



E-Government procurement observatory, maturity model and early measurements

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ABSTRACT

Electronic government procurement (eGP) is quickly becoming an essential piece of national e-government programs, since it enables active transparency and favors efficient vendor relationships; however, little attention has been paid to the need for periodical measurement of eGP portals' performance and goal satisfaction. Although maturity levels schemes have been proposed for other domains, most notably IT-related, to the best of our knowledge no maturity level model of eGP has been widely deployed yet. This article presents the e-Government Procurement Observatory Maturity Model (eGPO-MM), which focuses on both legal and institutional arrangements, and portals' technical aspects; the model consists of two Leverage Domains, seven Key Domain Areas, and 25 Critical Variables, which are valued with a weighted scoring system that produces quantitative indicators about portal capabilities and allows direct comparisons. The model was used to evaluate eGP portals from 14 countries in Latin America and the Caribbean; the measurements are presented, and fit well with previous rank perception, leading to a good reception by participant agencies. eGPO-MM has already allowed to identify areas for joint action and fostered knowledge-sharing among governments, including identification and dissemination of e-procurement best practices; it also established clear reference points to allow each agency to determine a roadmap to higher e-procurement maturity.

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1. Introduction

Electronic Government Procurement (eGP) is quickly becoming an essential piece of national e-government programs, since it enables active transparency and favors efficient vendor relationships.

eGP systems (Curtin, 2007; Talero, 2001) not only increase transparency, and might decrease corrupt practices, but also increase productivity of day-to-day procurement activities within agencies, and may attract new suppliers to do business with the government. Current eGP challenges (Brun, Corti, & Cozzini, 2007) include knowing how to make the procurement system more efficient and effective given available technology; promoting legal frameworks and good management practices; and creating an appropriate institutionalism.

Measuring the maturity levels of public procurement portals allows eGP agencies not only to increase the transparency of public procurements, but also to identify areas for joint action, fostering knowledge-sharing among agencies, and contributing to identify and disseminate e-procurement best practices. It also establishes clear reference points so eGP agencies can determine what requires to be done to achieve a higher maturity level (Dewan & Kraemer, 2000).

In Latin America and the Caribbean, establishing maturity levels is even more relevant because there are at least three common themes

across nations: dissimilar eGP development, lack of resources, and few instances of communication and exchange of ideas (Vaidya, Sajejev, & Callender, 2006). The proposed model focuses on addressing all three themes: its early development benefited from the participation of several government representatives to ensure ownership of the system¹; model measurements and experiences are shared through the Interamerican Network on Government Procurement (INGP)²; and early feedback was gathered from the network, thus promoting model ownership, besides the direct benefits from participants' experience and knowledge.

This article presents the design and initial application of a maturity model for e-procurement, developed with support of the Organization of American States and the Interamerican Development Bank. The rest of this article is structured as follows: Section 2 describes the overall issues and related work on e-government and maturity models; Section 3 describes the eGPO-MM maturity model and its components; Section 4 presents the design and results of an initial study with 14 Latin American and Caribbean countries; Section 5 compares eGPO-MM with other maturity models; Section 6 explores some future work; and Section 7 summarizes and concludes.

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¹ IDB and OAS have supported the development of the e-GPO, but tool ownership remains with the Inter-American Network on Government Procurement (INGP).

² INGP: http://www.ricg.org/content/display_news.aspx.

2. Theoretical framework and state of the art

The potential of ICT to support government processes has been widely recognized (Yildiz, 2007); e.g., to create interconnectivity networks to improve the efficiency of service delivery, to encourage citizen participation, and to increase the transparency of administrative processes. Although there is no universally accepted definition of the concept of e-government (Yildiz, 2007), the United Nations and ASPA, (2002) defined it as “utilizing the Internet and the World-Wide-Web for delivering government information and services to citizens” and Fountain (2001, p. 4) spoke of Digital Government as “a government that is organized increasingly in terms of virtual agencies, cross-agency and public–private networks whose structure and capacity depend on the Internet and Web”. Hence, e-government initiatives arise from the combination of (1) the need to improve the quality and efficiency of public services, and (2) the acceptance of ICT as an important element to achieve that goal.

2.1. E-Government as a multi-dimensional concept

E-government is much more than merely providing online services (Andersen & Henriksen, 2006; Cresswell, Pardo & Canestraro, 2006); it also involves integrating public agencies and providers, 24/7 service delivery, assimilation of new laws and government regulations, and so on (Wimmer & Tambouris, 2002). Thus, technological change must be accompanied by organizational change, process redesign, information technology (IT) governance implementation (to achieve alignment between IT resources and business objectives), and human capital training.

2.2. Capability maturity models

The development of capability maturity models has been a strong trend in various technological and organizational areas. The best-known models are the CMM/CMMI family (Capability Maturity Model and CMM Integration), developed by the Software Engineering Institute (SEI)³; although developed for development, maintenance and acquisition of software products and services, their capability maturity levels structure and the mechanisms for determining those levels have been replicated by many other models in other areas.

In the SEI's definition (SEI, 2006), a capability maturity model “contains the essential elements of effective processes for one or more disciplines and describes an evolutionary improvement path from ad-hoc, immature processes to disciplined, mature processes with improved quality and effectiveness”. Thus, it typically describes best practices related to its scope and supports process improvement by providing evolutionary scales that describe improvement roadmaps.

2.3. E-Government maturity models

For our purposes, existing e-government maturity models can be categorized into three groups: governmental models, holistic approach models for e-government projects, and models of e-government evolution.

2.3.1. Governmental models

These models have been developed by governments, consultants and academics to help government agencies identify and improve their levels of maturity in relation to e-government. Stand out two Australian and Canadian examples: the Business Process Interoperability Framework (BPIF) (AGIMO, 2007) contains a maturity model that can be used by agencies to identify their current business-layer interoperability maturity level; the Service Delivery Capability Model (AGIMO, 2006) provides a

common framework to identify and describe the capabilities required to deliver a service to citizens; and the e-Government Capacity Check (Government of Canada, 2000) is a suite of tools for capacity diagnosis, used by public agencies to assess their capability to deliver electronic services to citizens.

2.3.2. Holistic approach models for e-government projects

Holistic models are designed to be applied in electronic public services development projects. A well-known model in the e-government academic community is Wimmer's Holistic Framework (Wimmer & Tambouris, 2002), which aims to support the integrated modeling of electronic public services and its synchronization with technological developments to ensure that the electronic service delivered by a project will meet all relevant requirements. Similarly, the Capability Assessment Toolkit (Cresswell et al., 2006) examines capabilities through 180 indicators, to determine whether an e-government project will be successful. Both models have been successfully applied in Austria (Makolm, 2006) and the USA (Cresswell, Pardo, & Hassan, 2007). Other related efforts, focused on assessing the benefits and impacts of e-government projects and proposals, are the frameworks of Esteves and Joseph (2008) and Montagna (2005), designed for ex-post (after implementation) and ex-ante assessments (before implementation), respectively.

2.3.3. Models of e-government evolution

The evolution of e-government is often modeled by sequential steps, in the *stages of growth models*. The UN & ASPA (2002) proposed five progressive stages: (1) *emerging*, the government's online presence is established; (2) *enhanced*, government sites increase in number and complexity, and the information becomes more dynamic; (3) *interactive*, users can download forms, e-mail officials and interact through the Web; (4) *transactional*, users can pay for services and transactions online; and (5) *networked*, full integration of electronic services across public agencies.

Other related proposals, reviewed in (Maumbe, Owei, & Alex, 2008) and (Shahkooh, Saghafi, & Abdollahi, 2008), are the model of Layne and Lee (2001), which identifies four stages of growth focused on functionality and technical capability; the model of Andersen and Henriksen (2006), which extends the Layne and Lee model by incorporating a customer-centric approach; the model of Gottschalk (2009) which focuses on interoperability; and the model of Klievink and Janssen (2009), which introduces the notion of dynamic capability theory to move up from one stage to the next.

2.4. E-procurement assessment models

Several assessment models have been proposed already, though not as maturity models.

2.4.1. Multilateral Development Banks (MDB)

An assessment methodology has been proposed by the Multilateral Development Banks (MDB), developed by the Asian Development Bank, Inter-American Development Bank, and World Bank (2004a, 2004b). Specifically, the Electronic Government Procurement Readiness Assessment (November 2004) is intended to conduct a high level review of its procurement environment to determine its level of readiness to make a transition to e-GP in a sustainable manner. Its objective is to assist jurisdictions to integrate the reform of their public procurement processes with the potential of technology. The framework provided has been developed both from research and experience with a range of existing procurement environments in different countries.

The framework is structured in 9 components: 1. Government leaderships, 2. Human Resource Management, 3. Planning and Management, 4. Policy, 5. Legislation and Regulation, 6. Infrastructure and Web Service, 7. Standards, 8. Private Sector Integration, and 9.

³ SEI: <http://www.sei.cmu.edu/cmmi>.

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