

Chapter XIV

A Multi-Agent Service Oriented Modeling of E-Government Initiatives

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ABSTRACT

The recent economic, organizational and technological transformations are motivating developing countries to adopt electronic government applications. The main objective of the e-government project in Sudan is “to achieve a society based on a strong base of industry knowledge in which all segments of the media access to information that leads to the distribution, publication and use of information as widely as a whole contributes to the achievement of economic growth, increase employment and raise the rates and quality of production in all sectors and poverty eradication. However, the project has been based on the use of a client-server architecture that has many limitations. This chapter provides a multiagent service oriented architecture for the implementation of the project based on a thorough review of project documents and implementation reports.

INTRODUCTION

The use of the internet and other related communication technologies has led to the emergence of multiple business models and dictated new axioms for information acquisition, sharing and utilization. The increasing use of technological platforms is directly related to the emerging organizational

transformations, and the growing importance of deploying universally enacted applications to improve the efficiency, effectiveness, and data quality in public and private organizations. Such applications range from electronic document interchange, through e-learning, e-business, e-commerce, e-banking to corporate models of e-government.

The last couple of years have witnessed an expanding deployment of e-government initiatives and applications at different scales. The emphasis, at the abstract level of analysis, continued to be made on the use of information and communication technologies in public administrations (following customer-centered perspectives) to strategically enhance accessibility and delivery of government information, public services and democratic processes to citizens, businesses, government employees, and other agencies (Hernon, Reylea, Dugan & Cheverie, 2002; Andersen, 2004; Seifert, 2002; European Community, 2003; Hangen & Kubicek, 2002). The use of such pool of technologies also reflects the existence of a wide range of institutional, structural, technological and personnel-related factors.

The majority of e-government initiatives are aiming at improving government processes by cutting process costs, managing process performance, making strategic connections in government and creating empowerment within the government architecture. Accordingly, connection between governments and citizens (and other stakeholders) can be improved (Hussein, 2006; Richard, 2001). In addition, the interactions associated with the use of such rich pool of organizational and technological platforms in e-governance, creates a “task-oriented” forum of engagement between governments and other stakeholders (Davies, 2002; Paul & Thompson, 2004; Kim & Henriksen, 2006; Traunmüller & Lenk, 2002).

However, the increasing deployment of e-government applications neither means that governments and citizens will gain the “promised” benefits nor the level and magnitude of “downside” risks can be assessed. Estimates about the performance of existing applications in different countries show that almost 85% of the e-government systems are been regarded as “totally or partially” operational failures irrespective of their “technological buildup”. Such failure has

been attributed to the lack of leadership and strategic thinking, technological infrastructure that facilitate accessibility, connectivity and network readiness, institutional infrastructure that secure an e-business climate, population e-aware, human capital, and legal infrastructure that maintains trust, information security and privacy.

Successful implementation of e-government initiatives depends not only on the availability of “resources” but most importantly on the adoption of appropriate implementation-oriented paradigms that describe the growth and evolution of e-governments. To avoid failures, such modeling paradigms must be practical enough to guide the implementation, monitoring and maintenance of the entire e-government initiative. In addition to the growing percentage of failure of many e-government applications, the importance of focusing on the development of practical models and architectures originates also from the importance of managing the complexity associated with electronic interactions.

The main objective of this chapter is to address the context of e-government modeling by investigating architectural issues taking the e-government initiative in Sudan as a case study. The chapter emphasizes the need for an integrated architectural approach for the management of distributed e-government services by coupling service oriented architectures with multiagent technologies. While section 2 of this chapter presents relevant literature in e-government development architectures, section 3 discusses service oriented concepts. Section 4 reflects on the e-government initiative in Sudan with more focus in section 5 on the process of coupling multiagent technologies with service oriented architecture to be used for the development of the “coupled model” described in section 6. Section 7 addresses the advantages of the coupled model for the case study, potential limitations and modifications with some conclusions provided in section 8.

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