E-GOVERNMENT CHALLENGES AND THE CITEL EXPERIENCE

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ABSTRACT

E-government is a technical, economical and social challenge. In the framework of a national call for e-government projects, the Comune di Pisa succeeded in implementing the CiTel project, aimed to the realization of a telematic service desk to citizens and firms on several channels, both virtual and real. CiTel modules are going to be reused in other national projects. Further developments are full compliance with Italian law about accessibility of public sites and availability of services through digital television.

KEYWORDS

Web-based services; e-Government; Social Issues; Organizational Impacts

1. INTRODUCTION

E-government is a technical, economic and social challenge, where wrong or short-sighted decisions can waste resources. New projects must take into account existing experiences and investments, show a good return of investment, and implement services usable by a large variety of people.

Recently, with the Decree (DPCM) 14 February 2002, a first advance of 120 million Euro was directed to the financing of e-government projects presented for evaluation by PA organisms. A system of "co-financing" was provided, where e-government public funds could cover only a part of the total amount of the projects, up to 50%. The rest of the expenses should be financed directly by the project proponents. The CiTel e-government project has come in fourth position in the selection advertised by Ministry of Technological Innovation (MIT).

In the following we will briefly recall some e-government issues. Subsequently we will describe the CiTel project, outlining its achievements and technological issues. Finally, we will give and idea of envisaged future developments.

2. CHALLENGES IN E-GOVERNMENT

E-government is a big opportunity to bring services to all citizens, but must also consider some challenging issues.

First of all, there are *technical* issues. Any project will not start "from the scratch", but will have to consider previous investments resulting in legacy systems. Some of them can be rewritten in new environments, while in some other cases this could be too expensive. Therefore interoperability with existing software and hardware platforms is a key success factor. It is unlikely that available resources can support a full replacement of existing applications. Designers must carefully consider portability and compatibility with future technologies. Finally, some legal aspects, like security and privacy, must be considered, as personal data are processed and stored, and financial transactions must be executed. To cope with such requirements, appropriate technical choices must be done.

The *economical* issues are mainly concerned with return of investments and safeguard of the previous ones. The last point leads again to interoperability considerations and to some other considerations, like cost/benefit analysis and the effectiveness of the resulting application.

Finally, *social* issues are mainly concerned with the usability by a large variety of people. This implies that the interface must be usable by disabled or elderly people, understandable by low literacy or non native language people, etc.

It is easily seen that these requirements are not orthogonal. In a few words, the most significant characteristic of any successful e-government application is its *quality* ([Signore2005]).

3. THE CITEL PROJECT

3.1 Generalities and previous experiences

The CiTel project was born in the context of the Tuscany Telematic Regional Net, where local administrations since several years operated towards a comprehensive environment for technological innovation and Information Society. The project would not have born in absence of this technical infrastructure, a 8000 km high speed network connecting local administrations and optical fibre Pisa infrastructure.

The municipality of Pisa was very active in proposing innovative projects which received several awards ([Forum2001], [Forum2002]).

In 2002 the CiTel project has been proposed in the framework of the multi-project E-Toscana in the selection advertised by MIT. The project ranked in fourth position in the national selection, and first among the E-Toscana project (area "services for citizens and enterprises"). The total cost of the project has been about 3.36 Millions of Euro (about 1.6 MEUR by Comune di Pisa, 1.1 MEUR investment by private firms, 630 KEUR as Ministry co-financing).

3.2 Design requirements

The CiTel project "*Telematic Front office for the citizen*", that engages the Comune of Pisa with other partners like Regulus, Cedaf, and the W3C Office in Italy, is oriented to the realization of a telematic service desk to citizens and firms on several channels, both virtual and real.

The municipality of Pisa was mainly looking for:
- enhancement of services;
- increased transparency (citizens should be well aware of what is going on);
- set up of the "Digital Office";
- development of infrastructures in the regional area;
- optimization and organizational costs saving.

To fulfil these requirements some well defined and concrete objectives have been identified:
- Setting up a unique municipal desk. The service to the users is performed by the front-office, and citizens perceive it as the "unique" office.
- Set up of a call-centre, whose task is offering front-office services as well as supplying first-aid information and accepting claims, as usual.

- Activation of a bi-directional web based communication channel between citizens and administration.
- Allowing payment of a wide variety of services through the web.
- Allowing access to services also through distributed multimedia kiosks.
- Supplying information to citizens using several media, like SMS and e-mail.
- Extending service offering to tourists.

3.3 Achievements

With the realization of the project the citizen can approach the desk for information or services directly by her/his computer, by mobile phone or by telematic kiosks installed in several points of the town, avoiding rears and bureaucratic routes.

These services are intended not only for the citizens of Pisa but also for residents in some neighbouring cities (Calci, San Giuliano Terme, Vecchiano, Volterra, Vicopisano and Cascina). Therefore, presently 7 municipalities (for a total of about 200.000 potential users) are yet having access to these services, and 2 more (San Miniato and Pietrasanta) just joined.

The citizen will be admitted to services after being identified through various levels of credentials, starting from the login and password (low credential) to the Electronic Identity Card (strong credential) and the digital signature.

Citizens not using the more advanced technologies may contact the usual information and service desk and the Call Center by a toll-free number. In this case, the operator will be able to answer in a more complete way than in the past, retrieving the information requested by the citizen through fixed identification codes.

The CiTel telematic desk is thought not only for citizens, firms, Tax Assistance Centers but also for tourists (who can book and pay tickets for exhibitions and museums), students (it is possible, for example, to have access to timetables and class registries).

As a first step, we tested the real desk for the first services on line: acknowledgment system, automatic routing to the proper office without knowing the final destination, estimation of citizen satisfaction, access to own files, delivery of requests and fiscal statements checking the own position and calculating the money due, sending of SMS to citizens about events they are interested in.

Connecting to the website (http://www.e.pisa.it/) citizens can obtain the major part of the services included in the e-government project for the seven cities of the Civic Net of Pisa. Among the services, we will recall: payments on-line, account statements for firms, building declarations and application, state and payments of cases, applications for the limited traffic area, state and payments of the fines, access to the own data, self-declarations on line, changes of residence, applications for schools, school meals and school bus, applications for the occupation of public ground; payments of the "lux perpetua", booking and tickets for museums, class registries in the schools of Pisa.

Citizens can access with a unique acknowledgment system and make payments using the same mode for every involved local authority.

The virtual front-office activates a bidirectional communication channel allowing citizens to make applications and express their own satisfaction without moving themselves and without knowing the office of competence.

3.4 Technological issues

We want point out that on the technological level the project uses an efficient, modular platform of services. The fundamental architectural component of the system is the Base Framework, proposed by Regulus. It consists of all the components common to the services to the citizens and of the management and control applications used by the operators:

- Authentication and Authorization Management,
- Menu Management,
- LOG Management,
- Notifications Management,

- Orders Management,
- On line Payments Management,
- User Session Management

This framework can be tailored to specific needs, depending on the context of the application environment adopted by the local administration selected by the user, making available local data.

It interacts with CIG-Citizen Identification Gateway, which is the CiTel security system. CIG is an Authentication Server independent from the other components of CiTel, and can be used by several, even external, applications.

The Base Framework has been implemented in open source environment using standard technologies, both as architecture (Linux,Apache Web server, TOMCAT, etc.) as well as development and management platforms (SUN J2SE/J2EE platform, Struts framework, AXIS, standard XML/SOAP interfaces as required by the Web-Services model, etc.). As DBMS, Oracle has been selected.

The CIG security system can contemporarily handle several different credential typologies (User/Password, Digital X.509 certificate, CIE[1], CNS[2], etc.). Authentication is based on the *challenge-response* mechanism, according to the governmental specifications for *strong authentication*.

Services have been structured separating various logical levels:

- *Presentation* (*User Interface*) in designing the Web interface W3C-WAI Recommendations have been taken into account, to achieve accessibility. The presentation is XHTML 1.0 Transitional valid, making use of Cascade Style Sheets (CSS), designed to modify the look of pages and the way different areas in the page are arranged and filled.
- *Application Logic (Management of the Service)*: implements and controls user's operations sequence, interacting with the infrastructure modules of the web portal.
- *Integration with the Back Office (Data Management)*. A fundamental goal in CiTel was to avoid duplication of application data in its database. The implemented integration architecture allows to keep application data in the back offices of the participating administrations. When citizens need to operate on them, they are retrieved from their source, used and eventually updated back in their place.

CiTel services have standard interfaces towards back offices of the various administrations, therefore every service can operate on specific data stored on the administration the user has selected.

The interface between services and back office systems has been realized trough the Web Services model, developed according to WSDL and XML/SOAP standards, and according to the indications supplied by the authorities of e-government. It is open to the standards of the cooperation plan established in Tuscany that includes Pisa as participant.

The planning effort with Cedaf lied in realizing a Front Office which uses own information as well as info acquired by web services to obtain a right level of cooperation between the various local authorities: so it is possible to improve efficiency and quality of service to citizens and firms.

The 3 levels structure allows improving a multi-channel fruition of services and integration with back-office services.

It is worth to point that issues related to the standardization of interfaces between Web Services and back office applications, aimed to an easier reuse of the projects by different administrations, are concern of a specific activity involving AssInform and some e-government projects, including CiTel. Additional effort is required to the administrations, to plan all the activities required to make directly accessible to citizens correct, verified and consistent data, with the appropriate levels of security.

3.5 Reuse

The reutilization plan is an important issue. For this purpose a cooperation has been activated between the Agencies acting as coordinators of e-government plans. It is established the reutilization of all the products, documents and applications realized in the project. All the Agencies that apply may obtain the technical documents produced in the planning and analysis phases.

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[1] CIE: Carta di Identità Elettronica (Electronic Identity Card)
[2] CNS: Carta Nazionale dei Servizi (National Services Card)

Some Local Agencies, namely Livorno, Lucca, Pietrasanta, Carrara, already participated in our analysis and reutilization, attending the project advancement meetings. We tried to take advantage ourselves by their professional skills. Presently, two e-government projects are going to reuse the base framework and two municipalities (Pietrasanta and San Miniato) started to reuse CiTel modules to supply services to their citizens. Seven self-consistent modules are going to participate in a call issued by CNIPA (National Centre for Informatics in the Public Administration), to build a national catalogue of reusable solutions.

Contribution of partners, involved Agencies, Ministry of Technological Innovation, was very valuable to keep the schedule.

3.6 Other issues

An integrated e-government plan has to face some problems, related to legacy applications, acceptance by involved administrations and personnel skills.

To overcome these difficulties appropriate initiatives were taken. People belonging to the seven administrations involved in the project where educated about e-government issues, digital signature, technical and management issues, to gain the skill needed for a successful acceptance, implementation and operation of the plan.

Another key point was the participation to the analysis phase, to set up services aware of the needs of the participating administrations.

To make the project operational the Pisa Municipality modified its internal organisation and in 2003 presented an awarded project ([Forum2004]).

4. FUTURE WORK

Now we are in the delicate phase of starting the use of the services by citizens and firms. It is not sufficient to have a W3C WAI-AAA conformant interface or e-learning modules for every service to have the guarantee that these are actually and effectively used. The actual estimation about the use is possible only when a lot of services will be activated. We will heavily use the customer satisfaction analysis to assess the quality of service. CiTel will obviously evolve in increasing the number of services available trough the web interface.

In addition, it is already planned to modify its infrastructure and some services to make use of television channel, probably the most popular and widespread technology in Italy. In this aim an evolutionary project, T-CiTel, has been already presented. It has been one of the 29 projects in Italy which got funding in the framework of a contest for digital terrestrial television transmissions, managed by the Ministry for Innovation and Technologies. The main task is to bridge the digital divide, supplying selective and personalized information to all the people who are not using more sophisticated technologies.

Even if the user interface of CiTel has been developed taking into account the W3C Recommendations, and especially the WAI Guidelines ([WCAG1.0]), an additional effort will be required to make CiTel conformant to the Italian regulation for accessibility of public sites, which is very strict ([Signore2004]).

In the short period, CiTel is participating to a new contest, aimed at the "reuse of solutions" issued by CNIPA (MIT).

5. CONCLUSION

Facing the e-government challenges, CiTel resulted in a successful experience (award at [Formez2004] and winner at [Paaperta]). Main points are the conformance to an open standard architecture and compliance with W3C Recommendations, which resulted in saving of investments, high interoperability and flexibility towards new technological framework.

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[Forum2002]   At the Forum PA in 2002 the municipality of Pisa has been awarded in the prize "100 progetti per il cittadino" (100 projects for citizens) for its project "exchanging information on line in the school". This project was bringing basic internet services (videoconferencing, e-mail, portals, etc.) in each school room.

[Forum2004]   To make the project operational the Pisa Municipality modified its internal organisation and in 2003 presented a project named "Rethinking services supplying system", awarded at Forum P.A. 2004 ("I Successi di cantieri").

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