Chapter 4.3
Building Innovative, Secure, and Interoperable E-Government Services

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ABSTRACT

Research into initiatives worldwide shows that although some of the legal and organizational barriers for the adoption of new technologies in e-government have been lifted, there are still not many implementations of actual e-government services that have been designed based on a common and systematic approach. The prevailing requirements for e-government services, interoperability and security, pose major challenges to e-government architects and it is now being slowly understood that Web services in combination with public key infrastructures may provide the necessary solutions. In this context, this chapter presents three innovative e-government services based on these technologies, focusing on their security and interoperability aspects. The goal of the chapter is to demonstrate the services' specifications and use cases so that they may act as examples for further research and development.

INTRODUCTION

Nowadays it has become evident from the existing e-government initiatives and best practices that although most of the legal and organizational barriers for the wide adoption of e-government services have been lifted, there is still a lack for actual e-government services implementations. Services that make appropriate use of new and already established technologies, such as Web services and PKI, are considered promising in the

sense that they satisfy the important e-government requirements of interoperability and security, respecting at the same time the business goals of public organizations and the expectations of citizens that interact with them.

Designing, building, and delivering e-government services that share a set of common requirements demands at first the introduction of a generic e-government architecture that fulfils those requirements, and then the change of focus to the specific requirements posed by each service to be deployed. Those special requirements might stem from the policies of the specific organizations wishing to deploy the service, or even by the legal framework set up by the state or country where the service is to be offered.

This chapter initially presents the major requirements of e-government services and references an existing e-government architecture that satisfies them. It then goes further into analyzing three distinct service implementations that rely on the architecture and leverage its common functionalities. These services include the issuance and distribution of public certification documents, such as birth certificates, electronic invoicing, and electronic ticketing. Their selection has been based on desk study and worldwide research results that demonstrate they are among the top services demanded by governmental organizations and citizens. Their implementation is based on Web services and PKI filling the gap of successful deployments of those technologies and demonstrating use cases that can be further consulted in the future for similar endeavours.

The chapter is structured as follows: "Generic E-Government Requirements and Architecture" focuses on the most important requirements that need to be satisfied by an e-government service and references a generic e-government architecture that has been already designed and has already been built in the European e-mayor project. "Three Innovative Secure and Interoperable E-Government Services" investigates in detail one by one the use cases of the three aforementioned innovative e-government services: issuance of public certification documents, e-invoicing, and e-ticketing. Finally, "Conclusion" draws conclusions.

GENERIC E-GOVERNMENT REQUIREMENTS AND ARCHITECTURE

This section describes firstly the basic requirements that need to be taken into account when building an e-government service and then goes on to give an overview of an e-government architecture that may host e-government services that satisfy the requirements.

It should be noted that in the rest of the chapter when we refer to an e-government service, we specifically mean an enterprise service operated by a public organization that performs one instance of a business function, as for example the issuance of a certification document etc. The terms "enterprise service" and "e-government service" are therefore interchangeable in this context.

E-Government Requirements

Interoperability is a primary goal of an e-government service. Lack of interoperability amongst services is mainly due to the unhomogeneity of technical solutions deployed in the infrastructures that support the service itself, as well as the lack of well-defined service business functions.

The interconnection of governmental organizations that use various platforms and systems is a difficult task requiring easily identifiable and publishable e-services, as well as clear interfaces for the establishment of secure and reliable connection points.

Interoperability is satisfied by using widely deployed standards and technologies during the services' design and implementation phases.

Current practices indicate that in order for an e-government service to succeed in its business goals, it should be secure in all aspects so that