

E-GOVERNMENT DEFINED: AN OVERVIEW OF THE NEXT BIG INFORMATION TECHNOLOGY CHALLENGE

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ABSTRACT

This paper defines electronic government, and examines its ongoing evolution from simple publishing to fully integrated service delivery. We discuss the current status of e-government at different levels, and the challenges involved in leveraging digital technology to create more effective and accountable government.

Keywords: Government, electronic government, e-government, digital government, digital democracy, information technology.

INTRODUCTION

The rise of the Internet and e-commerce challenged companies to adopt new ways of doing business. Unprecedented access to information also empowered consumers, shifting the balance of power between buyers and sellers. A similar revolution looms in the form of electronic government, which in one sense can be described as e-commerce applied to the public sector. Governments eager or compelled to implement e-government face many of the same challenges, as well as entirely new ones stemming from the unparalleled scope and complexity of government functions and constituencies (governments of large states like California dwarf even the largest global corporations). They will have to adopt new ways of conducting business and delivering services, and adapt to a fundamentally altered relationship with their constituents. IT professionals and educators stand once again at the front line of this revolution, and need to understand its scope, direction, and risks.

WHAT IS E-GOVERNMENT?

Definition and Goals

Electronic government has been defined in a number of ways. Most broadly, it encompasses all activities by government or relating to government that are conducted digitally. More specifically, e-government describes the use of primarily Internet based information technology to enhance (many say transform) the performance and accountability of government through better/faster/cheaper:

- (a) *Execution* of government activities, especially *delivery* of services;
- (b) *Access* to government information and processes;
- (c) *Participation* in government by citizens and organizations.

Most e-government initiatives share the goal of using the Internet and the Web to create “citizen-centric” government. Examples span everything from online voting to chats and forums with

elected officials; from online licensing, grants, student financial aid, and tax transactions to incorporation services.

Participants

Like e-commerce, e-government, can be divided into categories based on who participates.

- **G2G.** Government-to-Government includes interactions within or between governments.
- **G2B.** Government-to-Business covers exchanges between government and commercial and non-profit enterprises.
- **G2C.** Government-to-citizen describes those between government and individual citizens.
- **C2C.** Citizen-to-Citizen includes interactions between citizens that are facilitated by or otherwise related to government.

Of these categories, the biggest by far is G2G. Governments are inherently large, complex organizations that must constantly communicate and transact across many levels and divisions: city to county, county to state, state to federal, legislative to judicial, for example. Another huge category is G2B, since large organizations require large amounts of a wide variety of goods and services. While G2C receives a lot of press, most of the interaction between government and citizens occurs at the local level, where e-government is the least developed (see Figure 2).

EVOLUTION OF E-GOVERNMENT

Genesis and Driving Forces

The roots of e-government go back to the earliest days of electronic computing. The US government drove much of the development of computers and networking, including creating and nurturing the Internet. Yet it took the exploding popularity of the Web and e-commerce to demonstrate the possibilities of e-government. The enthusiastic embrace of new ways of exchanging information and transacting business has inevitably caused companies and consumers to expect similar services from government. For their part, most government entities recognize this imperative, even though they are struggling to translate the vision into reality.

Pursuing the Promise

Also driving e-government initiatives are the potential benefits of “going digital.” Most benefits involve improving efficiency and lowering costs across all government functions—with the goal of driving up productivity in both the public and private sectors by enabling fast, economical delivery of information and services to citizens, businesses, and other government entities. An Arizona study found that online license renewals cost the state \$2 per transaction, versus \$7 over the counter (1). Even these dramatic savings are eclipsed by the productivity losses that stem from millions of citizens having to leave work to stand in lines.

Another primary area of perceived benefits surrounds citizen empowerment and stronger democracy expected to ensue from making government more responsive and accountable. Indeed, a poll conducted in 2000 found this to be the most significant benefit in the eyes of the majority of respondents—beating out greater convenience by a factor of three to one (2).

Evolutionary Stages

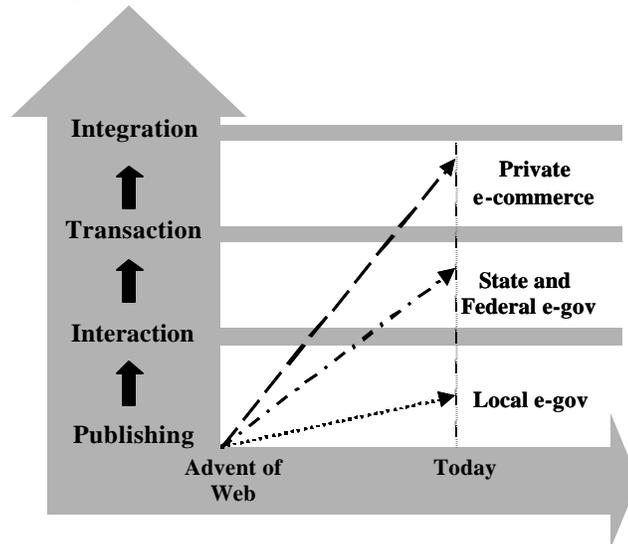
Like e-commerce, e-government demonstrates a progression through four distinct stages of sophistication and functionality (3). The preliminary phase involves simply publishing information on the Web and Web-based Intranets. Just as corporations started by putting up websites with little more than contact information, governments are following a similar path. The difference is that governments are progressing more slowly (see Figure 1); many government sites in fact remain stuck in this first evolutionary step.

The next phase of development is interaction. At this level, users interact with information in the form of a survey, an account, or another means of personalizing the Web experience.

The transaction phase represents a far more significant step. At this level constituents and government can conduct real-time transactions, such as delivering a tax refund or paying a parking ticket, entirely online.

The final, mature stage of e-government is integration, which entails leveraging digital technology to seamlessly connect and align internal processes with external services; few government entities have reached this lofty plateau (4).

Figure 1 – E-Government Evolution to Date



E-GOVERNMENT TODAY

Overview

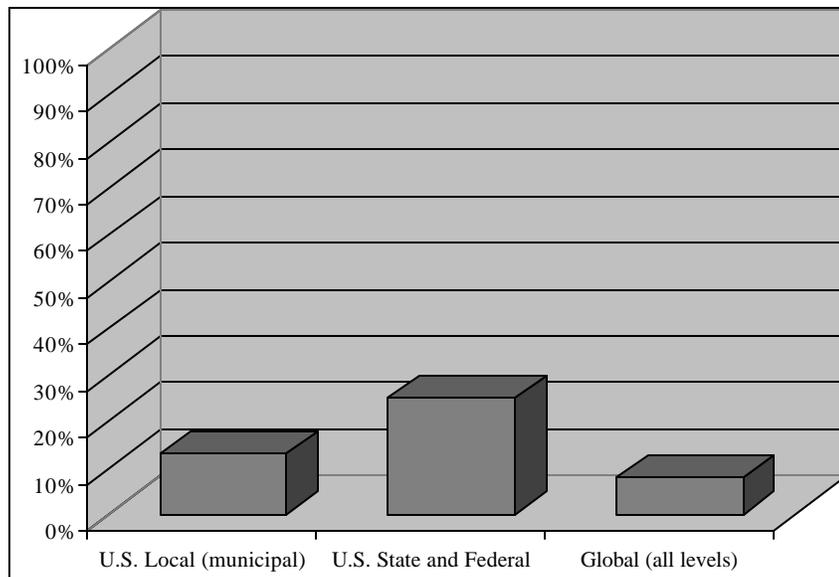
Despite many initiatives and much enthusiasm on the part of governments and their constituents around the globe, e-government is clearly in its infancy. In many countries it is virtually non-existent. Even in the United States; the Internet's birthplace, most local government agencies have a website offering little more than contact information. The federal government, despite its unparalleled resources, admits having some way to go before realizing a seamlessly wired government "connecting the world to all U.S. government information and services" (5).

True e-government entails fully transactional online services. However, just moving existing information and transactions online is not enough. According to Christopher Hoenig, a noted e-government observer and advocate, going transactional should not be viewed as an end in itself.

Most E-government sites are shallow e-commerce applications and portals overlaid as a thin veneer on top of massive, outdated organizations and aging information technology systems. They all too often fail to transform a way of doing business or to deliver outstanding return on investment. (6)

The transformation Hoenig calls for involves moving beyond transaction to integration—which in turn entails redefining entire processes (and often entire organizations) around constituents' needs. But, if transactional e-government represents just a beginning, most government entities have not yet begun the journey. As Figure 2 shows, less than 20% percent of US government websites surveyed in the summer of 2001 offered services that could be completed entirely online. Most other countries scored significantly lower (7)

Figure 2 - Percentage of Government Websites that are Transactional



E-Government Examples

E-government in early 2002 remains more a promise than a reality, but a number of existing sites illustrate its potential. Some local, state, national, and international governments boast comprehensive, well-integrated portals through which citizens and organizations can conveniently initiate and complete a wide array of government related business. These exemplary sites strive to streamline and personalize the experience by identifying users and their purpose. They feature customized entry points and services for government employees, citizens and businesses, and other agencies and governments. They de-emphasize governmental divisions, organizing themselves instead around topics and services relevant to their constituents. They also incorporate sophisticated query and search functions to help users quickly locate the information and services they need.

Table 1 summarizes examples of both typical and advanced websites at different levels of government.

Table 1 – Web Portal Examples

<u>Name and URL</u>	<u>Level</u>	<u>Participants</u>	<u>Stage</u>	<u>Comment</u>
Economic Dev. Council of Collier County, Florida www.enaplesflorida.com	Local (county)	G2B	Interact	Designed to inform and promote; interactivity includes special premium access for member organizations
City of Colorado Springs www.springsgov.com	Local (city)	G2G, G2B, G2C	Transact	Comprehensive portal to city services and info; product of an intensive e-gov initiative
State of Alaska www.state.ak.us	State	G2B, G2C	Interact	Limited interactivity, very limited transactionality confined mostly to online job application; consists mostly of simple lists of links to state agencies
State of North Carolina www.ncgov.com	State	G2G, G2B, G2C	Transact	Customizable, comprehensive portal to state government services for all constituents
US Government www.firstgov.org	National (federal)	G2G, G2B, G2C	Transact	Ambitious initiative has disappointed, garnering visits from less than 0.3 percent of non-government Internet users in a recent month; most users bypass gateway to go directly to relevant agency (8)
Government of Singapore www.ecitizen.gov.sg	National (City-State)	G2G, G2B, G2C	Transact	Highly advanced, comprehensive services portal for one of the world's most technologically progressive city-states; citizen can complete nearly all government services online via a ubiquitous broadband network

E-GOVERNMENT TOMORROW: ISSUES AND CHALLENGES

Governments face several major challenges in transitioning to e-government. Implementing Web-based applications for thousands of government services forces them into new, uncharted territory. Government agencies must carefully consider each challenge and systematically approach each new area defined by their expanding boundaries. Table 2 summarizes the major challenges and risks of e-government from the perspectives of government and constituents.

Privacy. Citizens feel that lack of privacy protection is the biggest deterrent to conducting transactions online. A recent survey by the Council for Excellence in Government found that 64% of respondents reported concern about government computers being vulnerable to hackers. Sixty five percent were very concerned about identity theft. Fifty-seven percent said Internet users should forgo some privacy if it serves homeland security, but only 47% liked the idea of a national identification card (9).

Security. Providing adequate security for a wide array of services—from online searches to online transactions—represents a tremendous challenge. Virus attacks, for instance, can shut down websites for days. Another challenge involves using firewalls and barriers to secure data, without blocking constituents from legitimate access. Citizens must feel confident that private information they submit will not be lost, sold, or otherwise misused.

Table 2 – Major Challenges of E-Government

<u>CHALLENGES</u>	<u>RISKS TO GOVERNMENT</u>	<u>RISKS TO CONSTITUENTS</u>
Privacy	Erosion of confidence and trust in government	Encroachment on personal freedoms
Security	<ul style="list-style-type: none"> • Loss or misuse of data • Erosion of confidence and trust in government 	Loss or misuse of information
Costs	<ul style="list-style-type: none"> • Low return on investment • Resource scarcity 	<ul style="list-style-type: none"> • Higher taxes • Higher charges for services
Technical Issues	<ul style="list-style-type: none"> • Inadequate infrastructure • Obsolete technology • Poor scalability 	<ul style="list-style-type: none"> • Lack of accessibility • Lack of usability • Lack of necessary skills and knowledge
Competition	<ul style="list-style-type: none"> • Duplicated activities across agencies • Territorial conflicts • Conflicts of interest 	Inability to compete
Empowerment	<ul style="list-style-type: none"> • Hyper-responsive government (over-government, unfocused government) • Loss of governing control 	Information overload
Accessibility	<ul style="list-style-type: none"> • Disenfranchisement of disabled, low-income, non-English speakers, and other disadvantaged constituents • Widening the digital divide 	Disenfranchisement

Costs. The federal government will spend about \$45 billion on information technology in 2002 (10). Despite this impressive level of spending, the current budget allocation for e-government implementation falls significantly short of the \$6 billion needed, according to one analysis (11). The vast amounts spent on e-government initiatives raise questions of costs versus benefits and return on investment. The high cost of implementation may also force some budget-strapped agencies to charge constituents for access to information, and increase charges for services (12).

Technical Issues. The sheer scale and complexity of government presents enormous technical challenges to going digital. Inadequate infrastructure, obsolete technology, and scalability issues represent some of the more pressing concerns. Risks to some constituents include inaccessibility to systems and lack of skills and knowledge needed to use them.

Competition. US Government policy generally prohibits government sectors from competing with private businesses or citizens, since government typically enjoys an unfair advantage in terms of size, resources, and recognition. Yet competition does occur, witnessed by the US Postal Service (USPS) competing with the private package delivery industry. The US Postal Service's recently launched eBillPay allows citizens to use government services to pay bills online, putting USPS in direct competition with private e-commerce companies offering the same services (13). Other issues involve e-government turf battles, and potential conflicts of interest stemming from, for example, commercial advertising on government websites.

Empowerment. Concerns exist that citizens can have too much access and input into government. Government risks becoming hyper-responsive to overly involved constituencies electronically voting on and otherwise influencing every conceivable issue and decision (14).

Risks for individuals and organizations include making sense of enormous amounts of government-related information.

Accessibility. Only two percent of government websites provide disability access (15). A somewhat higher—but still small—percentage offer alternative languages. If a government services system does not provide access to citizens who are physically impaired, speak a language other than English, or denies access to groups for any other addressable reason, it fails to serve its full constituency. Failure to accommodate any group of users, because of disability and/or socio-economic factors, results in disenfranchisement and widening of the digital divide.

CONCLUSION

Fundamentally, e-government is about leveraging technology to reorient government around treating citizens and businesses like customers, rather than as supplicants (16). Though its evolution has thus far proven somewhat halting, e-government is unquestionably gaining momentum. The prospect of dramatic transformations in the way governments function, interact, and relate to their constituencies has launched hundreds of ambitious initiatives as well as much debate about the challenges and risks. Understanding those challenges and risks will help prepare governments and citizens alike to better meet the first category and mitigate the second.

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