Open Source as Knowledge Sharing

Alberto SILLITTI¹, Gianluca LINI², Giampiero GRANATELLA³, Tullio VERNAZZA², Giancarlo SUCCI¹

¹Free University of Bozen
Piazza Domenicani 3, I-39100 Bolzano, Italy

²DIST – Università di Genova
Via Opera Pia 13, I-16145 Genova, Italy

³RCC Regional Competence Centre Regione Liguria
Via Fieschi 15, I-16159 Genova, Italy

ABSTRACT

Open Source Software (OSS) and Open Data Standards (ODS) are not only software available for free they are an opportunity for Public Administrations (PAs), especially small ones, to capture the eGovernment challenge. Regional Competence Centres (RCC) are flexible structures, established by Italian Minister of Innovation and Technologies and the local Regional Authorities. RCCs’ main goal is to support the PAs in ICT. Local RCCs study the opportunities offered by OSS to PAs to reduce the digital divide. OSS and ODS are studied in local observatories in order to share knowledge regarding eGovernment.

Keywords: Open Source, eGovernment

1. INTRODUCTION

People often talk about Open Source Software (OSS) as software available for free, but this is only one of the several aspects of OSS.

As a matter of fact, to evaluate the economy of a OSS solution we should consider both the initial expense, obviously lower due to non-license fee, and the TCO, Total Cost of Ownership between OSS and proprietary solutions.

TCO includes not only the license fee but also support, learning, migration, set-up and managing expense; regarding the above issues the guidelines of the Italian Minister for Information Society [1] indicate the value for money as a selection criterion for OSS.

The greatest effort made in e-government projects has to do with tools integration and data exchange, because of the huge number of different owner-systems used in both companies and PAs. Open standards are emerging to solve these integration problems and early users are experimenting new ways to provide cheap and reliable services to their customers.

The best and well-known example to understand the value of open standards is the Internet. Internet is mainly based on TCP/IP protocols [2] that are independent from hardware and software: these protocols are implemented in all hardware environments and operating systems. On the basis of these protocols, a number of further specifications, which allow different machines to exchange nearly all kinds of data, has been developed.

Standards and protocols are the Internet main building blocks; they are open, their development and improvement are collected as a set of documents called RFCs (Request For Comments) [3]. These documents come from the early stages of the Internet development, when only a couple of thousands of users in Universities and Research Centers, share knowledge through these standards. At that time, the knowledge of network interconnection has reached out to most users, making the Internet Protocol a way to interconnect different systems. These researchers developed the main original elements, still in the present network.

Nowadays ICT can be improved introducing new open standards and developing the basic software to implement them. Open standards are the main way for different applications to communicate. Large communities of people, who develop and share information, mainly use OSS to implement Open Standards in several applications.

The main feature about OSS is the sharing of knowledge that allows improving software created by others.
The implementation of the National eGovernment Plan in Italy considers OSS as a possible alternative to proprietary software.

This paper is structured as follows: section 2 introduces the eGovernment initiative in Italy; section 3 describes the problem of information integration; finally, section 4 draws the conclusions.

2. eGOVERNMENT

In March 2002 the Italian Ministry for Innovation and Technologies and the Presidents of the Regions, together with the two Autonomous Provinces, have agreed to establish a network of Regional Competence Centers for eGovernment and an Information Society (RCCs).

The Regional Competence Centers have to promote and support the cooperation among different levels of government in the regional territory and across different regions. At the same time they are expected to meet, understand and coordinate the demands and needs coming from the Local Administrations and they are also expected to figure out methodologies, processes and solutions.

The goals of the RCCs are:
- improve the cooperation between different actors involved in the e-government action plan;
- train and support Local Administrations, especially the smaller ones;
- promote awareness and understanding of e-government opportunities, providing solutions for technical, organizational, and legal problems in the innovation process.

RCCs are interested in evaluating the impact of OSS in PAs. OSS is a possible way to reduce digital divide for small PAs (especially small municipalities), which cannot bear the effort (of costs and knowledge) for participating to eGovernment initiatives.

OSS allows the development of software that meets the PAs specific needs, and points out the “vendor independence”, where vendor stands for developer or supplier. This means that any competent user can modify or customize an OSS product, so that a PA is independent from single provider.

Besides, a OSS solution can be customized by another PA easily and this process gets the knowledge sharing base wider.

This process grants the benefits of solution adaptability or reuse ability.

The use of Open Standards and Open Format (as XML documents) [4] are a key-factor to innovate Italian PAs. This allows the share of information and data needed for interoperability and interconnection of PAs applications. The guidelines of the Italian Minister for Information Society [1] points out the importance of Open Formats for the documents of PAs. PA documents should be available to everyone, stored in different formats, and at least one of these must be open.

This is a main point, because the software used to produce the information is separated from the way this information is represented. This is interesting for users because the focus is the content and it is not anymore important the software to read it.

Some local RCCs (the ones of Emilia Romagna and Liguria Regions) have experimented the use of OSS to develop local Observatories about eGovernment and now they are developing a middleware system to allow the sharing of “Regional Knowledge” through Open Standards (XML [4] and SOAP [5]).

3. INFORMATION INTEGRATION

The system of the Emilia Romagna Region (http://osservatorio.regionedigitale.net/) has as main goal to observe and analyze the information in the projects and to generate reports to show improvements of IT.

The system of Liguria has a different purpose, it provides support the Local Administrations in the project management area.

The two systems share a set of common data (even if stored in different DBMS and with different formats), above all the ones related to the project (title, dates, partners and costs), but they are used for different purpose. For this reason, report generated, form to collect data, and data management are very different.

The described databases and the ones other Local Administrations are developing address different needs even if they include a common set of knowledge. The adopted approach is not to standardize the databases, but to design in order to guarantee the interoperability, having still two different, but cooperating systems. For this reason, it was developed a middleware, an Integration Server, to allow communications among these systems that partially share the same knowledge base.
The Integration Server allows the definition of Central Observatory able to provide comprehensive information about e-Government projects in Italy. The information is still stored in the databases of the Local Authorities, while the Central Administration has a high level joint information.

The architecture is based on the Web Services technology and implemented through open protocols and tools (Figure 1).

The communication occurs through communication ports developed in SOAP and standard interfaces described using WSDL. The messages exchanged among the systems are encoded in XML. The use of open standards in the communication protocol makes independent the information and the architecture of the single systems that could be implemented using open or closed source software.

**Figure 1: Observatories integration**

OSS is an opportunity to allow PAs to bear the effort of eGovernment challenges.

The Italian Minister supports the introduction of OSS in PAs and also local RCCs are evaluating benefits of OSS. Mainly, OSS benefits are the follows:

- reduce costs;
- ensure transparency and security;
- avoid dependence on a single supplier;
- provide a high degree of re-usability;
- offer access for small development teams;
- avoid dependence on a single software solution and vendor.

4. **CONCLUSIONS**

Open Source Software is a great opportunity to allow PAs to bear the effort of eGovernment challenges.