Integration and Enterprise Architecture Challenges in E-Government: A European Perspective

Vishanth Weerakkody, Brunel University, UK
Marijn Janssen, Delft University of Technology, The Netherlands
Kristian Hjort-Madsen, Ministry of Science, Technology, and Innovation and The University of Copenhagen, Denmark

EXECUTIVE SUMMARY

Traditionally, government agencies are organized vertically around functional structures and there are almost no processes spanning departments and agencies. In such an environment, the coordination of business processes and integration of underlying information systems presents a significant challenge. Using case studies in three European countries, this research explores process and systems integration challenges in the European public sector and highlight opportunities for service improvement in the context of e-government implementation. While cross-organizational process and information systems integration barriers are seen in the literature as presenting the main technical challenge for realizing fully integrated e-government services, this research found that a legacy of rigid bureaucracy, established illogical routine tasks and lack of coordination of different information systems in the public sector were preventing the respective governments from expediting their e-government initiatives in Europe.

Keywords: e-government; e-government services; enterprise architecture; process integration; systems integration

SETTING THE STAGE

As more and more citizens become internet savvy they demand faster delivery of public services and better insight into the status of their requests. While integrated service delivery requires the sharing of information among information systems of public agencies and harmonization of cross-organizational business processes, a debate that is facing many European governments’ on-line agenda, at least in the short term, is how to precede best with this integration. Existing systems are typically build-using architectures that do not readily support enterprise-wide integration, thus requiring the development of new architectures to link on-line government (Allen, Juillet, Paquet, & Roy, 2001). The challenge is that many e-government initiatives
require information exchange in networks across different governmental organizations. Most public institutions today manage technology in what is popularly described as “stove pipes” or “isolated islands of technology”, with individual institutions implementing their own channels, Web page applications and supporting infrastructure. Traditionally, government agencies are organized vertically around departments. Cross-organizational processes can only be created by integrated information systems delivering timely and right information, and supporting cross-departmental processes. Current systems are often developed within the boundaries of departments without having in mind the “big picture” capturing the enterprise architecture of the whole organization. The existence of isolated, overlapping in function and content, highly fragmented, and unrelated computerized applications within the same public organization has resulted in a major interoperability problem and has led to “isolated islands of technology” (e.g. Peristera & Tarabanis, 2000).

E-government has evolved from the domain of e-business and as such needs business processes that can be continuously optimized and expanded outside the enterprise and outside internal enterprise systems (Fustes, 2003a; Champy, 2002). While the linking of these processes and IS require enterprise application integration (EAI) technologies, EAI has been an expensive and often problematic solution for many organizations engaged in e-business (Linthicum, 1999; Sutherland & Willem, 2002). These problems are multiplied in the public sector, where inefficient and bureaucratic business processes and disparate legacy IS/IT systems need to be integrated in an e-government environment (Weerakkody & Choudrie, 2005). In a resource limited environment such as government agencies, enterprise architectures should therefore not be merely about service delivery, but also about integrating and sharing resources and using common systems (Hanafin, 2004). Opportunities for joint-development, pooling of resources and coordination of efforts are often neglected due to the lack of overview. Although there a number of enterprise architectures available (e.g. Zachman, 1987; Bernard, 2004; Nora, 2006; Schekkerman, 2003; Office of the e-envoy, 2002; Danish Ministry of Science, White Paper on Enterprise Architecture, 2003) public managers find it difficult to translate the architecture to their specific situation, use these architectures to guide their decision-making and use these architectures as guidance for development from the existing situation. One of the reasons is that concepts are only vaguely defined, too abstract, or too technical defined (Kunda & Brook, 2000; Peristera & Tarabanis, 2000).

Given this context, the research question driving this article is what are the process integration and enterprise architecture challenges faced by government when implementing integrated e-government services?

To explore further the arguments set out above, this article is divided as follows. The next section describes the e-government development stages and examines the characteristics of Web services technology and enterprise architecture modeling, and how they could facilitate process and IS integration in e-government. This is followed by a summary of the methods used to carry out the research discussed in the article. The section afterwards then presents the results of an exploratory study in three different government agencies in the UK, Netherlands, and Denmark by examining key public service processes and related process and IS integration issues. The article concludes by summarizing the main research findings and discussing the enterprise architecture as well as process and IS redesign-requirements for delivering fully integrated e-government services.

To explore the arguments set out above in a deep and meaningful manner, a case study approach was considered to be suitable (Yin, 1994; Walsham, 1993). Case studies were conducted in a large local authority/council in the UK (Weerakkody, Baire, & Choudrie, 2006), Delft Municipality in the Netherlands (Janssen & Cresswell, 2005) and the Copenhagen hospital in Denmark.