

DoQui - The Document Management Platform to Support Piedmont PA

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Abstract: The Turin Municipality, the Piedmont Region and the Province of Turin developed a shared document management platform to support administrative procedures. These Institutions took advantage of *open source* concepts, stimulating the local production fabric, thus producing positive results also for the local IT companies. The DoQui project sets up a complex technological solution in a dynamic context, such as ECM (*Enterprise Content Management*), from rather strict sector requirements, in terms of user class (public institutions), and territorial scope (Piedmont Region or Italy). The project sets up a friendly solution for ICT companies, so as to create a community willing to share the project idea and enable a business model able to target both Public Administration and private sector, as both need efficient document management solutions. Hence, the aim of this initiative is to answer the needs of the promoting public institutions, but also to create opportunities and new value chains.

Keywords: Enterprise Content Management (ECM) Document management, Dematerialization, Electronic Records Management System (ERMS), Moreq - Model requirements for the management of electronic records

1. Introduction

The DoQui Initiative started in 2006, to develop an IT tool enabling Electronic Document Management for Public Administrations. The specific aim of the project is the shared development, not only of System Information functionalities among the public entities involved, but also of the rules, the organisational models, the procedures and all the technological platform development, management and evolution costs.

The partners involved decided to adopt Open Source standard methodology and tools, with the aim of ensuring investment sustainability and of stimulating the co-development and collaboration (wikinomics) of the ICT enterprise environment, thus by promoting the adoption and solution-transferring to different Governments and private fields.

2. Objectives

The objective is that of setting up a document management platform for the Piedmont Public Administration that will be developed according to open source innovative standards. The solution is defined to be used, through a more general and open system, by the Public Administration. Simultaneously, the system should also be very flexible and oriented to the maximum reuse of its components.

The platform falls within the framework of management, archive and sharing systems for IT documents, produced from digitalised paper documents or digital originals, in compliance with the existing Italian legislation, in particular the “Digital Public Administration Code”.

The innovative character of the initiative lies in the creation of an open source community to develop and manage the platform and to maintain and develop a public and

private market for this solution. This would make it possible to valorise the local competences from the point of view of knowledge dissemination on how PA systems work. Furthermore, it would contribute to valorise the academic, methodological and technological competences, starting from the needs of the PA institutions to the production of a solution, to capture a market share and finally to promote the Piedmont ICT district on a wider market. According to these guidelines, the objectives of the initiative can be thus summarised:

1. Develop an IT Document Management product able to, on the one hand, to comply with all the legislation that regulates the daily management activity of administrative procedures, and, on the other, to be a means to analyse and modify internal organization processes of the single institution and to encourage a redefinition of their relationship with external actors (citizens, enterprises);
2. Determine positive external consequences for the economic fabric of the Piedmont ICT sector, developing new competences, promoting the creation of new business models, also verifying that SMEs of the sector are able to go beyond a “body rental” logic, moving towards the idea of proposing the market a specialist consultancy and the offer of complete ICT projects/products;
3. Develop an industrial strategic line that is mainly based on free software, favouring the creation of a community that will be able to disseminate the necessary culture to adopt, on the one hand, an industrial approach of such paradigm, and on the other to make it easier to adopt open instruments, thus becoming a possible excellence and reference point at national level;
4. Develop a product to be exported and that can be economically interesting, that can be economically profitable both in terms of the product itself, and in terms of the IT services connected to it (consultancies, customisations and verticalisations, functional evolutions), for the different actors that promoted or drove the initiative (institutions, CSI-Piemonte, ICT companies that will participate in the solution maintenance community).

3. Methodology

The DoQui project provided for the setting up of a multi-entities Steering Committee (SC), composed of Piedmont Region, Turin Municipality, Province of Turin, CSI-Piemonte, Polytechnics of Turin, and University of Turin, which is entrusted with the governance of the activity. The SC is in charge of:

1. Starting the IT tool development process;
2. Defining the business model guidelines and the mechanism for the involvement of ICT enterprises and users;
3. Monitoring time plan, objectives, results and project’s evolution;
4. Evaluating opportunity to involve further institutions and users;

In the frame of the Steering Committee activities, the Archivist Working Group, composed by Archives and Official Book Responsibles, plays the role of defining the functional system requirements. The technical coordination is led by CSI-Piemonte that, with the Polytechnics of Turin support, plays the following roles:

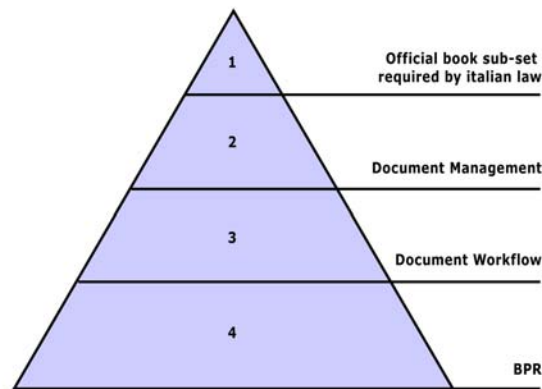
- Definition of the system architecture, to design and develop the IT components, on the basis of the Steering Group requirements;
- Management of the relations with the User Working Group, composed by all those interested in using the solutions developed;
- Coordination the Technical Working Group, composed by all those enterprises interested in more in depth analyses related to market policies;

- Ensuring the sharing of development activities with all the interested partners and subjects.

The solution, basically corresponding to the three main axes of the initiative, should:

1. Provide IT and electronic document management functions for Piedmont Public Administrations;
2. Provide a complete, flexible and scalable technological platform for the development of external markets for Piedmont enterprises;
3. Take cue and refer both to local 'domain' aspects, substantially the Italian regulation on the subject, and to industrial aspects.

With this regard, the solution offers the typical functionalities defined by the Italian National Centre for IT in Public Administration (CNIPA) in the following scheme:



Making it also possible to extend it towards a Enterprise Content Management (ECM) platform, that the sector industry is developing, according to the following scheme:



The functional requirements of the platform are hence mainly set, in the first phase, to develop an IT solution to comply with the management needs of the Official Archive of the public institution, in terms of management of the classification, title lists, documentation distribution rules, both inside the offices and towards external receivers, saving and archiving policies (current and long term archive), with reference to the existing regulations. This solution to be developed, called DoQui Acta, will become the core of the document management system of a complex information system, together with the public register application.

The Acta application is based on a digital content management engine, specifically on an infrastructure service with SOA (Service Oriented Architecture) logic, that will issue document management services, a set of services that refer to the more extended enterprise content management industrial solutions. This infrastructural service is called DoQui Index.

An in depth analysis was carried out on the solutions available in the open source environment, as well as a benchmark of the frameworks that are more developed (for ex. Exo Platform, Alfresco, Nuxeo). Alfresco was chosen on the basis of very wide criteria (features of the community, evolution of the solution, references, functional completeness, emerging and/or operating standards). In particular the Alfresco 2.0 version was chosen to develop the Index platform with subsequently described features.

4. Technology Description

The main functional modules of the DoQui Acta system will be:

- Title list management;
- Dossier management (file, series, dossier, documents);
- Archive management (ex. maintenance functions);
- Warning and sorting management.

The definition of these requirements is managed in a shared and joint way through periodic meetings, which sees the participation of archive managers and the official book of public institutions funding the initiative (Archive Workgroup). The Workgroup, moreover, periodically meets with other experts on the matter at national and international level. Also thanks to these consultancies, the workgroup decided, in September 2007, to define its archive model according to the first indications available of the new MoReq2 standard.

MoReq2 is a Model Requirements Specification for the Management of Electronic Records. It defines generic requirements for an electronic records management system, or ERMS. MoReq2 builds on the earlier MoReq, which was published in 2001. It is intended for use throughout the European Union, though in practice it can be applied elsewhere. The MoReq2 specification is complete and is now formally published. Compared to the first version Moreq of 2001, the latest update of 2008 contains directions to verify the compatibility of a system with the requirements of the model and allows the inclusion of specific national (laws, regulations). Testing frameworks and XML schema are in progress, they allow a wider use of the Moreq2 model.

The Acta application development is in progress. The product will be completed and released in the first quarter 2009. Two tenders are in place: one for software development (Acta consist of 3,500 Function Point) and other for testing (functional, performance and integration tests). On the other hand the Index infrastructural service (document management platform), now available in its first version, publishes the following services:

- Document check-in and check-out;
- Document display;
- Document access (security and access and protection policies);
- Versioning management;
- Digital signature and time stamping support;
- Indexing and document search (on metadata and “full text retrieval”);
- Format transformation functions.

The non-functional requirements of DoQui Index platform are as follows:

- “Enterprise” class technological platform, based on SOA paradigms and the state of the art standards (web services, AIIM Iecm, JSR170, etc);
- High architecture and function modularity, to guarantee an adequate level of flexibility and configurability;

- Loading capacity in the order of millions of documents and hundreds of concurring users (thousands of nominal users);
- Top-down scalability, in terms of requests for processing for a minimum solution, that can be used also in small contexts (small municipalities, SMEs, etc);
- Considerable misalignment between application (for ex. official book) and platform level, that can hence coexist with quite heterogeneous application realities;
- Running platform based on Open Source middleware (application server, db server, operating system, etc.) and J2EE programming language;
- External application security (authentication and authorization) and ILM (Information Lifecycle Management) functions.

The platform will make available to Acta the connection with an external long-term preservation service (at present, the strategies of the Piedmont public institutions consider this service in a market outsourcing logic).

With reference to platform taxonomies, the paring of Acta and Index solutions will constitute the ERMS (Electronic Record Management System) of the public institution.

From the technological point of view, it must be pointed out that the project complies with the modern SOA paradigms, divided into self-consistent modules and based on ECM standards of international importance, and by this time adopted by all the main vendors (for ex. JSR170 for the access to file system and DBMS). This approach makes it possible:

- To guarantee a better division between the different functions that constitute a document management complex system (storage, storage access business logic, content organization business logic, user interface);
- The functional increase of the system through the adding in the overall architecture, of further self-consistent modules, also of heterogeneous technologies, and also those developed by third parties.

The Acta general archive management component will be web oriented and, to guarantee an adequate ergonomics level (very critical in the document management sector), web 2.0 paradigms and technologies have also been introduced (widgets for drag&drop, self-completing, interface automatic resize), without compromising the system accessibility connected to the relevant legislation.

5. Developments

The paragraph briefly reports the DoQui roadmap and its main milestones.

Year 2007

- Design, development and delivery of the Index platform (December 2007)
- Requirements collection, user cases and Acta architecture definition
- Start and release of vertical application (on-line payslips)

Year 2008

- Development and delivery of Index administration and management tools (June 2008)
- Development and release of the Index component related to external services management for equivalent preservation
- Development and release of an Index generic client (October 2008) that foresees a minimal set of Acta functionalities and that enables an effective integration of those documentation lines not strictly linked to the official institution archive
- Design, development and delivery of the first Acta modules in test user
- Release of other different PA vertical product lines (Electronic Invoice, ...)

Year 2009

- End of Acta development and release (second semester of 2009)
- Training (opens source training modules)

6. Results

The DoQui initiative has been running for a year now and the first significant results have already been achieved, both from the point of view of the IT platform and from the point of view of the potential positive impact on the territory.

As far as the possible beneficial elements for the funding institutions are concerned, from the point of view of the technical and IT results, it is worth mentioning:

- The release in October 2007 of the dematerialisation of the on-line payslips for the Piedmont Region;
- The availability of the first version of the DoQui Index platform, with the definition of its service interfaces, that makes it possible to launch in 2008 the integration projects for external systems (for ex. official book and other management verticalizations, to interact with the platform in terms of local repository, or with the overall system with regard to the management of the institution general archive);
- Some adoptions of the Alfresco framework, identified as basic engine to set up Index as an ECM tool for non administrative environment;
- The closing of the formal requirements of Acta, that are the reference points both for the developments of the system and, most of all, as an element to share the reference model with other realities that want to adopt it.

The Index ECM Engine is available in open source mode, on the project website www.doqui.it/download, where the project documentation and the presentation materials are also available.

Hereinafter is a short list of further positive results that can be related to the initiative, though not from a not strictly IT point of view, and that would make it think that the industrial policy objectives on open source can be reached:

- Wide participation of other Piedmont public institutions to the cycle of seminars organized in the May-July 2007 period, that confirmed their interest in using the system (some 20 institutions including municipalities, provinces and local health units);
- Wide participation to the same seminars, of the local ICT enterprises, that shared the functional setting, the reference architecture and the technological choices (some 50 enterprises). Some of these enterprises have begun autonomous investment programmes to follow the project (8 enterprises made an investment and let their developers work in CSI-Piemonte engineering laboratories for some months);
- Confirmations, by the Italian National Information Technology Centre for Public Administration (CNIPA), of the compliance of this initiative to national strategies, both with regard to open source and with regard to the specific document management sector.

An example of the flexibility of the Index platform is the creation of an application known as 'Cedolini on-line' (on-line payslips) where the institution's content management system is used to publish the employees' payslips on the web. In this case the document system interfaces with the external personnel management procedures that calculate the salaries, elaborates the format to generate the payslips (.pdf file), which is then stored in the Index with the necessary security and protection criteria (encryption). The electronic payslip is then made available to the employee in reserved form through certified web access and a secure channel. 'Cedolini on-line' is now used to prepare 4,500 payslips every month, but the number is set to increase. A multi-user version release of 'Cedolini on-line' will be distributed to all the Piedmont Public Administrations, and it will improve administrative efficiency and reduce the cost of printing, packaging and distribution of the paper documents.

As of now, the DoQui website recorded 1,800 downloads, both by companies and public institutions, of the Index source code and the draft documents. The Index was

installed and experimented by three other government agencies, outside of Piedmont (Val d'Aosta, Liguria and Puglia Regions), to assess the integration with existing document management applications (administrative practices and official book). The tests and installations were successful, and these regions are considering the possibility of making some developments to integrate their protocol software with Index. The results of the trials are a useful feedback for future developments of the project and will be shared with all users of community.

7. Business Benefits

Many innovation characteristics, not only of technological nature, can be identified in the present document management project. From the point of view of the approach to the problem of document management of Italian public institutions, this project is innovative as the focus of the model is on the concept of document, file and archive, differently from the traditional approaches that see archives as a derivation of the public registry system. This approach makes it possible to launch a convergence plan of the institution towards a structured management of its documents, better than the traditional approach, enabling to face “end to end” dematerialization processes that do not take into consideration the flow of such flows through the public registry system (see, for example, the flow of deliberations and resolutions).

From the point of view of the development model, an innovative approach has been adopted on the mode in which the needs have been collected and codified in functional requirements, through a multi-institution and multi-disciplinary (managers of archive and register, organization and information systems) work group, that directly produces the following benefits:

- The definition of the shared functionalities, that can simultaneously be parameterized, and hence be able, with a single IT product, to satisfy different functional, organization and operating needs, from the heterogeneous administrative realities that are represented in the workgroup;
- The use of the open source paradigm, that tends to guarantee lower adoption and lock-in costs as against equivalent market solutions (generally open source products are more compliant to standards, and if they are adopted by strong and competent ICT enterprises, they can guarantee an adequate knowledge of the source code. This makes it possible, if necessary in the future, to maintain autonomously the solution, regardless of the choices that the original communities may take differently from the institution evolution strategies);
- The opening of the system, with a shared approach, from its birth and ideation, to ICT enterprises, both to provide the adequate knowledge of the functional and technical scope that was set up with the public funding, and to collect suggestions, advice, and remarks aimed at improving choices, to the advantage of the funding institutions and of the enterprises that will use, for business purposes, the software solutions to be released.

8. Conclusions

All the public institutions involved in this project had the chance of sharing, through working group Archive meetings, the functional and organisational needs to have an effective document management system.

This context highlighted different needs related to operative systems, but the participation under a common working group and an in depth analysis of all the single system components enable to achieve shared procedural and functional decisions for the official documentation management. This required a joint effort (in terms of effort and time analysis) that took longer than similar projects carried out by a single institution.

The approach followed in the construction of the system was to process and classify documents from the outset according to the criteria and rules of the Official Archive of the public institution, and not just follow the "business" rules of the single administrative processes. This methodology streamlines document processing in the back end office and creates an innovative vision of the processes, making them more homogeneous.

Moreover, the development of a common project has enabled the sharing of interests and synergies with other subjects (ICT enterprises) in order to realise – in open source mode – new implementations based on the DoQui platform. Having shared, since the beginning, the project design and the adopted technologies has made it possible to achieve such cost-effective tools and outputs, that a single entity would have achieved in a difficult way, due to the high cost of technological investments and of the personnel training effort.

Indeed, the project made it possible for all the entities involve to approach the Open Source environment, not only as a development mode, but also as a business opportunity, based on the provision of innovative services without software licence costs.

A document on rules and guidelines to build the community of users and developers is presently being defined and formalised with public institutions and ICT companies.

References

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