Chapter 4
Implementing Interoperability Standards for Electronic Government: A Case Study of the E-Ping Brazilian Framework

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ABSTRACT
Interoperability standards play an important role in the integration of systems and information sharing for electronic government. However, these processes do not just mean exchange of data but, mainly, integration of processes and transactions. Therefore, the implementation of these standards depends not only on technological aspects, but also on other variables of the institutional, organizational and economical contexts. Based on this scenery, this chapter discusses the implementation of the standardization process in an electronic government environment. It presents the findings from a case study of the Brazilian interoperability framework (e-PING), based on documents content analysis and face-to-face semi-structured interviews. As a result, it points out some aspects that may be conditioning in the setting of these standards.

INTRODUCTION
Standardization can bring several benefits for the public administration, such as improvement of data management, contribution for the information infrastructure, expansion of the contexts of action of the programs of the public policies, improvement of the accountability and promotion of the coordination of programs and services, among others.

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In the electronic government’s case, the ideal environment should be a single access point to the information and services. In this context, it is easy to identify the relevance of the adoption of standards due to the need of systems integration and information sharing. Akbulut (2003), Dawes (1996) and Landsbergen and Wolken (2001) already investigated these processes among government agencies and they identified the standards adoption as an enabler factor.
Standardization is necessary to facilitate the data exchange, their re-use along the time, and also to prevent the lock-in to proprietary tools and formats (EPAN, 2004). However, in order to a standard be succeeded is necessary its use and its acceptance by all of the agents involved in the transactions affected by its implementation.

Several factors can be conditioning in the adoption of standards by the government agencies, such as incompatible technologies, internal interests of each agency, dominant professional standards, external influences on the decision makers, and the level of decision power of the agency.

Based on these premises it can be clearly seen that the adoption of standards of interoperability by the government agencies is a complex process, due to the number of agents involved in the process, the environment where it takes place, the level of interrelation between the agents and the environment, besides the likely conflicts of interests originated by this interrelation. Therefore, it needs to be analyzed and understood, since the understanding of this process allows the creation of better conditions for dissemination and evolution of the specified standards.

The objective of this paper is, therefore, to identify what factors can be conditioning in the adoption of interoperability standards in electronic government’s environment. It presents a case study of the e-PING - Standards of Interoperability for Electronic Government, a framework that has been implemented by the Brazilian Federal Government since 2004 (Brasil, 2008).

**STANDARDS AND STANDARDIZATION**

A standard is a group of specifications to which all of the product elements, processes, formats, or procedures under its jurisdiction have to adhere (Tassey, 2000). For David and Greenstein (1990), a standard is a group of technical specifications adhered by a group of suppliers, tacitly or as a result of a formal agreement.

David and Steinmueller (1994) classify the standards in four categories: reference, minimum quality, interface and compatibility. The compatibility standards play a relevant role in the Information Technology field, because they enable data exchange among components of a specific system or between different inter-organizational systems.

According to Williams at all (2004), the development and implementation of compatibility standards not only technically define an inter-operational method among the different components in a network, but it also represents a proposal for the future of the complex socio-technical systems that are the form of an inter-organizational network.

Standards can also be classified according to the processes by means of which they are established. A distinction is frequently made among formal, *de facto* and *de jure*. Formal standards are created through standardization entities; *de facto* are technologies established by market mechanisms, and the *de jure* are the ones imposed by law (Hanseth & Monteiro, 1998).

According to Graham *at all* (1995), the standardization process represents an attempt to align interests, practices of businesses and expectations of a group of people with one interest to develop and to use the system that will be standardized. Therefore, the standardization is not just to provide a usable solution but, mainly, to articulate and to align expectations and interests (Williams, 1997).

In the context of Information Technologies (IT), the standardization can be defined as the process in which two or more agents agree and adhere to a group of technical specifications of a system, their parts or their functionality, tacitly or as a result of a formal agreement (David & Greenstein, 1990). Consequently, these standards enable and constrain at the same time the behav-
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