Chapter XVII

Service-Oriented Architecture for Seamless and Interoperable Service Delivery

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ABSTRACT

The delivery of seamless services is an essential feature of e-government applications. Offering seamless services presents several operational implications; a flexible and interoperable architecture is needed in order to provide some facilities to refer to, invoke, and combine e-government services in a standard way, within the context of cross-organizational workflows. This chapter presents an e-government architecture (E-GovSM) that eases the cooperation among applications of different government agencies in order to supply new added value services. Moreover, it promotes reuse of existing systems by integrating governmental legacy applications. The E-GovSM (e-government service marketplace) is a service-oriented architecture based on Web services and XML technology.
INTRODUCTION

One of the main e-government challenges is to facilitate citizen-public administration interaction enabling seamless services delivery to citizens through the Internet (European Commission, 2003). Regulations and administrative provisions fragment all aspects of the life of a citizen according to multiple sectors (i.e., taxation, health, etc.) (Contenti, Termini, Mecella, & Baldoni, 2003). This fragmentation often causes difficulties in delivering services to citizen; services result composed by several activities involving different agencies and frequently need to link and use data from multiple and diverse information resources. Therefore, in order to deliver seamless services to citizens, a strong collaboration and cooperation between administrations is required. Consequently, “interoperability” is the keyword to address e-government challenges. Interoperability is not only a technical issue dealing with distributed computing, but it deals also with information sharing among different administrations and the redesign of administrative processes to support more effective delivery of e-government services. Three level of interoperability are relevant to e-government issues: technical, semantic, and organizational (European Commission, 2003). The first one refers to the technical issue of connecting computer systems, defining common communication protocols, and data formats. The second one concerns the exchange of information in an understandable way even between applications that were not initially developed for this purpose. The third one refers to enabling processes cooperation. While interoperability requirements seem so obvious, today’s reality is that information systems are not yet interoperable, different administrations are not able to share and reuse data or cooperate for fulfilling e-government challenges. An interoperability infrastructure is therefore at the heart of e-government applications (Office of the e-Envoy, 2003). This infrastructure has to enable cooperation among agencies and integration of legacy systems; it has to enable service reuse and composition in order to deliver ones that are more complex. To this extent, service-oriented architecture (SOA) is a new paradigm, which had been envisioned for a notion of environment where everybody provides some services for some others. Therefore, a service-oriented infrastructure is fundamental for reaching high levels of interoperability. Service-oriented architecture, by the means of Web services, can provide a standard and efficient communication means among different governmental agencies involved in providing integrated services as well as dynamic context-driven information to the citizen (i.e., services personalized according to the user, for instance, customers or employees, the device, laptops, PDAs, or smart phones, and different situations, for instance home, hotel, or office) (Sharma and Gupta, 2004). Driven by the convergence of key technologies and the universal adoption of Web services, the service-oriented e-government architecture promises to significantly improve agency flexibility and interoperability, reduce IT costs, improve operational efficiency, and facilitate inter-agency cooperation.
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