be supported by the users. This is the role of commercial operators, competing on quality of services and prices. This is a perfectly sustainable business.

About developments it is proposed to make a distinction between 3 types of actors.

(1) Users need solutions and when not yet available as open source, software extensions must be made. Users are usually willing to pledge resources in order to get exactly what they need, but on condition deadlines will be met. Medical users are not interested in becoming vendors of software licenses. The same is true for foundations and public healthcare authorities willing to help as many people as possible.

(2) technical developers need good explanation about requirements and like interesting challenges. Although not the primary motivation, developers need realistic incomes. While volunteers already do a lot, development budgets are necessary in order to provide solutions within foreseen delays.

(3) Brokers in “Open Source Market Place” would become very useful. Their role is to review software requests, to reformulated it in technical terms and in a generic way of common interest. They seek solutions in existing repositories as MEDFLOSS and other repositories and evaluate how to make new extensions when necessary. The broker should guarantee the saved money pledged by users until valuable results will become ready for production. A kind of notary role.

Responsibilities

More and more critical medical procedures relay on informatics, today much more than statistics and invoices. What if ever a medical accident would be the consequence of a software error ? With carefully checked software the risks are very low but will never be absolute zero and responsibilities must be shared between all the actors.

Both open source and commercial softwares will soon or later face this problem. The responsibilities at stake are much more than simply a replacement of the defective software. In the worst case a death due to some wrong information.

Most organizations and individuals have professional insurances but the situation should be clarified. Of course insurance will ask that all reasonable safety measures have been followed. Certification by independent bodies could be required. Be aware that the reliability is not necessarily better in expensive commercial software where nobody can control the content of the software.

Peer reviewed projects

Many projects claims to be open source. They are well published in a repository, but they have been made by one author or small team and this is why the projects should be considered as "candidate open source".

Full open source projects must be so good and so well documented that other people did chose to reuse them in an independent context somewhere else.

Future of Open Source

Indeed there are several open source limiting factors. Many people are not yet aware of the benefits of open source and more promotion is very necessary. Here the users need to dare to take initiative to seek solutions, because there are no vendors nor commercial marketing campaigns.

The public in general should become more aware of misleading monopolistic practices. The user do not like to change any habits and ther is a lot of inertia.

Sharing open source softwares on large scale is a way to cope with healthcare budget limitations.

More support services should become available because this is a mandatory requirement for any application in production and because they are up to now relatively fewer informaticians having experience in Open Source environments.