Chapter 14
Architectural Guidelines and Practical Experiences in the Realization of E-Gov Employment Services

Elena Sánchez-Nielsen
Universidad de La Laguna, Spain

Daniel González-Morales
Universidad de La Laguna, Spain

Carlos Peña-Dorta
ARTE Consultores Técnicos, Spain

ABSTRACT
Today’s Public Administration faces a growing need to share information and collaborate with other agencies and organizations in order to meet their objectives. As agencies and organizations are gradually transforming into “networked organizations,” the interoperability problem becomes the main challenge to make possible the vision of seamless interactions across organizational boundaries. Today, diverse architectural engineering guidelines are used to support interoperability at different levels of abstraction. This paper reviews the main guidelines’ categories which support aspects of architecture practice in order to develop interoperable software services among networked organizations. The architectural guidelines and practical experiences in the domain of e-Gov employment services for the European Union member state Spain are described. The benefits of the proposed solution and the lessons learned are illustrated.

INTRODUCTION
Nowadays, the Public Administration (PA) must be agile and responsive in order to be operative and efficient. One of the major changes has taken place in the way PA cooperates with agencies and organizations by forming networked organizations in order to optimally collaborate towards the provision of software services in a service oriented environment. In this context, interoperability is explicitly identified as one of the key bottlenecks. Legacy systems/applications often
hinder collaboration endeavors, since, in many cases the applications are not even designed to interoperate with other applications. Diverse architectural engineering guidelines have been used to support interoperability from IT architect perspective: enterprise architecture, software architecture design, service oriented architecture paradigm, frameworks and maturity models and infrastructures architecture. Over the last years a number of organizations and individual researchers have developed and documented techniques, processes, guidelines and best practices for the different viewpoints of architectures proposed. In the European Union (EU), the European Interoperability Framework (EIF, 2009) defines a set of recommendations and guidelines for the development of PA e-Gov services. However, there is not a consensus about what architecture guide use in order to design and implement interoperable systems for PA.

The goal of this paper is twofold. First, we provide a review of practice architectures, frameworks and models of maturity with architectural guidelines for the problem of interoperability between networked organizations. Second, we describe as case study about how the interoperability problem is addressed at national, regional and local level for Spanish e-Gov employment services. Our practical experiences and lessons learned during the software project development for the Public Administration and collaborative organizations in the context of e-Gov employment services are illustrated using different architectural guidelines at national, regional and local level.

The European Interoperability Framework (EIF, 2009) is adopted as interoperability framework guidelines at national, regional and local level. At regional and local level, the following guidelines are addressed: Zachman Framework (Zachman, 1987) as enterprise architecture, UML and BPML enterprise modeling language as process language to describe business processes and their executions, Service oriented Architecture (OASIS SOA, 2006) as paradigm to implement a service oriented environment, and open source middleware as infrastructure interoperability.

The remainder of the paper is structured in the following way. First we review the main architectural guidelines from a top-down approach that require special attention in order to develop interoperable services. Next, we focus on the information strategy for Spanish e-Government and the domain scenario for developing e-Gov employment services. We describe how the interoperability problem is addressed at national, regional and local level using the European Interoperability Framework as main interoperability guideline for the Spanish employment scenario. Our practical experiences using the Canary Islands Community as use case to validate the provision of centric-citizen services in the employment domain are illustrated. The functionalities of the services developed, the approach used, the results and lessons learned with the implementation of the architectural guidelines are described. Finally, we provide concluding remarks and future work.

RELATED WORK

This section presents relevant literature associated with the software services development in an interoperability scenario from a top-down viewpoint. Different areas need to be covered in order to provide a solution to problems of interoperability between institutions and organizations. These areas are:

- **Enterprise Modeling**: The goal is to make explicit knowledge that adds value to the enterprise or can be shared by business applications and users for improving the performance of the enterprise.
- **Interoperability Frameworks**: Which provide a set of standards and guidelines that describes the way in which organizations have agreed, or should agree, to interact with each other.