Implementing Electronic Government: The eGOIA Project*

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Abstract. This paper presents the activities accomplished and the first results achieved by the eGOIA project in the context of @LIS – ALliance for the Information Society - Program of the European Commission. This initiative aims to reinforce the partnership between European Union (EU) and Latin America (LA) in the field of the Information Society. The paper shows the current situation of the eGOIA project and the effort (strategic, tactic, operational) to implement a demonstration system based on the development of a software infrastructure in order to allow the access of citizens, through the internet, to integrate public services at several levels (municipalities, regional or states and federal) and Citizen Points of Access (CPA). It is focused in the integration of front-office technologies and of the back office systems. Also, it details the general requirements, the structure and four-tier architecture of the demonstrator, the enabling technologies (e.g., enagoOSP, MDA, EDOC), the selected services (ID card) and a study of user groups (e.g., skilled and unskilled poor people, classes of employees) as well as, it presents the future initiatives.

1. Introduction

The eGOIA – Electronic GOvernment Innovation and Access - project is an @LIS - ALliance for the Information Society – initiative [1]. The @LIS is a program of the European Commission aiming to reinforce the partnership between the European Union (EU) and Latin America (LA) in the field of the Information Society. Its objectives are to establish dialogue and cooperation on policy and

* This publication has been produced with assistance of the European Union. The content of this publication is the sole responsibility of the authors and can in no way be taken to reflect the views of the European Union.

J. Padget, R. Neira, J. Díaz de León (Eds.). e-Government and e-Democracy: Progress and Challenges

regulatory frameworks in key areas and to boost interconnections between research networks and communities in both regions. Also, @LIS program aims to implement demonstration projects in LA gathering best practices in EU and LA in order to show the benefits of the information society applications to the citizens of both continents in several thematic area and, particularly, electronic government.

According to ONU [2], the broadest definition about electronic government (e-government) includes virtually all information and communication technology (ICT) platforms and applications in use by the public sector. For the purpose of this initiative e-government can be defined as: "utilizing the Internet and world-wide-web for delivering government information and services to citizens, enterprises and the administration itself". Some reasons for e-government advent are: i) governments are under strong pressure to meet rising expectations of service in times of limited resources; and ii) public institutions have to demonstrate their value to society, offering citizen-centric services and eliminating waste of time and resources. But the main purpose of the e-government initiative is the use of ICT in public administration combined with organizational change and new skills in order to improve public services and democratic processes and strengthen support to public and social policies [3].

The intensive use of ICT appears as an answer to these challenges. The technology availability and the demand by services have as consequence an emergence feeling, all over the world, to quickly implement the digital infrastructures in the different levels of government (municipal, state or region, federal). In Latin America, particularly in Brazil, this is occurring in a very heterogeneous way, due to the geographical differences of social, political and economical development. However, many barriers and obstacles need to be overcome, policy needs to be deployed efficiently to everyone and sizeable investments are necessary. Change processes in organization and culture take time: it can take several years before the combined investment in ICT and organization and skills development deliver the full benefits that, probably, it will take several democratic mandates. In this context, it is being developed the "Electronic GOvernment Innovation and Access – eGOIA" project [4, 5] supported by the EU @LIS program.

The main goal of eGOIA is the instantiation of demonstrators that show future-oriented public administration services to a broad public in Latin America. The vision of the eGOIA project is the provision of a single virtual space supporting the interaction of citizens (independent of social status, gender, race, abilities and age) and the public administration in a simple, future-oriented and cost-effective way. eGOIA aims to demonstrate an e-government system based on an open service infrastructure in order to allow the access of citizens through the Internet to integrated public services at several levels: local, regional and federal. The project is being developed with 8 partners from Germany, Brazil, Portugal, United Kingdom and Peru (appendix).

The roadmap for eGOIA is:

eGOIA intends to develop a long term, ambitious set of guidelines and strategies for future e-attendance agency solutions;

Begins with the demonstration of some integrated citizen-centric electronic services (e-services) based on the current set of public services;

Offers these services to the public in the newly established Citizen Access Points;
Evaluates service usage through monitoring the behavior of selected user groups associated with the assessment of the results;
Multiplies the lessons learned into different Brazilian regions/states and also into other countries (i.e., Peru and Portugal).

This paper summarizes the activities that have been accomplished and presents the first results from the project. In section 2 a short description of a Citizen Service Center, named *Poupatempo* [6] is given. The current situation of *Poupatempo*, the benefits brought to the population and the challenges faced are presented as well. The main requirements of the eGOIA demonstrator are described in section 3. The architecture of eGOIA demonstrator is presented in section 4. The selected services and the characterization of the user groups for the first version of the demonstrator are discussed in section 5. Finally, discussions about the experiences and the future work are presented in section 6. In appendix, a brief description of eGOIA partners is provided.

2. Current situation

The first result of the eGOIA was the creation of a common vision of the project in order to establish targets based upon benchmarking social requirements, knowledge of system capability and knowledge contributed by the people who will have to do the work. In additional, the objective with the benefits of "benchmarking" is to enable governments to achieve higher level of performance and puts credible targets to the users (citizens – G2C, employees – G2E, businesses – G2B).

To create a common project vision, as shown in the figure 1, the project investigated the background knowledge, such as knowledge of partners, existing Latin American government applications and services, successful stories/best practice examples from LA and Europe that are relevant for the eGOIA demonstrator, relevant standards and initiatives and existing technology and infrastructures. To define the requirements of the eGOIA demonstrator the interests of the eGOIA partners and user groups were analyzed. The aim was to identify requirements from different viewpoints such as social, legal, organizational, technical, political, financial, economical and security requirements. Constraints influencing the eGOIA demonstrator were gathered. These constraints can be for example laws and regulations, standards that have to be applied, available infrastructure, financial constraints, employee education, etc. The results of this investigation were presented in one of the project deliverables in the middle of March 2004 [7]. In addition, a framework of strategies and policy deployment for the adjacent subprojects were discussed and elaborated, they will be both the guidelines to e-government demonstrator implementation and the basis for the activities of dissemination and exploitation of the demonstrator.

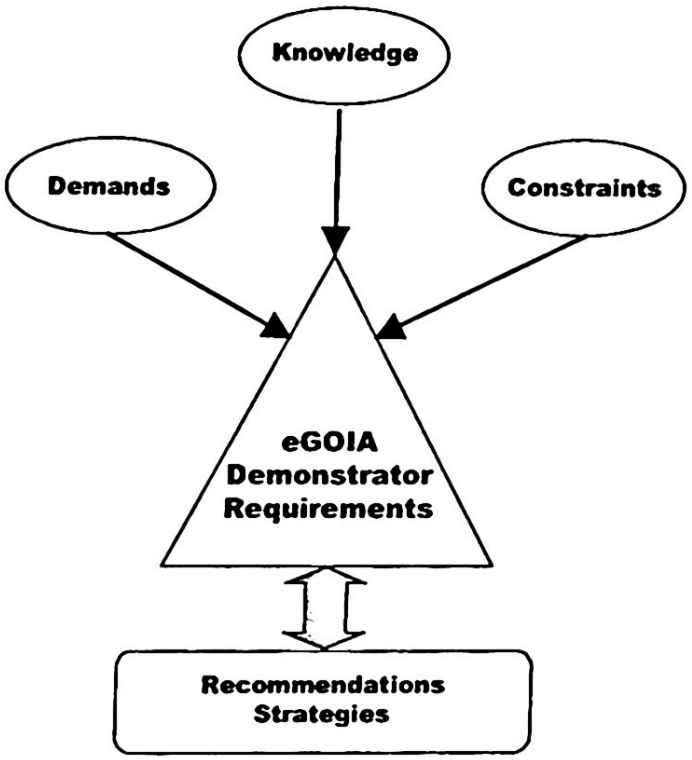

Figure 1 - Definition of the eGOIA Demonstrator.

The following activities were accomplished:

a) **Knowledge**: Examination of e-government current situation in LA, applications and services, good practice examples from Europe and LA, relevant standards and initiatives and existing technology and infrastructures towards their applicability to eGOIA.

b) **Demands**: Identification of functional and non-functional requirements (e.g., social, organizational, technical, political, financial, economical, security requirements etc.) and from different points of view of the stakeholders. The interests of the eGOIA partners and user groups (stakeholders) have to be analyzed and evaluated. The user groups consist of citizens, employees of the public administration, administrators, etc and must take into account all their social and physical diversity. eGOIA focuses on G2C (government to citizen) demonstrations. G2B and G2G (government-to-business and the government-to-government) scenarios and applications may be of interest in later versions of the demonstrator.

c) **Constraints**: Identification of constraints that are requirements that postulate boundaries for the design, implementation and deployment of the eGOIA demonstrator. These constraints can be of different nature, for example legal constraints, financial constraints, technical constraints and organizational constraints such as the available infrastructure, employee persuasion and education, etc. Considering constraints and external conditions for planning, developing, building and running an e-government system, it should be clear – and carefully distinguished – that there are qualitative as well as quantitative effects. Non-quantitative and non-rational (nevertheless existing) reasons to

refuse a system or to refuse a proposed application scenario have to be taken into account as well.

These three main activities are being used as a basis to define the general requirements of eGOIA demonstrator supporting the transformation of the current state of the government systems to the target state, that is, a real enterprise integration able to offer a set of services to the different user groups.

General requirements of eGOIA demonstrator are being worked out and described, based on the knowledge, demands and constraints with the main focus on demonstration to the user groups and the back-office integration. The demonstrator will be used as an experimental system to be tested and evaluated.

Recommendations and strategies are being specified to achieve compliance with the project objectives and to provide guidelines for the adjacent subprojects. Recommendations and strategies comprise the business and administration processes and how the results can be multiplied into different regions, states and countries. This includes an analysis of motivational maintainers for the usage of e-government and how this can be achieved in the target demonstration environments. Also, preliminary economic strategies such as pricing of products/services have to be taken into account.

3. eGOIA General Requirements

Technically the eGOIA demonstrator is based on two main paradigms – front-office and back-office integration. Back-office integration concentrates on a unified approach to access already existing and newly emerging government services. Requirements for faster development cycles, decreased effort, and greater software reuse motivate the creation and use of middleware and middleware-based architectures. These architectures create a virtual boundary around application components (i.e., e-government services) that interact with each other only through well-defined interfaces and define the standard mechanisms to compose and execute components in generic component servers. Besides the integration of back-office processes the main factor for the acceptance of e-government services is an intuitive user-interface integrating the diverse e-government services available (front-office). eGOIA will instantiated these services in so-called Citizen Access Points focusing on the integration and participation of poor people with a lack of possibilities and experiences towards this new technological environment. Therefore the applications – citizen-centric services – have to be easily usable by concentrating on certain life-situations (such as child birth, marriage, looking for a job, social assistance required, etc) that are easy to follow by the target user group.

To provide high-quality eGOIA services for the citizens, the user requirements (functional and non-functional requirements) are gathered and constantly evaluated. These assessments are fed into the development process in different phases of the project.

The figure 2 shows the context of the eGOIA demonstrator in the sense that it will integrate many kinds of e-government initiatives. It presents the Brazilian initiative called e-Poupatempo, but could also include any other national or

regional experiences. The Peruvian initiative could be e-Democracy or e-CityMall, etc. And Portugal could provide any equivalent initiatives.

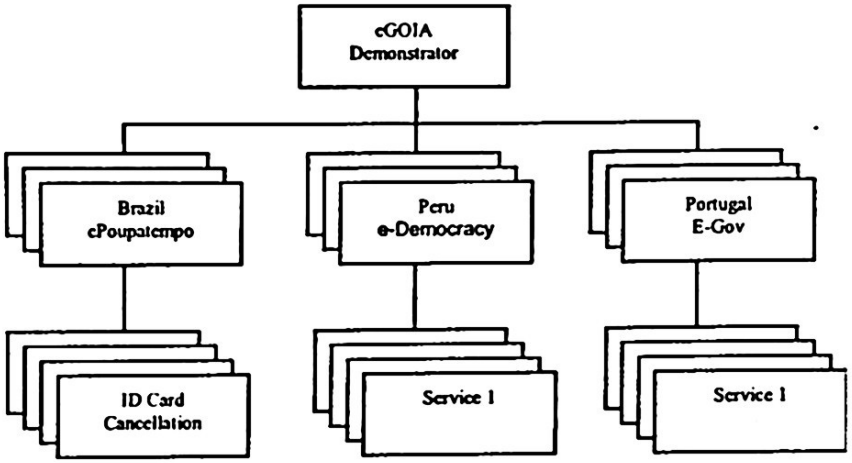

Figure 2 – Integration context of the eGOIA demonstrator.

The figure 3 shows the context of the eGOIA demonstrator in terms of the main actors that will interact with it. The first and most important group of actors that will interact with the eGOIA demonstrator is the citizen's group. The citizens will start the majority of the services implemented in the demonstrator. The second group of actors is the public Institutions. These institutions will provide the services that will be integrated and composed by the eGOIA demonstrator. The third group is the commerce institutions. These institutions will request citizen information and pay for these information. The fourth group is the bank institutions. These institutions are qualified bank agencies to bill commerce institutions that use paid public services and to receive payments, such as taxes, fines, etc.

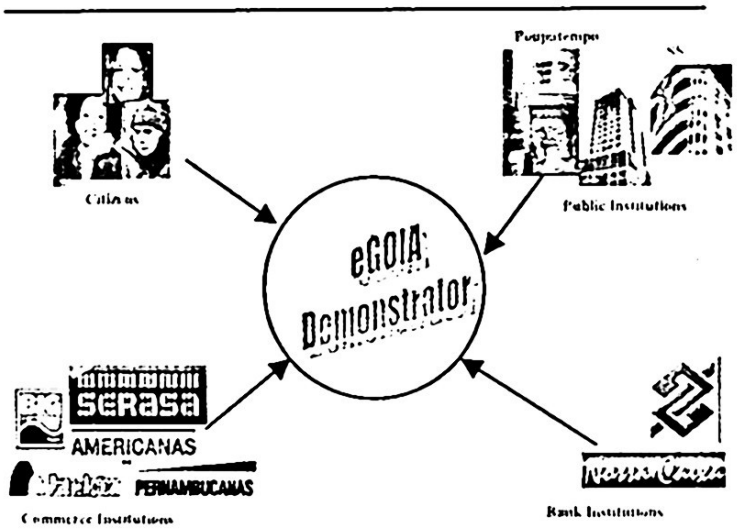

Figure 3 – Main actors of the eGOIA Demonstrator.

Some of the most general requirements are listed below. Most of these requirements are strongly associated to the provision of facilities to the citizens, as they are the most important group of users. The eGOIA demonstrator will provide ubiquitous access in the sense that the citizen will access the e-government services from anywhere through a single user friendly Web portal. For some kind of services the system will provide identification, authentication and authorization mechanisms to allow the citizen to make personalized access to the public services. The service provision must be reliable, secure and preserve the users data integrity. The citizen must not have the feeling that his/her profile is inconsistent and dispersed in the government entities. It is important to guarantee a non-stop service offer by some electronic communications channels opened 24hs, 7 days a week for the population. The eGOIA demonstrator will provide mechanisms for service certification to guarantee that the citizen has a certificate that proves the service execution. Any document delivered or accepted by the e-government system must pass through a certification and authentication process. To attend the great diversity of the public, including tourists and naturalized citizens that are unable to read in the administration natural language but is fluent in another language the eGOIA demonstrator must support at least Portuguese, Spanish and English languages. The system must provide mechanisms to support a variety of end-user interfaces, wide area of range, wireless devices and information consistency, independently on the place or time the system is accessed.

The main requirements from the back office perspective are the following. The eGOIA demonstrator has to provide mechanisms to access back office data and transform them to be consumed by different services or presented to the citizen. The implementation of some services consider the integration and composition of some mainframe based legacy applications. In order to orchestrate these actions the eGOIA demonstrator will be constructed using a middleware service integration platform, called enago [8]. Security, digital signature management, certificate handling, processing of forms and contract/request tracking stuff have also to be considered in the back office integration perspective.

4. The eGOIA Demonstrator system

The eGOIA Demonstrator will be an e-government demonstration system that will support the interaction of citizens and civil public servants with different types of e-government services through the Internet and Citizen Points of Access (CPAs). For such, it will focus in the integration of front-office technologies and of the back office systems. The figure 4 illustrates the structure of the eGOIA demonstrator.

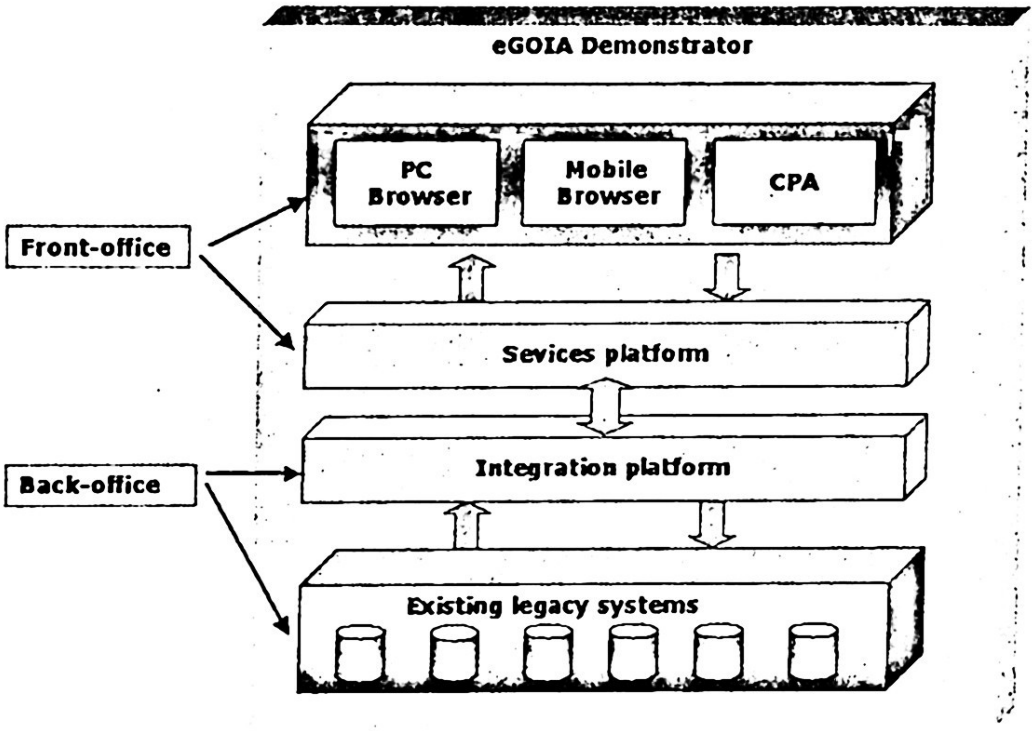

Figure 4 – eGOIA demonstrator structure.

4.1. Front-office Integration

The first task of the front-office integration will be the assessment of points of access to the public services aiming at the creation of advanced points of attendance to the citizen, in the modality of auto-attendance (advanced users) or mediated by a person who orientates, such as in the presential agency. From the existing points of access ("infocenters", kiosks, schools, etc), it will be selected those that will be used, as Citizen Point of Access, in the project demonstration.

Experimentation performed in the project, will identify models of public services access and users skills, considering aspects such as socio-economical and cultural situation. Thus, the second task of the front-office integration will consist of the applications of these models, through the design and implementation of user interfaces regarding user skills and the channels used.

4.2. Back Office Integration

The conception of the eGOIA demonstrator will take into account that it has to be possible to provide e-government applications in an open and distributed environment (Internet), configured in a flexible way, considering the autonomy and evolution of the involved government departments. So, the proposed architecture will integrate all the existing legacy systems, specifically the existing databases, and preserve the autonomy of all entities, responsible for the services.

4.3. Demonstrator Architecture

eGOIA software architecture is illustrated in figure 5, which depicts the software logical architecture and an envisioned physical distribution using four tiers. The logical architecture follows the traditional Web application approach and is comprised of the following blocks:

The **User Logic** deals with the functionality required by the user and the devices used;

The **Business Logic** is comprised of the processing services responsible for common services (both domain specific and general) that can be used by multiple users. Legacy systems and integration components belong to this block ;

The **Persistence Logic** is responsible for physical data storage and data management.

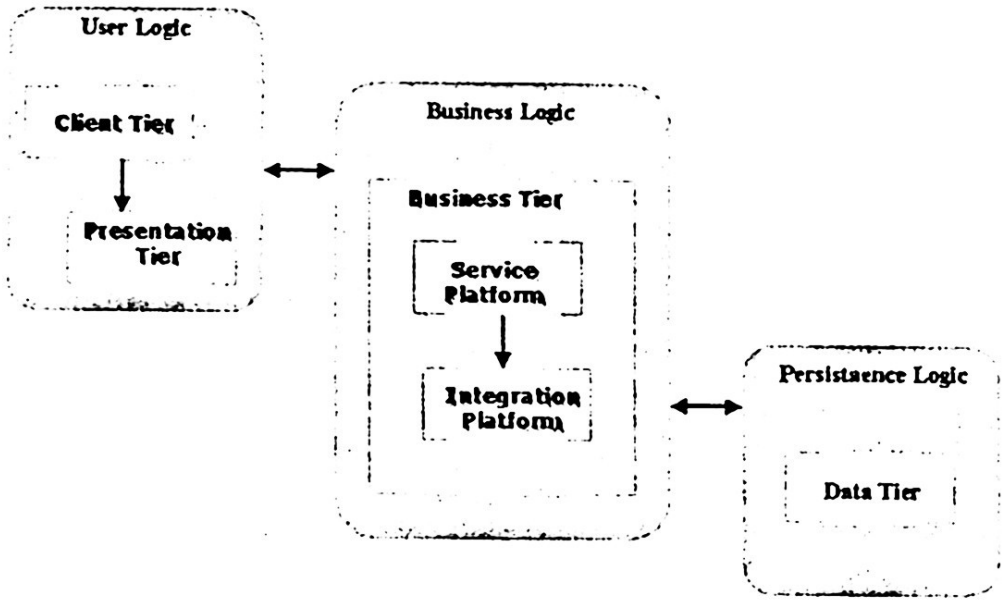

Figure 5 – eGOIA demonstrator architecture.

Regarding component distribution, eGOIA project aims to achieve a multi-tier structure, described as follows.

The **Client Tier** represents different access channels, required by different users, terminals, transmission paths, as well as different application purposes, in order to interact with dedicated applications. The different access channels comprise e.g. Web access over Web Browser or special Browser plug-in, portable radiotelephones and personnel digital assistants (PDAs), and external systems.

The **Presentation Tier** describes the information preparation for the client and the interaction of the user with dedicated applications. The presentation

component covers all standards for communication with the regarded end-systems of the Client Tier.

The **Business Tier** encloses the e-government components and services and can be regarded as the core of e-government-specific applications. In this tier the specific business logic of the diverse e-government applications is combined and integrated. In this tier the highest integration need is expected for e-government solutions. The Business Tier processes the data from the persistence tier.

The **Persistence Tier** comprises the back-end and guarantees the data storage. Data storage is usually solved by means of databases. The back-end stands as comprehensive term for functionalities of the operating system, specific databases, and in addition, for existing legacy or ERP systems and services.

4.4. GOIA Demonstrator Enabling Technologies

The eGOIA project has chosen a service integration platform that supports the needs for modern e-government service integration scenarios. This platform is already used for e-government in Berlin, Germany. The enago Open Service Platform (enagoOSP) provides a uniform service access, execution and management environment, particularly across different administrative and technological domains. It is based on state of the art CORBA and Java 2 technologies that enable component based e-service and service portal implementation. enagoOSP has been designed to support efficiently and economically the different roles involved in e-government, namely end users/citizen, government offices, infrastructure providers and third party providers by the provision of a unique service integration platform.

The main focus of enagoOSP is to enable the integration, composition and management of existing and emerging application services based on different programming languages, different access technologies and different service technologies, and to provide a controlled (secure) and uniform access to these services by means of one-stop shopping and single sign on capabilities including customization by means of profiles to the customers and end users.

The development of e-government applications (i.e., e-services in the eGOIA context) will be model driven aiming the following goals: (i) decrease development time, by generating code automatically rather than handwriting it; (ii) improve code consistency and maintainability; and (iii) increase portability across middleware vendors, by defining models independently of platform.

Model Driven Architecture MDA [9] is the modeling technology adopted in the eGOIA project. MDA and the standards that support it allow the same model specifying system functionality to be realized on multiple platforms through auxiliary mapping standards, or through point mappings to specific platforms, and allows different applications to be integrated by explicitly relating their models, enabling integration and interoperability and supporting system evolution as platform technologies come and go.

To model a system, MDA defines three kinds of models [9]:

A **Computation Independent Model** (CIM) is a view of a system from the computation independent viewpoint. A CIM does not show details of the structure of systems and is sometimes called a domain model and a vocabulary that is familiar to the practitioners of the domain in question is used in its specification.

A **Platform Independent Model** (PIM) is a view of a system from the platform independent viewpoint. A PIM exhibits a specified degree of platform independence so as to be suitable for use with a number of different platforms of similar type.

A **Platform Specific Model** (PSM) provides a set of technical concepts, representing the different kinds of parts that make up a platform and the services provided by that platform. It also provides, for use in a platform specific model, concepts representing the different kinds of elements to be used in specifying the use of the platform by an application.

Based on this approach, eGOIA demonstrator will make use of a modeling infrastructure that supports the software development for enagoOSP based on UML and EDOC [10]. This modeling infrastructure contains modeling and development tools and their interconnection. Each of these tools or modeling techniques support a different phase or activity in the development process for a software system, as follows.

The platform independent modeling tools based on UML and EDOC directly support the abstract PIM and refined PIM modeling steps;

The PSM modeling tools based on UML and a UML profile for enagoOSP support the enagoOSP platform specific modeling tasks;

The integration between the modeling infrastructure and the IDE Eclipse (www.eclipse.org) does support the final Java developments and compilation of system components; and

enagoOSP supports the integration of these components, their operation and the maintenance of the resulting system.

5. Select Services and User Groups

The success of the demonstrator depends on the ability of the eGOIA project team to identify the needs and expectations of the citizens and governmental agencies and to quickly implement services that meet these needs and expectations, and can be offered in a friendly use way.

5.1. User Groups

According to main purposes of eGOIA project, it was defined, as future beneficiaries of the project outcomes, two main groups: the population (citizens) and the public services providers. The population group was detailed to allow focusing on a well defined target segment in order to face the digital exclusion.

The public services providers group was detailed aiming to the system integration of different governmental domains and the services improvement.

Based on previous study of the population of Sao Paulo region [11], it was identified that income, education and age are the most important parameters to define user groups. Also, it was observed that "there is a strong correlation between education and age and income distribution that, for the project purposes, the education and age related problems are represented among the people classified by income variable" [12].

According to these considerations, the target group of the population is the poor segment, defined as those people with monthly income of three Brazilian legal minimum wages. Besides, this target segment was divided into *Internet skilled* and *Internet unskilled* people to allow the identification of specific needs and expectations. The ability was established by observation of the users' behavior in the access to the Internet. The study showed that "people with some familiarity with internet tend to play a special role among their close social environment (family and friends), that seems to be particularly important in stimulating social and digital inclusion and anticipating needs of the unskilled majority". In additional, the study showed that the skilled poor people segment tend to include users with low to medium educational level, working in more qualified jobs or places with computers and they are younger than forty. On the other hand, the unskilled poor people segment "tend to include users with low educational level, unemployed or working in less qualified jobs (as mostly in agriculture), as well as people over forty" [11].

As part of the adopted methodology for data capture, it was defined a *control segment* that includes skilled people with income over three Brazilian minimum wages ("not poor people"). This third group is important because of, both, eliminating causes of educational deficiency related to not well succeeded solutions and comparing the needs in order to evaluate if they are related to social conditions. This segment tends to include people from medium to high educational level, working in qualified jobs with computers and younger than forty.

The public services providers consider both governmental and private institutions because of the current situation of the public service provision based on the Brazilian and Sao Paulo State Constitutions that established roles concerning the public services delivery by governmental, non-governmental and private agencies in an independent way. The group of providers was divided into *direction staff*, *ICT managers*, *back-office employees* and *Citizen Points of Access - CPA (or front-office) employees*, in order to represent the specific needs and expectation and to assess the result by each perspective [12]. They have the following characteristics:

a) **Direction staff**: They are the public or private responsible authorities for the services provision. They must represent the different domains needs and expectations, as well as the assessment of results by their perspective.
b) **ICT managers**: They are the ICT personnel, committed on ICT specifying, developing, implementing and maintaining the technological resources. They must represent the specific ICT needs and expectations, as well as the assessment of results by their perspective.

c) **Back-office employees:** They are the personnel committed on non-automatic activities and decisions related to the services to be changed to the demonstrator. They must represent the specific internal processes needs and expectations, as well the assessment of results by their perspective.
d) **CPA employees:** They are the personnel committed on the real time, direct support to the citizens needs during the provision of public services by Internet. They must represent the citizens direct support processes needs and expectations, as well as the assessment of results by their perspectives.

5.2. Select Services

Since it would be hardly possible to assess in depth every service characteristics, we should strive to apply a combination of criteria that ensures, as much as possible, the highest pay-off with the minimal risk at the selection of services to be applied in the demonstrator, while taking into account the characteristics of the technology available to the project.

The service selection characteristics:

a) A service that searches for information in the existing mainframe system and in the "low platform". As a service like this was not identified, this characteristic was changed for services that access each of the mainframes.
b) A service that makes records and saves information in the mainframe system.
c) "Multi-organizational" services. Services, which processes belong to more than one organization.
d) Services that require user identification to be accessed.
e) Services that accept anonymous users. Any person, without previous registration, could demand some e-government services.
f) Services that require to be accompanied. The service is realized in intermediate steps. The user must be informed about the service states through reports.
g) Services that accomplish financial transaction. One or more tax must be paid for the conclusion of the service. Electronic credit transference should be considered.

According to these criteria and for this phase of eGOIA project, it was chosen a service collection: the citizen identification services – identification card (ID card), involving the Public Safety Secretary of Sao Paulo State (SSP – SP). The ID card is a national citizen identification document, with national validity, federal regulation and issued by every Federated State, issued over 140.000/month just in Poupatempo agencies and it is based on mainframe legacy system. It must be presented to apply for all others official documents. It is asked, for personal identification, by governmental agencies, for appliance to public services, rights and documents issuing; by employers, for employment and labor agreements; by third parts, for contractual relationship; and by financial agents and commerce, for buying on credit and for getting visa.

In addition to social relevance of the ID card, some important technical aspects of the selected services for the eGOIA demonstrator has to be considered, such as integration - the eGOIA demonstrator will integrate different mainframe based legacy systems and Windows based systems; online service accounting could be

performed in many ways, such as by lot of services, one-by-one, by time-slice, etc.; user identification, for some services the citizen has to make login in order to access the system; scalability – when thousands or millions of citizens try to use the same service in the same time.

6. Conclusion and Future Work

This paper presented the vision, goals, objectives and the initial strategies of the eGOIA project. In short, the eGOIA project is focusing on G2C (government to citizen) demonstrations, nevertheless also the G2B (government-to-business) and G2G (government-to-government) scenarios and applications may be of interest in later versions of the demonstrator. Also, this paper shows the progress reached in the first six months of activities [7, 8, 12]. These activities can be synthesized as the identification of:

Existing knowledge, considering the situation of existent in three partners: Brazil, Peru and Portugal.
Good practices of eGOIA partners.
Technical frameworks and standards.
General requirements and constraints.
Selected services for the demonstrator.
User groups.

An important milestone was the project official web site: http://www.egoia.info . It is updated regularly with eGOIA information, news and achievements and it is planned to support multilingual information, i.e., English, Portuguese and Spanish. Other milestone was the first presentation of the project for the international community at the 3rd IFIP Conference on e-Commerce, e-Business, and e-government [5].

As a future work, it is necessary to create a plan (strategic, tactic, operational) that mediates the interactions between the eGOIA project and the governments, facilitates the identification of demonstrator opportunities, defines governmental segments and enlarges the identification of customer and governmental needs.

To prepare the regional dissemination and multiplication of results, meetings took place with the representatives of Public Service Agencies in Cuiabá (Mato Grosso State, Brazil). The Brazilian state participants were: *Ganha Tempo (Mato Grosso do Sul); SACI (Pará); SAC (Bahia); DETRAN (Pernambuco); Central do Cidadão (Rio Grande do Norte); Serviço de Atendimento Imediato ao Cidadão – Na Hora – Brasília* (Federal District). The initial aim was to gather information on inventory, description of the e-government processes, technology used, requirements, legal aspects, etc of the services potentially selected for the demonstration project. Besides ID card, an initial suggestion of choices of services of national responsibility of the states comprise in particular those related to *DETRAN* (Department of Traffic) and Job Services, these are common services of great demand and high cost of production to all agencies. Also, a presentation about e-GOIA progress to representatives of 18 ABEP associates was performed.

In Peru initial contacts with the municipalities have been established and it was possible to know the Peruvian experience in Citizen Access Points (kiosks).

In addition, members of the project have known the experience of Berlin in using a eGOIA similar concept of middleware platform in the integration of legacy systems.

Finally, the eGOIA initiative has proposed three level of activities: strategic, tactic and operational. This paper has shown the strategic level gathering benchmarking, policy deployment and strategic guidelines for e-government implementation. The next steps will be the tactic (technological and organizational change management) and operational (government process reengineering and demonstrator implementation) activities.

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Acknowledgement

This paper describes work undertaken and in progress in the context of eGOIA project

(ALA/2002/47-446/1087), a three-year project (2003-2006), which is partially funded by the European Union (EU). The authors would like to acknowledgement all eGOIA partners.

Appendix

eGOIA partners

Fraunhofer FOKUS - Institute for Open Communication Systems, Berlin, Germany - http://www.fokus.fraunhofer.de

Secretaria de Estado da Casa Civil - São Paulo, Brazil - http://www.saopaulo.sp.gov.br

Centro de Pesquisas Renato Archer - CenPRA - Campinas, Brazil - http://www.cenpra.gov.br

Associação Brasileira de Empresas Estaduais de Processamento de Dados – ABEP - Taboão da Serra, Brazil - http://www.abep.sp.gov.br

Consejo Nacional de Ciencia y Tecnología – CONCYTEC - Lima, Peru - http://www.concytec.gob.pe

Helios ICT Management Ltd. - Murieston Livingston, West Lothian, UK

Meticube Sistemas de Informação, Comunicação e Multimédia, Lda. - Taveiro, Portugal - http://www.meticube.com

INI-GraphicsNet Stiftung - Darmstadt, Germany - http://www.inigraphicsnet-stiftung.de