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A Descriptive Framework for Federal Electronic Government: A Necessary Step Prior to Field Research

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INTRODUCTION

To date, there are relatively few empirical studies of electronic government (e-government), especially among federal agencies. This lack of empirical analysis might be considered alarming in light of the attention and resources being funneled toward e-government at the federal level. Arguably, before researchers, public servants and the public can evaluate the investments and results of e-government, we must arrive at some agreement on what it is and what it looks like when it is good.

As a prelude to an empirical analysis of federal e-government in the United States, this paper sets out to bring some focus to the issues surrounding e-government, such as target audiences, characteristics, functions and goals, so it might be evaluated through fieldwork. The paper begins by examining the impact of electronic commerce on e-government to provide a historical context for how e-government evolved and came to be. A review of *selected* e-government definitions then follows. An analysis of the content and synthesis of these selected definitions are then used to develop a descriptive framework of e-government. The paper concludes by asserting that field research, using the descriptive framework presented in this paper, is necessary at the federal level to fill a gap in the e-government literature.

ELECTRONIC COMMERCE AND ELECTRONIC GOVERNMENT

The theoretical grounding for e-government can be found, in large part, in electronic commerce literature. Empirically, one can argue that consumers' expectations for expediency and round-the-clock access to goods and services, long characteristics of e-commerce, are driving similar standards for governments to deliver agency information and services. Definitions of e-commerce help to explain this point. For instance, one major definition of electronic commerce states that this application refers to any business activity that takes place using an electronic medium, frequently the Web (Gangdopadhyay 2002). From a practical perspective, electronic commerce and e-government emerged gradually and provide methods of serving business and government in ways never imagined before. Adam, Dogramaci, Gangopadhyay and Yesha (1999) describe the major objectives of electronic commerce to include increasing the speed and efficiency of business transactions and processes and improving customer service. Increased speed and efficiency are also of considerable interest to federal agency managers and other leaders within the federal sector.

Likewise, Holmes (2001) states that the e-government movement is being driven by the need for government to cut costs and improve efficiency, meet citizen expectations and improve citizen relationships and facilitate economic development. Electronic commerce and e-government share many common attributes, as depicted in Table 1.

Comparing some of the technology and management underpinnings of electronic commerce and e-government also yields similarities. Zwass (1996) identified a generic framework and taxonomy for electronic commerce, which includes:

Infrastructure - the hardware, software, databases and telecommunications that together deliver such functionality as the Web over the Internet and support Electronic Data Interchange and other forms of messaging over the Internet or over value added networks;

Services – messaging and a variety of services enabling the finding and delivery of information, as well as negotiation, transaction and settlement; and

Products and Structure – direct provision of commercial services to consumers and business partners, intra-organizational information sharing and collaboration, and organization of electronic markets and supply chains.

When viewed through the lens of the federal government, Zwass' framework is in many ways applicable to public sector organizations. Federal agencies, in particular, are increasingly employing information technology including hardware, software and the world-wide-web (WWW) to support their operations (West 2000).

To many federal agencies the early days of e-government were defined by establishing a web presence and providing informational messages and content to the public. Federal agencies have also begun to offer interactive and transactional services, such as electronic tax filing by the Internal Revenue Service (IRS) and Internet-based retirement claims processing by the Social Security Administration (SSA). These types of applications reflect Zwass' services element and further illustrate the commonality between e-commerce and e-government.

The final piece of Zwass' framework discusses collaboration and provisions for direct services to consumers, or in the case of federal agencies, public users and partners. These partners may be other federal, state or local agencies with whom federal agencies have established and maintained a business rela-

Table 1 Electronic Commerce and Electronic Government Similarities

Electronic Commerce	Electronic Government
Expected cost savings	Expected cost savings
Communication channel and access to products and services for consumers	Communication channel and greater access to government services and public information
Reduced cycle times	Reduced processing times
Simplified business processes and establishment of Customer Relationship Management	Reduced government "red tape" and economies of scale
Marketing and advertisement of products and services	Advertisement and dissemination of information and services
Improved Customer Service	Improved user satisfaction

tionship. Other partnerships may be with private or not-for-profit product and service providers who have contracts or other forms of collaborative relationships with federal agencies. One tenet of e-government is providing direct service delivery or customer-centric service to the public and partners through a variety of technologies. Collaboration with several federal agencies to align services by "life events" rather than by agency function for the benefit of the public is often a keystone of this collaboration.

> *One of the most compelling arguments for electronic government is the opportunity it presents to provide seamless services arranged, not from a bureaucratic viewpoint, but by subject or life event, such as a birth in the family, marriage, a death, moving house, starting school, setting up a business, declaring bankruptcy, being accused of a crime (Holmes 2001, p.20).*

The ability of Zwass' framework to explain both private and public sector activities underscores the influence of electronic commerce (e-commerce) in e-government.

SELECTED DEFINITIONS OF ELECTRONIC GOVERNMENT

When and where the idea of e-government officially arose is subject to speculation at this point. Of perhaps even greater importance, is the question of which elements or components bind e-government together into a coherent and logical construct usable in federal agencies. E-government has generated such enthusiasm both inside and outside of government that definitions of it run the gamut. Not surprisingly, public sector definitions include executive and legislative branch leaders. However, other sources of definitions include private industry, independent councils, consortiums and symposiums. This diverse group of definitions provides a variety of e-government characteristics. To investigate further, this paper presents a series of e-government definitions, beginning with government sources.

Government Definitions

The recently enacted Electronic Government Act of 2002 provides a definition of e-government in federal law for the first time. The Act states that e-government is the use of web-based Internet technology to improve access to and delivery of government information and services to the public and other government units. Stated goals for e-government in the Act include improvements in government operations as measured by goals such as efficiency, effectiveness, service quality and transformation. It's noteworthy that the definition is so web-centric and does not distinguish between individual and organizational users as part of the public.

The General Services Administration's Office of Electronic Government (General Services Administration 2001) took a similar approach and described e-government as a way to offer citizens and businesses the opportunity to interact and conduct business with government by using electronic methods. The overall objective of e-government is to give the public easily accessible, e-government services and information. The Office of Electronic Government suggested that e-government was *enabling* government to move from passive to active service delivery and information flow. One final e-government definition is provided by the General Accounting Office, where it referred to e-government as "government's use of technology, particularly web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities" (2000, p.7)

Councils, Committees, Symposiums

The review of e-government definitions outside of the government sector begins with the Council for Excellence in Government (2001). The council published a list of criteria, which they believed should be included in any definition of e-government. These principles include:

- easy to use
- available to everyone
- private and secure
- innovative and results-oriented
- collaborative
- cost-effective
- transformational

The Committee on Computing Communications Research (National Academy of Science 2002) had a less comprehensive list of characteristics than the Council for Excellence in Government, and described e-government as the application of information technology and associated changes in agency practices to develop more responsive, efficient, and accountable government operations while fostering a more informed and engaged citizenry. Trotman (2002), director of marketing at Accenture, described e-government as the application of the tools of e-commerce and communications technology to the delivery of government services and the delivery of those services via electronic channels.

The National Electronic Commerce Coordinating Council (NECCC) defined e-government as the transformation of internal and external business processes toward customer-centricity based upon service delivery opportunities offered by new communications technologies (such as Web-based technologies) to better fulfill the purposes of government to provide efficiency and effectiveness as well as fairness and equitability (National Electronic Commerce Coordinating Council 2000). West (2000) also described e-government as the delivery mechanism for information and services online through the Internet or other digital means. While his definition does not provide as much detail as others, it captures the use of the Internet, a consistent theme in other definitions. Norris, Fletcher, and Holden (Norris, Fletcher et al. 2001) analyzed survey data gathered by the International City/County Management Association (ICMA) and described e-government as the delivery of services and information, electronically, to businesses and residents, 24 hours a day, seven days a week.

The Institute of Technology Assessment (1999) concludes this particular section of definitions and described e-government as the use of new information and communication technologies to support the workings of governments and public administrations. ITA goes further to identify expected outcomes or goals. They are:

- Better and more efficient services to businesses and citizens
- Greater efficiency and openness of government administration
- Cost savings for the taxpayer

Private Sector Definitions

The analysis includes definitions from private sector entities to see how their definitions of e-government might be similar or different from public sector proposals. The National Information Consortium (NIC) sponsored a market survey that described e-government as the birth of a new market and the advent of a new form of government – a form of government that is a powerful force in the Internet economy, bringing together citizens and businesses in a network of information knowledge and commerce. The NIC report described e-government solutions as Internet based or electronic transactions among government to Citizen (G2C), government to Business (G2B), and Government to Government (G2G). It also included a list of core components for e-government solutions that included government services and applications, enterprise portal management, and back-office infrastructure integration (Momentum Research Group 2000).

Deloitte Research (2001) defined e-government as the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees. Morin (2000) defined "public sector" e-government as the electronic interaction (transactions and information exchange) between governments, the public (citizens and businesses) and employees. Finally, Verton (2000) characterized e-government as the automation of government-to-government and government-to-citizen interactions. He asserted that collaborative software and other tools are expected to help make transactions with government agencies, such as voting or renewing a driver's license online, faster and more efficient.

ANALYSIS OF SELECTED DEFINITIONS OF ELECTRONIC GOVERNMENT

Eight of the fourteen definitions and descriptions of e-government include the roles of citizen and business. Eight discuss the use of technology. Six entail information. Three contain communication as a key component of e-government. Three contain the Internet. Two definitions mention B2G and G2G relationships and two definitions emphasize the importance of security, privacy and confidentiality. Missing from all but one of the definitions is explicit reference to e-commerce in the function and foundation of e-govern-

ment. Many e-commerce characteristics, such as round-the-clock access and the Internet, are mentioned in several definitions. It is important to note that these definitions are not exhaustive, nor do they represent a random sampling of e-government definitions. They do, however, represent, at a high level, the present day view of e-government from a variety of perspectives. These perspectives are based largely on the use of technology, such as the Internet to conduct business with other organizations and deliver services to the public.

On the whole, contemporary definitions of e-government are insufficient for field research. Many are too nebulous or contain narrow points of view focused primarily on technology. While technology is *an* important element in e-government, it is by no means the only one. The descriptive federal framework provided by this paper is broad based and underscores the relationship among critical domains necessary for federal agencies to deliver services to the public.

A COMPREHENSIVE FRAMEWORK FOR FEDERAL E-GOVERNMENT FIELD RESEARCH

Banks, Oxman, Rodgers and Irish (2002) point out that a definition of e-government is the foundational architectural layer upon which multiple agencies can build and realize cross-organizational implementation strategies, operational plans and measures of effectiveness. "A common definition of e-government will afford government agencies at all levels a common frame of reference by which to measure the effectiveness of their e-government implementations" (Banks, Oxman et al. 2002). As the preceding selected review of definitions shows however, depending upon the source, the term "e-government" *assumes* a myriad of meanings. This makes it an even more nebulous and difficult topic to study and discern. Arguably, before federal agency managers will be able to successfully lead their agencies to an e-government platform and capitalize on its expected efficiencies, a framework is required.

The framework proposed in this paper begins with an explicit and comprehensive analysis, which we believe serves the function of a definition proposed by Banks, Oxman et al. In addition, this paper suggests that researchers must also consider the exchange relationships as a complement to the descriptive federal framework, whether it is G2C, G2B or G2G. Understanding the relationships in use by public organizations is a way to assess whether the e-government offerings are available for all target audiences listed in the descriptive framework.

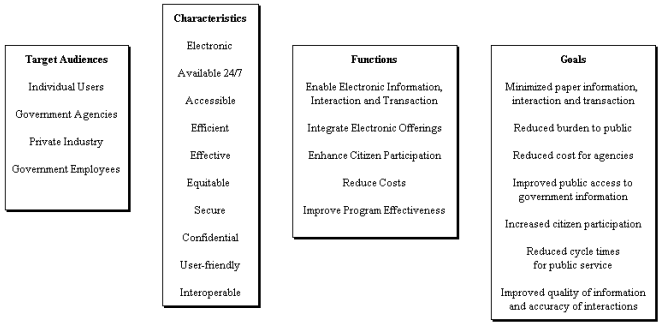
Many current definitions of e-government contain comparable attributes and at least three distinct categories emerge, to which we add a fourth—goals. They are:

1. Target audience	Who are the intended users?
2. Characteristics	What are the attributes or features?
3. Function	What is the purpose?
4. Goal	What are the expected outcomes?

One point largely untouched by the definitions is the intended goal or outcome of e-government. What federal agencies expect to be the end result from e-government has significant implications for budgetary support, integration in strategic plans and subsequent evaluations. Therefore, our descriptive federal framework includes a "goal" component to capture the expected results or outcomes of e-government. To illustrate how these categories emerged, the analysis matched similar terms from each of the definitions to identify patterns. The majority of e-government definitions follow a similar design beginning with a target audience. In some cases, the audience consists of the general public, federal agencies or private sector. It is this domain where the traditional G2C, G2G and G2B relationships reside. Following the target audience, the selected e-government definitions reviewed become descriptive, highlighting key features or attributes. Finally, a specific function or purpose is identified and linked to enhancing a particular aspect of federal service, such as operational efficiency.

This leads us to the need for a descriptive framework for federal e-government. The lack of agreement on a definition and other components of e-government make it nearly impossible to perform either descriptive or evaluative research on e-government in the field. This paper proposes the following descriptive federal electronic government framework to fill this void in the literature in Figure 1.

Figure 1 Descriptive Framework of Federal E-Government



MOVING E-GOVERNMENT RESEARCH INTO THE FIELD

A general agreement on the meaning of the term e-government should help improve the design and results of empirical field study. This paper proposed a descriptive framework for federal e-government that brings some order out of the current chaos and provides field researchers a foundation to begin empirical study consistent with Banks et al as cited earlier. To date, researchers interested in e-government either had to create their definition or framework or pick from among some of the incomplete and sometimes-conflicting collection outlined earlier in this paper. With some customization, the descriptive framework presented is usable by governments at all levels around the world seeking to explore e-government in greater detail.

As proposed, this framework for federal e-government will be tested empirically. The following questions will help to validate or refine the descriptive framework for federal e-government:

- Are selected federal electronic government projects performing electronic government consistent with the federal electronic government framework?
- What is the predominant electronic government model federal agencies are using to provide service to the public?
- What characteristics, if any, of electronic commerce are federal agencies able to employ to provide electronic government services?

The framework might also be instrumental in allowing researchers to address other important questions such as:

- Are citizens being engaged by the G2C relationship or are businesses and other public agencies the primary beneficiaries of e-government?
- Are there differences in the functions and characteristics of the framework that depend upon the target audience?
- Is electronic government meeting the goals outlined in the framework?
- Should items identified in the framework relate across the four categories? If so how?

The answers to these questions are unknown. However, with a usable framework now part of the equation, researchers have the opportunity to use it to compare against the real world and lay the groundwork for future empirical studies of electronic government.

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