

# Development Stages of Digital Government

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## INTRODUCTION

In recent years, a number of authors have reported studies on the emergence and development of digital government or e-government using various criteria (Forlano, 2004; Holliday, 2002; Kaaya, 2004; Layne & Lee, 2001; Netchaeva, 2002; Reddick, 2004; Silcock, 2001; Stowers, 1999, 2004; UN, 2001, 2002, 2004). From such studies, models have been proposed which indicate two to six stages of e-government development. Some of the models place emphasis on the structural features of government agencies in relation to electronic provision of services; others place emphasis on the nature and evolution of government Web sites and corresponding services. Still, a few models consider the evolution of the use of information technology (IT) to facilitate the undertakings of government tasks. However, with the exception of the latter, the consensus emerges from the models that the development of digital government entails an evolutionary process starting with the creation of simple government Web sites for publishing information on the functions of government agencies. These simple Web sites further develop into sophisticated portal designs which correspond with the services provided, along with the levels of transactions with the users. The majority of the countries of the world are implementing e-government strategies and various assessments have categorized countries according to their stages of development based on the existing models. Apart from the brief description of the models, this chapter will also give examples of the levels of development of e-government services in different regions and countries.

## E-GOVERNMENT DEVELOPMENT MODELS

Scholars examining the characteristics of e-government strategies under implementation by government agencies have devised various models of e-government development. For example, Layne and Lee (2001) conceive a four-stage growth model for e-government development using local, state, and federal governments in the United States as points of reference. They refer to the first stage as cataloguing in which the governments develop Web sites

for presenting information about their respective functions and services. The second stage, called transaction, allows online transactions with citizens, such as renewing licenses and paying various fines. This stage is also associated with enhancement of online interfaces within the internal structures of governments. Layne and Lee refer the third stage as vertical integration, which they describe as “local, state, federal governments connected for different functions or services of government” (p. 123), and the fourth stage, horizontal integration, as “integration across different functions and services” such as “the business being able to pay its unemployment insurance to one state agency and its state business taxes to another state agency at the same time because systems in both agencies talk to each other or work from the same database” (p. 125). According to this model, each stage is associated with the types of functionalities involved along with the technological and organizational challenges facing government agencies that are implementing e-government strategies.

Silcock (2001) reports six stages that governments go through both in their delivery of services to the citizens electronically and in their own internal communication. These are (1) information publishing and dissemination involving creation of Web sites for posting information on government functions and services, basically a one-way communication; (2) official two-way transaction, such as replacing letter-writing or phone calls with e-mail exchange; (3) multi-purpose portals, whereby a single portal provides links to various government departments, allowing citizens to get the kinds services they need; (4) portal personalization, allowing citizens to incorporate online features as needed; (5) clustering of common services in which portal designs allow citizens to perform transactions with different departments from one point; and, (6) full integration and enterprise transformation of which Silcock says “old walls defining ‘silos’ of services have been torn down, and technology is integrated still further to bridge the shortened gap between front and back office” (p. 90). Thus, this is an advanced stage of the fifth stage.

In a related model, Netchaeva (2002) provides a description of five stages: the first stage involves the various departments forming online sites that carry information corresponding to departmental functions. In the second stage, the sites develop some degrees of

interactivity such as e-mail exchanges with ordinary citizens, while in the third stage, according to Netchaeva, “users are given the opportunity to take part in forums and opinion polls” (p. 408). The fourth stage involves various degrees of online transactions for provision of government services such as car registration, license renewals, and payment of fines. The fifth stage entails a comprehensive and unified government portal with a range of complex services to the citizens.

Stowers (1999, 2004) offers three stages of e-government services as virtual bulletin board, the Web reaching out, and 24/7 service delivery. Stowers further reports a four-stage model proposed by Sood as presence (i.e., presence of government information), interaction, transaction, and transformation; as well as another four-stage model posited by the New Jersey Center for Governmental Studies as static, interactive, transactional, and transformational (Stowers, 2004). Reddick (2004) provides a two-stage model of e-government growth in connection to municipalities in the United States. According to Reddick, the first stage involves cataloguing of information online and applies to the relationship of government to citizen, while the second stage involves the completion of transactions online and applies primarily to the relationship of government to business. The latter is associated with the cities that have advanced levels of e-government implementation. Heeks (2002), like many other authors, considers the growth of e-government as an evolutionary rather than revolutionary process; but unlike such authors, his discussion implies that the growth of e-government did not start with the creation of government Web sites. Moreover, he views it in terms of two models of technology use: an old model and a new model. In the old model, information technology (IT) is employed for automating the internal tasks of government to process data (and this goes back to the advent of computers in the government structures). In the new model, according to Heeks, information and communication technologies (ICTs) are employed to support the external tasks of government through data processing and communication.

While many scholars advocate e-government growth models that have evolutionary patterns, some of the authors have cautioned about generalizing such patterns. For instance, Yong and Koon (2003) contend that no single development model fits entire e-government implementation, while Accenture (2003) has described a pattern that depicts the maturity of e-government through a series of plateaus, namely, online presence, basic capability, service availability, mature delivery, and service transformation (but looking closely at the model, one can realize that it is evolutionary in nature).

Perhaps the most extensive studies to determine levels of e-government development and associated implementation features of almost all the countries of the world

are those of the United Nations’ Department of Economic and Social Affairs (DESA), Division for Public Administration and Development Management (Formerly the United Nation’s Division for Public Economics and Public Administration, UN-DPEPA). which categorizes the development of e-government into five main stages: emerging, enhanced, interactive, transactional and networked or fully integrated (UN, 2002, 2004). In the first stage (emerging), a country becomes an e-government player by establishing modest Web sites owned by individual government agencies for posting government and contact information. In the second stage (enhanced), the government’s Web presence expands to include more Web sites and features such as the links to other agencies, features for searching and e-mail addresses. In the third stage (interactive), more features are incorporated for interacting with the citizens, while the fourth stage (transactional) entails more comprehensive and secure features for various online transactions, including digital signatures and passwords. The fifth and last stage (networked or fully integrated) is envisioned for complete integration of a government’s Web resources, for instant access to (or delivery of) all services irrespective of the department.

One can clearly note that most of the above models of e-government development are closely related; they just differ in the level of detail employed to address the research questions of the authors. Based on common features of such models Kaaya (2004) has summarized the various models presented above into four main stages, starting from simple to sophisticated and interactive Web sites (Table 1).

## **ASSESSING COUNTRIES ACCORDING TO E-GOVERNMENT DEVELOPMENT**

It is worth mentioning that the UN-DESA’s model (hereafter referred to as the UN model), with its corresponding benchmarking of nations of the world, has attracted the attention of researchers in this relatively new area of study and has thus emerged as a sort of a standard development model. For instance, Forlano (2004) has discussed the UNDESA’s five stages of e-government development and provided an analysis of the e-government services of selected countries that correspond with each stage. The countries presented in Forlano’s study include Botswana (emerging stage); Vietnam (enhanced); China, Estonia, India and Malaysia (interactive); and Brazil, Singapore, Mexico and UK (transactional). Likewise, Martin and Byrne (2003), as well as Panagopoulos (2004), have discussed and provided summaries the of the UNDEPA’s findings, while Mutula (2002) has analyzed

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