

The Realization of the Greek E-Gif

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Abstract

The design and delivery of interoperable e-services has proven essential for the modernization of e-governance. In this context, the establishment of a common framework which sets the basis for implementing e-government services is fundamental. In this paper we present an outline of the Greek e-Government Interoperability Framework and the lessons learned so far in the context of implementing it for the purposes of the Greek portal of the public administration, called Hermes.

Keywords

Interoperability framework, one-stop-gov, electronic certificates, e-signatures.

INTRODUCTION

The provision of e-government services typically involves numerous of government information systems, most of which are closed and developed fulfilling specific vertical requirements, without considering the needs for communication and exchange information with other government systems. The first attempts of exchanging information among different government bodies electronically highlighted the erroneous approach that had been taken in the past.

The situation worsens when there are intentions to provide one-stop services where the exchange of information among the participating systems has to be done in a well-established uniform manner among all participating entities, which typically comprise all government bodies. As a result the provision of one-stop services requires reconsidering the way systems are implemented and services are provided.

To achieve the aforementioned desired result most governments have proceeded in defining rules by which systems provide services and interact, and which have the form of e-government frameworks. These typically come to contribute to the normalization of the complexity and diversity of the established procedures and their corresponding implementations.

In this paper we present an outline of the Greek e-GIF as well as the experience gained from its realization in the implementation of the national e-government portal, called HERMES.

GREEK E-GIF

The Greek e-Government Interoperability Framework is comprised of three distinct standards regarding the implementation and delivery of e-government services as well as a common interoperability registry complemented by a validation model necessary for verifying the compatibility of deployed e-services with the specified framework.



Figure 1. Greek e-GIF outline.

Certification Framework for Public Administration Sites and Portals.

This framework specifies the directions and standards to be followed by the public agencies at central or local level, when designing, developing and deploying e-government portals of the Public Administration and supporting e-government services. Among the issues that this framework deals with are URLs format, content structure and presentation, navigation, content searching, accessibility, e-services, provision, authentication, and private data protection. The aim is to eliminate the heterogeneity of all government sites and to establish a uniform way of organizing, presenting, and providing the content and e-services.

Interoperability and Electronic Services Provisioning Framework.

It defines the basic principles and the general strategy to be followed by the public agencies, when developing e-government Information Systems and services. These frameworks provide guidelines, specifications and standards that should be used for the communication and the efficient exchange of information between e-government systems, aiming to the provision of integrated and interoperable e-government services. Three dimensions have been identified:

- *Organizational interoperability*, focusing on the management and improvement of services, identifying common service characteristics and homogenizing the service provision. The challenge is that the roles and the responsibilities, in many service provision scenarios, are not completely clear

or they are overlaid; in some cases even the rules (service logic), based on a complex legislative framework, have to be further clarified. The formal description of services has been a prerequisite for the identification of the joint – collaboration points among different legal entities, where delays are identified, and afterwards the process alignment and improvement. Business Process Modelling Notation, (BPMN) has been adopted for the formal description of the service that will be developed in the future. Existing services can also be described using UML.

- *Semantic interoperability*, focusing on the development of common semantic models. The challenge is that during the vertical computerization efforts, each legal entity defined its own data model; data reusability, among different legal entities, has been, until recently, practically not achieved – at least in an automatic manner. In the rare cases where data has been exchanged among different entities, ad hoc solutions have been followed. The effort has focused on the involvement of the competent authorities, in the public sector, in order to create a shared vocabulary including data elements, core components and codelists and ultimately XML schemas. Greece is implementing a centralized model through the Hermes project, where a set of core elements can be defined in a centralized manner and special sets of vertical models can also be created and maintained by the competent authorities.
- Technical specifications, focusing on the best practices for the specification and implementation of Information Systems and services. Multi-tier and service - oriented architectures based on component are encouraged. As already mentioned, one of the most challenging issues has to do, not with the standalone application, dealing with “local” data (i.e. data owned by the competent authority), but with composite services. Such services have to re-use the components of other services, provided by different authorities. Rigid technical guidelines (focusing on SOAP-based web services) are provided in order to enable such a fine-grained collaboration. While the adherence to such guidelines is relatively easy for new systems, it is more complex in the case of existing, legacy systems, where the need for a wrapper is usually foreseen as a temporary solution.

The concept of e-government services plays an important role, in this part. The well known 5-level categorization is followed and the user (citizen / business) requirements are examined in detail. The services scope includes Government to Citizens (G2C), Government to Business (G2B) and Government to Government (G2G) services.

Digital Authentication Framework

It provides the guidelines for identification and authentication of users utilizing e-government services and sets the rules regarding issuance and usage of public key certificates for the electronic services authentication and digital signatures. The framework follows an approach where services are categorized based on the type of data being handled by the applications and the need for assurances regarding the collected evidence on user’s participation. As such, the authentication methods approved for e-government services can be one of the following.

- Username and password.
- Soft Digital Certificates, i.e. certificates stored on user’s PC.
- Digital Certificates stored on secure signature creation device (providing strong authentication and qualified electronic signatures).

Validation Model for Public Administration Processes and Data

The validation model is a practical guide which defines the notation, the rules and the specifications for the design, implementation and documentation of the Public Administration processes, documents and electronic data exchange messages.

Interoperability Registry

In the context of the development of the Greek e-GIF, the Greek Interoperability Registry has been designed. A set of governmental services have been analyzed and modeled in the context of various projects that have been implemented under the 3rd Community Support Framework. Finally a national Interoperability Registry is being implemented in the context of the Hermes Project. This will be a web-based repository of service and document metadata, services process models, standardized XML schemas for mostly used governmental documents based on UN/CEFACT/CCTS standards, as well as codelists for the most common information elements within governmental service provision in Greece.

GREEK NATIONAL GOVERNMENT PORTAL – HERMES

Hermes is the Greek national Governmental Portal for the Provision of Information and Secure e-Transactions to Citizens and Businesses. The aim of Hermes is to become the electronic single point of contact (one-stop shop) for government services. Hermes will also host the Greek e-gif Interoperability Registry and the consultation and deliberation mechanism for the evolution of the Greek e-gif. Hermes is based on three axis.

- Content Provision
- Interoperability of services
- Authentication of citizens and businesses.

Content Provision

Hermes aims to serve as the electronic single point for the provision of government information. As such, the content of the portal has to be complete, accurate, consistent, and up to date so as to be a reliable and lawful source for all interested parties. Care should be taken on the following issues regarding content management:

- **Creation.** Not all of the content included in the portal is original. Recreating the original content that is already available on other sites is not an efficient approach. Still though the collected content has to be checked for its completeness and in some cases complemented.
- **Exchange (primarily provision).**
- **Processing and homogenization.**
- **Characterization (based on metadata).**
- **Syndication and management.**
- **Delivery.** It should provide *multi-access* capabilities based on the subject (life episodes and fine-grained thematic categories) by different groups (business, citizens and special groups e.g. students, pensioners etc.)

Initially it has been verified that more than 250 authorities can provide content that can be of interest to the users of Hermes. These authorities have been categorized based on the following criteria:

- The Content volume
- The publics that are served by these authorities; niche publics are not excluded, but they are characterized as low priority publics
- The frequency of content updating

According to these criteria three groups of authorities have been identified:

- Crucial public administration authorities, the content of which is very important for Hermes
- Important public administration authorities, the content of which is relatively important
- Indifferent public administration authorities; the content is less important

Of course it is recognized that the level of an authority can change during over time and it is important to monitor the performance of the authorities based on these criteria. The overall effort is enhanced by the measurements of the public interest as occurring by the Management Information System of the Citizen Service Centers (KEP), which provides insight on the public interest in a dynamic fashion.

In parallel to selecting the preferred authorities, we have to deal with the important technical issue of content provision from multiple sources. Manual, semi-automated and automated (web services, RSS) ways have been explored.

- Content and metadata insertion on behalf of the third-party authorities, using forms
- Retrieval of content and metadata on behalf of the Hermes system, invoking the web services provided by the authorities
- Provision of content and metadata on behalf of the authorities invoking the web services provided by the authorities

Hermes has thematically organized all service and content areas. This organization is based on three criteria:

- The Government Category List (GCL)
- The users
- The government authorities

This way a set of metadata has been created that support the – to a certain degree – automatic categorization of new content. All ways of content provisioning (from the manual to the automated) enforce the usage of metadata.

All tasks are supported by a well defined workflow engine.

Authentication of Citizens and Businesses

The unambiguous identification and authentication of a participating entity is the starting point in providing access to e-services. Hermes, in line with the Digital Authentication Framework, deploys a number of different authentication methods to deal with the diversity of the corresponding e-services requirements, ranging from the traditional use of username-password to the strongest method of digital certificates combined with the use of smart cards.

Hermes has established a Certification Authority (CA), which has undertaken the task of issuing digital certificates to citizens and businesses for the purposes of authentication, digital signatures, and confidentiality. This CA is part of the Greek Public Sector Public Key Infrastructure (signed by the Hellenic public administration root certification authority) which was established in the context of the SYZEFXIS project, the Greek Public Sector Network.

Not all government e-services however, are served by Hermes. The existing governmental sites continue to provide old as well as newly deployed services from their own sites. E-GIF framework compatibility requires service providers to upgrade their authentication methods, if necessary, and be able to handle digital certificates. The latter is also necessary for the handling of digital signatures on electronic documents.

To promote interoperability of the certification services provided by Hermes CA and ensuring the wide acceptance of the issued certificates by all government bodies, several issues had to be considered originating mainly from the participating entities' needs. The lack of a unique national ID for Greek citizens and the fact that most government departments identify citizens using sector IDs issued by them is just one of these issues.

The lack of unique national IDs and the restrictions imposed by the legal framework regarding private data protection had become the bottleneck at deploying digital certificates accepted by all government bodies. As a result, sector IDs had to be included in the certificate in an encrypted form and provided to authorised parties only under the user's consent.

Citizens or businesses that wish to make use of the provided e-services that require strong authentication have to obtain from Hermes CA three different digital certificates:

- **Certificate for Digital Signatures and Authentication.** This certificate, when issued with a smart card, can be used for qualified electronic signatures based on the EU Directive 1999/93/EC.
- **Certificate for Encryption.** This certificate is used for providing confidentiality on exchanged data and documents.
- **Special Purpose Digital Certificate.** This certificate is used for conveying sector ids in encrypted form. Is used only for the initial

These three certificates are “bound” together by the use of a common, yet unique to each certificate holder “Certificate Administration Code”.

The Hermes certification services are complemented by the issuance of certificates to all civil servants for the purposes of performing their duties in a secure manner. More specifically, civil servants that communicate data and handle documents are issued with two digital certificates (one for qualified electronic signatures and authentication and one for encryption).

Interoperable Service Delivery and Services

In the context of the implementation of the Hermes portal, which is expected to provide e-gov services (G2C, G2B, G2G), we have faced real problems (not only technical) when trying to ensure interoperability (especially when interconnecting information systems from different agencies).

As previously mentioned, the level of service computerization in Greece is a lower that the EU mean rate (approximately 68% in comparison with 74% according to [2]).

In practice as seen in figure 2, the front end is computerized to a significant degree, i.e. the citizens and business can invoke a set of services using the web forms of the KEP's portal; however the back office, i.e. the execution of the service itself as well as the delivery of the result are performed to a significant degree manually.

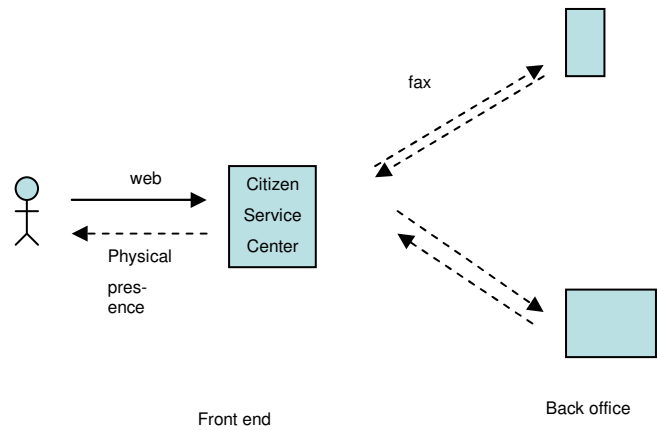


Figure 2. KEP's service model.

Hermes is extending the computerization to the back office allowing the service execution to take place in a fully electronic fashion. As expected adaptation of the legislation framework and organizational changes is required.

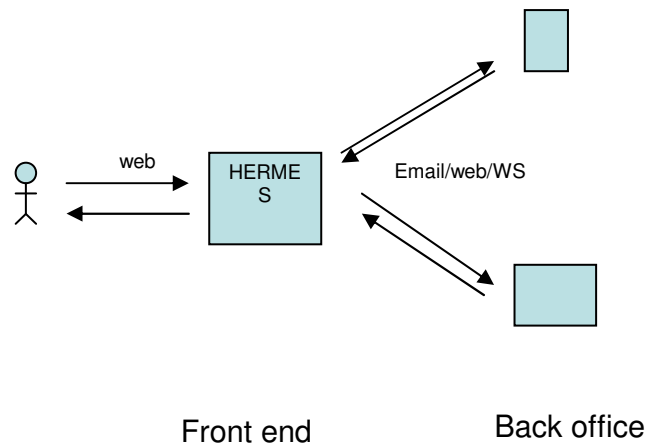


Figure 3. Hermes' Service model.

The concept of the Citizen and Business Certification Registry (or “document safe” as it appears in other European implementations) was an idea that we have explored. Although it was expected to offer significant benefits for the integration and collaboration of the IS in the Public Sector we have met difficulties in terms of the legislation and objections coming from the Hellenic Data Protection Authority.

Non-repudiation is a significant issue in the content of service provision. For this purpose, a Time Stamping server is deployed, which is expected to play a significant role in the provision of e-gov services at both ends (inbound request coming from the citizen/business and outbound response returning to the citizen/business) and potentially in the indi-

vidual steps (especially when different agencies are involved).

Services

Hermes is in infancy therefore is not aiming to adopt and provide all the available government services at once. The harmonization with the e-GIF framework is a long lasting process. A methodology has therefore been established for the evaluation and prioritization of services based on parameters including the significance considered by the EC, the frequency of the services usage by the public as well as more practical consideration such as the computerization level and the legal and organisational maturity of the involved governmental agencies. The information on the service usage comes from one of the most significant MIS systems in Greece that of the Citizens Service Centres with millions of service request per year.

CONCLUSIONS

The development of the e-GIF is characterized as a win-win situation. It is expected to help public bodies overcome their introvert character, achieve a high level of homogenization, as regards the ergonomic and functional aspects of e-government portals, reduce bureaucracy and utilize reliable channels for the delivery of e-government services. It also promotes the interoperability between Public Bodies on a legal, organisational, operational and technical aspect for the provision of integrated e-government services and it reduces the development cost of Public Administration Information Systems through the reuse of software components and the exploitation of existing e-governments services.

In the context of the end users, the benefits include the offering of high quality government services, the reduced expected service delivery time, the access to e-government services through multiple channels, the easier search and retrieval of information for e-government services and the enhancement of citizen trust by providing high level of quality, reliability, credibility, and transparency, when using e-government services.

The ICT companies are expected to benefit in the development of standards-compliant products, services and applications and the reuse of common codelists, vocabularies, process models and data schemas, resulting in better quality and lower cost products and services.

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- Greek e-Government Interoperability Framework “E-GIF”
- Specification and Development of the national portal “HERMES”.

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