Center for
Technology in Government

International Digital Government Research:

A Reconnaissance Study (1994–2008)

UPDATED VERSION

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Executive Summary

Today, digital government (DG) research is being conducted all over the world. Most of this work focuses within the geographic and political contexts of individual countries. However, given the growing influence of global economic, social, technical, and political forces, the questions embedded in digital government research are now expanding to international dimensions. A reconnaissance study such as this one focuses on the defining characteristics of a topic rather an in-depth analysis. In this report, we describe the size, scope, variety, and trajectory of the field. We have not exhaustively analyzed this body of work, nor have we attempted to evaluate its quality. Rather, we present our findings on the current nature of international digital government research and illustrate it with selected studies and organizational profiles.

This reconnaissance study is part of a multi-year effort funded by the United States (US) National Science Foundation (NSF) to create a framework for a sustainable global community of digital government researchers and research sponsors. It takes a broad look at the current state of international digital government research to identify its main contours and current directions. International digital government research explicitly focuses on understanding topics that cross the jurisdictions, cultures, or customs of different countries. This report provides a baseline against which to measure the future development of internationally-oriented digital government research.

This study relies on literature reviews, web searches, and documentary analysis to address broad questions about the scope and direction of international digital government research between 1994 and 2008. Overall, we found 276 articles and reports published in English in forty journals, the proceedings of thirteen conferences, and the Web sites of twelve research-oriented organizations. The journals that published international digital government research included a mixture of public policy and management, information systems and management, and dedicated e-government or digital government journals. The conferences cover general information science, information systems, or government conferences with significant e-government tracks, plus conferences devoted to e-government research. This body of work is a small fraction (7-9 percent) of all digital government research published during the same period. The research varies considerably in scientific rigor, with more recent work exhibiting increasingly higher quality data and methods.

Generally, there was an upward trend in the total number of internationally-oriented publications until 2006 when the numbers began to decline. The largest number and greatest diversity of publications specific to international digital government appeared in 2004 and 2005.

We organized these publications into six categories: comparative studies, benchmark reports, regional studies, fundamental issues, best practice studies, and transnational studies. Comparative studies comprised about one-third of the articles found for the years we examined, and benchmarks one-quarter. Fundamental issues and regional studies made up another quarter. Best practice and transnational studies represented much smaller portions of the total (nine percent and seven percent respectively).

Comparative studies represent the largest proportion of the articles we found as well as the earliest examples, dating back to 1994. Many comparative studies examine countries within the European Union (EU), or other highly developed countries. Comparative studies usually focus at either the national or municipal level and cover a range of topic areas including policy, implementation, management, impact evaluations, and themes related to democracy. Of the articles we sampled, two main areas emerged – (1) a strong emphasis on reviewing different countries' practices or models, and (2) research that challenges or extends existing frameworks to include contextual factors such as culture, national political structure, and social norms.

International digital government benchmark studies are well established and widely disseminated. Several have been published over consecutive years starting in 2001 by large intergovernmental entities such as the United Nations (UN), the World Bank, and the International Telecommunications Union. Government entities have also financed benchmark studies conducted by universities or private enterprises. Topics include government online services, web site quality, maturity, and penetration. In addition, citizen demands, preferences, and perceptions are often benchmarked. A variety of methodologies, standards, and definitions were present in the sample of benchmark reports we reviewed making it difficult to compare findings or to reach broadly consistent conclusions across sources or time periods. The number of benchmark studies declined substantially in 2008, possibly due to rising criticism about how these studies are designed and used.

Regional studies, fundamental issues, best practice, and transnational categories represented smaller proportions of the research literature. Regional studies often focus on a single world region or compare one world region to another. Research on regional concerns is concentrated in Europe, but we also found articles that addressed Africa and South America.

Fundamental issues studies generally focus on governance and strategy issues, success and failure factors, research reviews , evaluations, and development of explanatory models and frameworks. Much of the theory-building work we uncovered falls into this category.

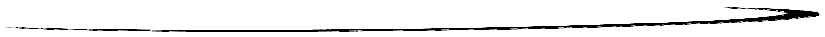
Best practice articles in our review provided descriptive "snapshots" of how countries or municipalities around the globe are realizing digital government. Best practice articles mainly examined organizational and technical issues associated with e-governance, online participation, and effects on democracy. They tend to rely on case stories rather than structured forms of analysis.

We found several different kinds of transnational studies. The majority of transnational research publications focused on pan-European issues that address the unification goals of the European Commission. Some transnational work focused on two or more countries working together to solve a shared problem; other work investigated how the actions or issues of one country impacted another country. In addition to Europe, we also found transnational work focused on the Caribbean, Latin America, the United States, and Canada.

International digital government research is conducted by individual scholars as well as by large and small organizations. The work is supported in a variety of ways from major, multi-year grants from government organizations, to self-funded projects sponsored by businesses as well as public and nonprofit organizations, to independent work by single investigators. There appear to be three main categories of researchers – large intergovernmental organizations and multinational corporations (such as the UN, Organization for Economic Cooperation and Development (OECD), and Accenture), academic institutions and nonprofit research centers (some involving multi-organizational partnerships), and individual scholars.

A mixture of government agencies, international governmental organizations, private industry, think tanks, and non-governmental organizations have sponsored significant programs of international digital government research. Global intergovernmental organizations usually sponsor global studies encompassing most or all countries. Occasionally, they concentrate on a specific group of countries, usually defined by their common level of economic development. Most of these studies concentrate on developing countries with the aim to promote economic and social development. The European Commission Directorates General for Research and for Information Society and Media have sponsored a large number of international projects that are diverse in topic and approach, but all address in some way the overarching themes of European unification.

Government research organizations fund mainly university-based scientific research, although there are some significant variations among countries. For example, the US National Science Foundation (NSF) funds university research whose purpose is to advance all aspects of science and engineering, except medical science. In comparison, the EC funds not only university-based researchers, but often funds work by private companies and public-private teams.



Building an International Digital Government Research Community

Given the growing influence of global economic, social, technical, and political forces, digital government research is expanding to include international dimensions.

Introduction

For most people, the idea of "government" is linked to a particular place. We associate government with a town hall or capital city and with the laws and policies that apply to the people and organizations located in a specific area of political geography. For instance, municipalities provide fire protection to their residents, states issue professional licenses to people who live or work with the state, and the national government defines what it means to be a citizen of a country. At the same time, we know that governmental jurisdictions and programs often overlap within a single country. Taxes, emergency services, transportation networks, and public schools are just a few examples.

This pattern of overlapping governmental policies and activities increasingly goes beyond national borders. For example, any global business that collects personal information from customers must comply with the privacy laws of multiple countries. If you live and work in one country but are a citizen of another, special international tax agreements apply to your income. The radio-frequency identification (RFID) chip or bar code in passports are checked by immigration officials all over the world. Government managers negotiating contracts with private sector companies are often not only outsourcing work, but also "off shoring" it, along with associated accountability, to people and subcontractors subject to different laws in other countries. International law enforcement, intellectual property rights, and global trade and finance all operate simultaneously under the rules, practices, and cultures of different nations. Broad socio-demographic trends like migration of jobs and workers, global health concerns such as swine flu and AIDS, and the environmental impacts of human activity are all concerns for governments on every continent. All of these international activities have at least one thing in common: they involve the collection, use, and management of information.

Digital government as an emerging global research domain

Over the past fifteen years, a global field of inquiry has been emerging at the intersection of government, society, and information and communication technologies. This domain is characterized by different labels, including "e-government," "e-governance," and similar terms (see Yiltze, 2007; Brown, 2005; Grönlund and Horan, 2004). The different terms stem in part from the development of the concept over time. In the early 1990s, government reform efforts were closely linked to the creative use of information technology to transform bureaucracy, including efforts to redesign back office work processes and support them with new applications of technology focused on citizen services. This push was typically labled "e-government." The view of e-government has

gradually expanded to "include not only services and administration but also democratic processes and the relationships among citizens, civil society, the private sector, and the state. Collectively this broader view constitutes what is coming to be understood as "e-governance" (Dawes, 2008). E-government focused on the use of information and technology to support or improve existing public policies and government operations and to provide comprehensive and timely government services. E-governance, is seen as a more fundamental effort to redistribute power across all sectors (Roy, 2005) and thus involves concerns for participation, inclusion, and democratic processes. In this report, we use the term "digital government" – a term coined by the US NSF in 1999 – as an umbrella to represent the full array of concerns related to the relationships between ICT and the public sector. Accordingly, "digital government research" attempts to illuminate and explain this phenomenon by focusing on the intersection of computer and information sciences, social and behavioral sciences, and government challenges and needs. "International digital government research" in particular, examines phenomena and concerns that are relevant beyond the borders of a single country.

International digital government research focuses on topics and problems that cross the jurisdictions, cultures, or customs of different countries.

Today, digital government research is going on all over the world. So far, this work mostly has been confined to studies conducted within the geographic and political contexts of individual countries. However, given the growing influence of global economic, social, technical, and political forces, the questions, risks, and opportunities embedded in digital government research are now expanding to international dimensions. Brown (2005, pp. 243-244) emphasizes the importance of understanding the state's relationship with e-government in an international context, suggesting, "[i]n the electronic environment, governments have access not only to each other, at all levels of administration and without regard to the formalities of inter-state relations but also to their respective citizens. In the same way, trans-national public sector institutions extend their reach into the constituent countries, and trans-national private and non-governmental actors come into contact with governments and interested citizens around the world. National sovereignty remains a cornerstone of the international system but the context in which it operates and the tools with which it is expressed are altered." International digital government research is unique, in that it explicitly focuses on understanding topics and solving problems that cross jurisdictions, cultures, or customs of different countries.

Purpose and scope of the reconnaissance study

This reconnaissance study is part of a multi-year effort funded by the US NSF to create a framework for a sustainable global community among digital government researchers and research sponsors. It takes a broad look at the current state of international digital government research to identify its main contours and current directions. A reconnaissance study has the virtue of highlighting the defining characteristics of a topic. We can say something about its size, scope, variety, and trajectory. However, it also has limitations. In order to gather information about as many aspects as possible, our

methods rely on secondary analysis of published information. We have acquired enough information to describe the current state of international digital government research with some breadth, but little depth. In this report, we present our findings on the nature of international digital government research and illustrate it with selected studies and organizational profiles. We have not exhaustively analyzed this body of work, nor have we attempted to evaluate its quality.

Building and Sustaining an International Digital Government Research Community is a multi-year project of the Center for Technology in Government (CTG), University at Albany/SUNY. Funded by the US National Science Foundation, the project includes an international reconnaissance study describing the current status of digital government research, an annual research institute to introduce doctoral students to international research topics and methods, and a support framework for several international working groups. The program will also produce an evaluation of these methods for supporting long-lasting international research relationships. For more information visit: http://www.ctg.albany.edu/projects/dgi.

Within these limitations, the study addresses the following broad questions:

- What kinds of international problems are the subject of digital government research efforts?
- What kinds of topics have been investigated using comparative methods across national boundaries? What problems and topics are emphasized by different research sponsors?
- What are the patterns of investigation (problems, topics, methods, funding sources and mechanisms) in different parts of the world?
- What are the important international organizations in this research area?
- What are the research institutions, conferences, journals, or other sources of research information that span countries?

The following sections of the report define six basic types of international research, summarize and characterize the extant research literature, profile the main research sponsors, and briefly describe key events and professional organizations where international digital government research is encouraged. An extensive bibliography of international work as well as the detailed methodology of the study are presented in appendices. A detailed Endnote® file of international research publications is available at http://www.ctg.albany.edu/publications/reports/recon_study. These results can be used as a baseline for assessing subsequent growth and development of the field. The study can also inform the development of the emerging global network of research professionals who are working in the international digital government domain.

International digital government – exploration of the research literature

Summary

The research literature published in journals, conference proceedings and formal reports between 1994 and 2008 presents a modest number, but a wide range, of internationally-oriented digital government studies. The work addresses many specific topics that fall into several general types with different patterns of authorship, sponsorship, methodology, and geographic coverage.

Overview of the method and framework

The literature review covered English-language sources published in print and online between 1994 and 2008. Sources included EndNotes® files compiled by faculty and students at the University of Washington, InfoWorld, and traditional library databases, as well as the proceedings of selected conferences and the publication Web sites of major organizations that conduct or sponsor international DG research.

We reviewed the literature with an expectation that the growing prominence of global social, political, and economic issues has influenced the extent to which DG research takes a more global view. We analyzed the literature in two ways: first by using citations and abstracts to select 276 publications with an apparently international focus, and second, by reading and analyzing approximately 20 percent of the articles to discern the broad trends and to understand more about topics and problems addressed, countries studied, methods used, and findings and results reported.

We started with a broad definition of *digital government*: the use of information and technology to support and improve public policies and government operations, engage citizens, and provide comprehensive and timely government services. Accordingly, we define *digital government research* as attempts to illuminate and explain this phenomenon by focusing on the intersection of computer and information sciences, social and behavioral sciences, and government challenges and needs. In order to distinguish between digital government research generally and *international digital government research* specifically, we looked for research that was explicitly international in nature, ". . . investigating questions brought up by considering government from an inter-national perspective" and the questions which come about because of differences among countries (National Science Foundation White Paper, 2004).

We then applied these definitions to six research categories that encompass various elements of international work: comparative studies, benchmark studies, fundamental issues, regional studies, best practice studies, and transnational studies. These categories are not strictly bounded and some articles fit two or more categories. However, for simplicity, we assigned each article to the category that best fit its topic and method.

Comparative studies seek universal theories and transferable practices by studying a defined topic in a variety of cultural settings, using consistent designs and methods, with explicit points of comparison and evaluation. Some comparative studies are conducted simultaneously in multiple countries, others test or apply a framework first developed in one country to others. Some topics that have been explored by comparative methods include freedom of expression, personal privacy protection, and methods of collaboration across the public and private sectors for delivering services to citizens.

Benchmarking studies rate or rank different countries on externally observable characteristics of their digital or e-government programs. The UN E-Government Readiness Reports are a well-known example in which all nations are ranked on selected indicators of their readiness to engage in certain aspects of e-government. Rating criteria include Internet penetration and the availability of transactional and interactive services. Social inclusion factors cover topics such as provision for online consultation with citizens and availability of services in multiple languages.

Fundamental issue studies usually focus on major trends and themes associated with cross-cutting developments in technology, governance, societal needs, or government and political reform. These studies try to increase our understanding of wide-spread, if not universal, issues such as public accountability, access to information, or government's role in the emerging virtual world. These studies, while fundamental to digital government research in general, are framed in the context of an international system.

Regional studies usually focus on major trends and themes associated with cross-cutting developments in technology, governance, societal needs, or government and political reform to address the particular or unique needs of different regions of the world.

In **best practice studies** investigators evaluate existing approaches or develop new models to meet particular needs that appear to be exemplary and worthy of, and feasible for, replication in other countries. These are sometimes tied to award programs to give them visibility as well as to databases of good practices, expert advice, and support for transferring effective solutions to common problems.

Transnational studies look at an issue or problem that involves either planned or unexpected interaction among two or more countries. Empirical transnational studies are quite challenging because they generally require two or more research sponsors in different countries to jointly approve and fund the work. Consequently, most studies of this kind are conceptual. Topics include such issues as personal identity, drug trafficking, border control, and migration.

Broad patterns and trends

The penetration of new themes into journals, conferences, and organizations sponsoring and conducting research is often a baseline indicator of the exposure and development of a research area. Some conclusions can be drawn by examining the broad patterns and trends reflected in journal coverage, growth in the number of publications per year, and the topics or problems being studied.

Volume and diversity of publications

Overall, we found 276 articles in 40 journals, proceedings of thirteen conferences, and the Web sites of twelve research-oriented organizations and their major divisions (these organizations are profiled in the next section). Table 1 and Figure 1 present the distribution of articles across the six categories described above. Comparative studies comprised about one-third of the articles found for the years we examined, and benchmarks one-quarter. Fundamental issues and regional studies made up another quarter. Best practice and transnational studies represented much smaller portions of the total (nine percent and seven percent respectively). The 40 journals included a mixture of public policy and management, information systems and management, as well as dedicated e-government or digital government journals. International digital government research is being published in an increasing number of journals. Through 2005, this work appeared in 31 peer-reviewed journals; by 2008, the number had increased to 40 such outlets. Appendices C, D, and E present the complete list of conferences, journals, and publications reviewed.

Table 1. Number of publications by research category

Research Category	N	Percent of total
Comparative	87	32
Benchmark	72	26
Fundamental issues	32	12
Regional issues	42	15
Best practice	24	8
Transnational	20	7
Total	276	100

Figure 1. Percentage of research by category

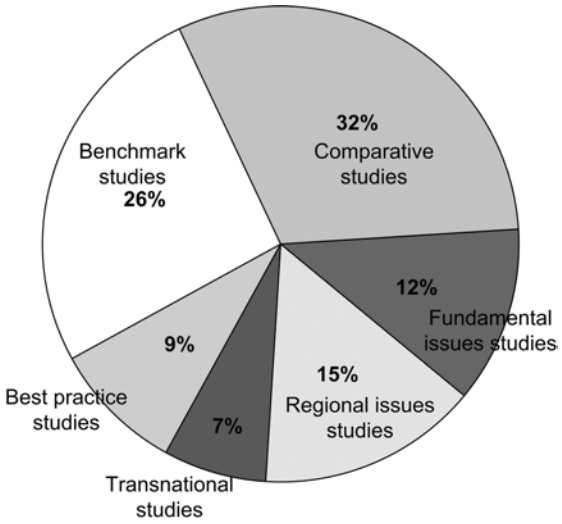


Figure 2 depicts a generally upward trend in the total number of internationally-oriented publications per year from 1994 through 2005. From 2001 to 2005, the number of articles increased substantially marking an upward trend of published international digital government research. 2004 and 2005 produced the largest number of publications on issues specific to international digital government subjects and were also the two years that demonstrated the greatest diversity of research types. This expansion in types, as well as the absolute number of publications, dropped well below the 2005 level in 2006, 2007, and 2008. In 2008, fewer benchmark studies, regional and transnational studies

were found. There is no obvious single explanation for this change, but several reasons are worth considering. First, it is possible that the drop has less to do with a decline in interest in international work than with an increase in rigor leading to fewer, but higher quality publications. For example, benchmark studies have come under increasing scrutiny and criticism, which may explain some of the drop in that type of study. Second, since so much of this work has emanated from Europe (where the majority of regional and transnational studies were conducted previously), a hiatus and later re-definition of e-government research funding by the European Commission during 2006-08 may be reflected in fewer publications that fit this category of research. Third, our review covered only English-language publications. It may be that more scholars are publishing in other languages that our study did not address.

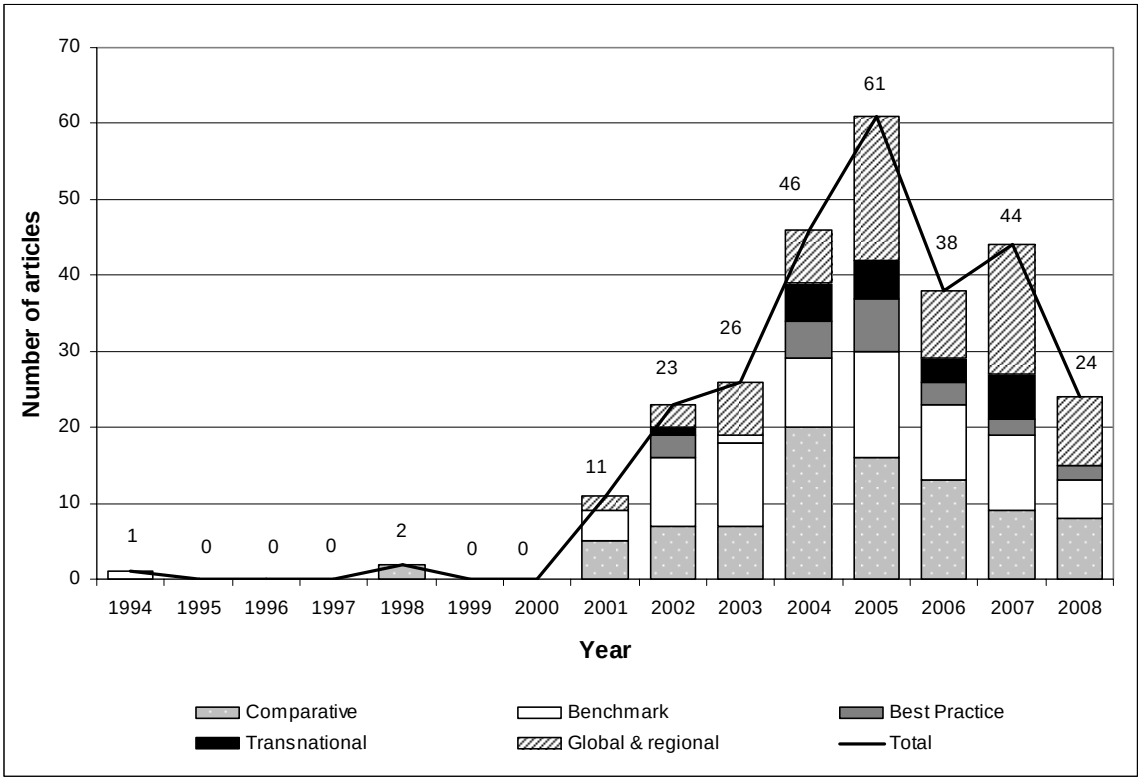


Figure 2. Representation of research categories over time

Geographic coverage

Figure 3 below shows the rough geographic coverage of the various research categories. The cross-hatch represents a higher concentration of articles focusing in the area and light grey represents one or two articles published. Benchmark studies provide by far the widest geographic coverage. They have global reach and often collect data on nearly 200 countries. Comparative studies are concentrated on the member states of the European Union, or tend to compare highly developed countries in Europe, North America, and the Pacific Rim. A small number of studies compare (in various combinations) countries in South America, Russia, East Africa, and the Gulf states. Research on regional issues is concentrated in Europe, but we also found articles that addressed Africa, South America, the Gulf States, and the Pacific Rim. In terms of focus on transnational issues, most

reflect Pan-European topics but there is also some transnational work focused on the Caribbean, Latin America, and the United States and Canada.

Patterns associated with different types of researchers

Large international organizations tend to produce benchmark studies and make those findings available on their organization Web sites. Most publications are free, but some charge a fee for access to the underlying data.

Some international organizations, such as the Organization for Economic Cooperation and Development (OECD), conduct comparative studies, but most studies of this type appear to be carried out by private industry, non-profit research groups, and individual scholars who publish their findings in journal articles or conference proceedings.

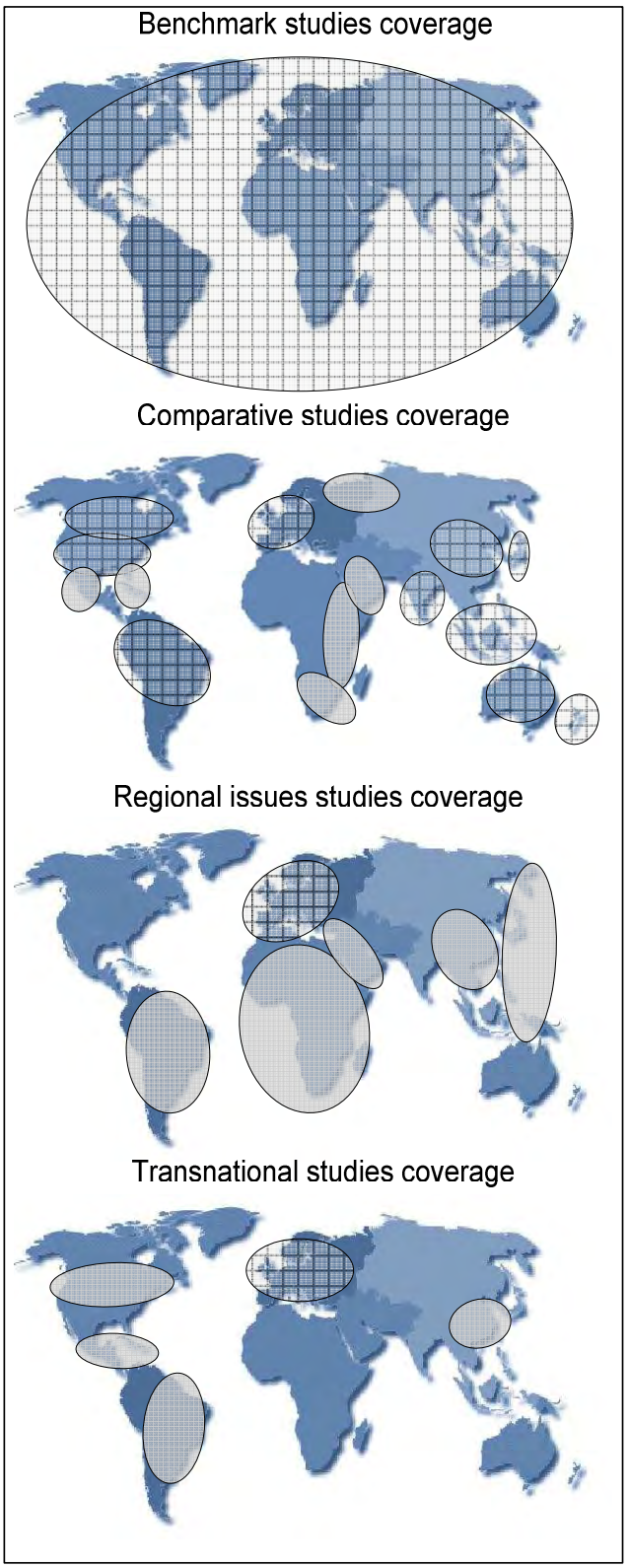
Best practice work is done by scholars who publish mostly in conference proceedings. The World Bank and OECD also have best practice orientations as does the EC, which offers an online *eGovernment Good Practice Framework* Web site (e.practice). OECD studies of this kind use a peer review method and a common analytical framework by which countries can evaluate their e-government policies.

Fundamental issues studies were represented mostly in peer-reviewed journal articles. In addition, intergovernmental organizations such as the World Bank produce some papers in this vein. Regional and transnational studies were predominantly published as conference papers, and journal articles by individual scholars.

Overview of publications by research category

In order to develop a preliminary understanding of the international digital government research literature, we randomly selected approximately 20 percent of the

Figure 3. Geographic coverage by type of research



publications in each category. These articles or reports were read and evaluated by a member of our research team who summarized the main characteristics looking at the topic or problem, theory and method used, and findings or lessons learned. Summaries and brief abstracts of illustrative papers are highlighted in the discussion below.

Benchmark studies

International digital government benchmark studies are well established and widely disseminated. The value of the benchmark study is its breadth of coverage. The purpose of a benchmark is to compare the state of practice around the globe, within a particular region or within a group of countries sharing similar characteristics, such as level of economic development. These studies are often lengthy and costly, but they can produce an extensive collection of research data . Benchmark studies have been published over consecutive years starting in 2001. Most annual or consecutive benchmark initiatives collect data with the goal of creating datasets for longitudinal analysis of issues over time, although year to year changes in method and data definitions can make this difficult.

International benchmarking of digital government development is a derivative of efforts to benchmark broader development of information and communication technologies or the information society. Benchmarking studies generally use large scale surveys of Internet use in all sectors but often include a digital government section, although some benchmarks look only at digital government topics. Broader information society topics include areas such as penetration of ICTs, access to and use of the Internet in society in general, and digital divide issues. Topics specific to digital government focus on government online services (including access and usage), quality (including readability, security, and accessibility), maturity (addressing one stop shopping and transaction structure such as credit card use or digital signatures), and penetration (such as how many applications are available on line). In addition, studies benchmark citizen demands, preferences, and perceptions. Some focus on government information dissemination, government communication channels (i.e., email, comment forms, participatory venues), and the transparency of government Web sites including such questions of how much information is provided about transactions and processes.

The Cyberspace Policy Research Group (CyPRG) has studied the diffusion and use of the World Wide Web in governments worldwide, particularly in terms of organizational openness and internal effectiveness. Their Web site provides information and resources for researchers to conduct their own research but also to use CyPRG data sets from 1995 to 2000. Some resources provided include a detailed explanation of their Web site Attribute Evaluation System (WAES) developed in 1997, notes on coding, how to find new and existing national Web sites, and sample interview invitations and guidelines. For more information visit: http://www cyprg arizona edu/index html.

Benchmarks serve several purposes including providing trend analysis,, best practices identification, and reusable data. The target audience is usually policy makers and decision makers who need to understand global trends or wish to evaluate progress with

respect to many different issues. Among the benchmarks we sampled , these broad trends included Internet penetration, connectivity, and productivity.

A variety of methodologies were present in the sample of benchmarks reviewed. A mixture of Web site evaluations, secondary data evaluation, and interviews were used. Many benchmark studies collect data from national or municipal Web sites or use information published from government reports about their Web sites. Secondary data from other survey sources like General Population Surveys are used to supplement data sets, as are interviews with government officials and information technology workers. Accenture, for example, interviewed 143 senior executives in 22 countries, and the SIBIS project conducted telephone interviews with more than 3,000 people responsible for IT functions across multiple sectors in EU member states.

Large intergovernmental entities such as the United Nations, the World Bank, and the International Telecommunications Union publish consecutive series. Government entities have also financed benchmark studies conducted by universities or private enterprises. The Cyberspace Policy Research Group (CyPRG), with funding from the US National Science Foundation, collected data on organizational transparency, openness, and effectiveness in 192 governments across the globe.

Digital Governance in Municipalities Around the Globe The E-Governance Institute at Rutgers, the State University of New Jersey and the Global e-Policy e-Government Institute (GEPEGI) at Sungkyunkwan University, Korea jointly surveyed municipal Web sites in 98 countries. The project was sponsored by the UN Division for Public Administration and Development Management (DPADM). The research team evaluated municipal government Web sites worldwide during 2003 and 2005 assessing various factors associated with digital governance such as security, usability, content, type of online services provided, online citizen response, and participation of national governments throughout the world. In addition, their series of reports provide a useful comparison of various other benchmarking efforts. For more information visit: http://andromeda rutgers edu/~egovinst/Website/researchpg htm.

Private businesses, such as Accenture, have conducted consecutive benchmarking studies as has the Taubman Center for Public Policy at Brown University, which has published benchmark studies on Web site effectiveness in 198 countries since 2001. Similar efforts have taken place in Europe where the SIBIS (Statistical Indicators Benchmarking the Information Society) project initiated in the Information Society Programme (ISP) of the European Commission contributed to several benchmarks prepared by RAND Europe between 2001 and 2003.

Several groups have created their own indices. The CyPRG team developed a methodology to measure organizational transformation, interactivity and organizational openness called Website Attribute Evaluation System (WEAS) (Cyberspace Policy Research Group, 2006). The World Economic Forum uses the Networked Readiness Index (NRI) developed by INSEAD to measure the receptiveness of the environment to ICTs, readiness of stakeholders (including citizens, businesses, and government) and

usage by stakeholders (World Economic Forum, 2007). The E-governance Institute created what they call the Rutgers-SKKU E-Governance Performance Index, which uses 98 measures over five core areas including security and privacy, usability, content, services, and citizen participation (E-governance Institute, 2006). Unlike most other benchmarking studies, this set of studies focuses at the municipal level of government.

The UNDERSTAND project employs a regional benchmarking strategy. The acronym stands for "European regions UNDER way towards STANDard indicators for benchmarking the information society." The study covers ten European regions using a set of common themes related to citizens, business, government, and technology.

Developing Regional Benchmarks Ten European regions participated in the UNDERSTAND project along with eleven academic and private sector organizations. The goal was to define and employ a set of common benchmarking indicators across four thematic areas: citizens and ICTs, e-business, e-government, and technological infrastructure. Starting with over 400 indicators from existing benchmarks as a start, the group went through a lengthy process of identifying relevant indicators to meet their needs and either including them or not. The project results include a benchmarking toolkit (complete with methodology, questionnaire, and samples), an online database, data from 36 regional surveys, the completion of two conferences and a dedicated Web site for information dissemination. For more information visit: http://www understand-eu net/ index php htm/.

Benchmarks use different standards and definitions, and therefore, comparing benchmark findings to each other has resulted in discrepancies in the overall conclusions. Ojo et al (2005) examined three different benchmark series in an attempt to create common indicators to resolve the disparity between rankings arising from the use of different indicators and weighting schemes. They concluded that three core indicators – 1) mature online presence with transactional services, 2) support for citizens' engagement in consultation and decision making, and 3) access to infrastructure – should be weighted more heavily than other criteria to more clearly show the difference between countries. They also propose a "target e-ready state," which would serve to normalize the results and increase the reliability of year-to-year comparisons. Janssen, Rotthier, and Snijkers (2004) examined 18 different international benchmarking studies on e-government or the information society and found variations in the scope and definition of e-government and in the type of measurement criteria used (finding output and environmental measures to be used most extensively). Several other authors also provide a review of benchmarking strategies or review the validity and value of e-government benchmark comparisons (Salem, 2007; Bannister, 2007; Germanakos, 2006; Janssen, 2004, 2003) generally criticizing their ability to meaningfully compare e-government development across the world.

Comparative studies

Comparative studies represented the largest proportion of the articles we found as well as the earliest, dating back to 1994. Comparative studies cover a range of topic areas including policy, implementation, management, impact evaluations, and democracy.

More specifically, these topics were represented in publications about the supply and demand of services, integration of information or services, exploring digital government integration frameworks, implementing e-government, e-commerce, e-democracy, e-participation, or enabling access to information. Comparative studies usually operate at either the national or municipal level. Most of the articles in our sample were comparisons among developed countries, with one or two articles each year focusing on developing countries

Comparative studies serve several purposes. Of the articles we sampled, two main areas emerged – (1) a strong emphasis on reviewing different countries' practices or models, and (2) research that challenges or extends existing frameworks to understand how contextual factors such as culture, national political structure, and social norms are important. More rigorous testing of theories in order to develop more robust models is steadily emerging.

E-transparency Across Latin America Frick (2008) examines online state communication through presidential portals in Argentina, Bolivia, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, México, Nicaragua, Panamá, Paraguay, Uruguay, Venezuela, Ecuador, República Dominicana, and Perú. The results highlight that online government communication is not systematic nor completely transparent. The degree of transparency is heavily influenced by the political, social, and cultural conditions already present in a society's political culture.

Most comparative work, especially studies associated with "reviewing practices or models" relied on Web site searches of the various countries studied. These articles tend to find that practices and models vary across countries for a variety of reasons, mostly cultural. For example, one publication reviewed the public information access models found in different countries and organizations (Fariselli, Bojic, & Culver-Hopper, 2004), while another reviewed the use of the Internet as an administrative reform tool, examining how countries publish information on the Web as a means of accountability (Wong & Welch, 2004). Adlerm & Henman (2005) published a comparative study of OECD countries and their various patterns of computerization impacts and e-government in one policy area, social security. They concluded that differences among countries show that social factors are important in shaping the technologies and their use.

Gascó and Roy (2006) assessed the similarities and differences in two sub-national jurisdictions known for implementing aggressive e-government strategies. Using case studies of Catalonia, Spain and Ontario, Canada, the research examines the impact of service delivery, democracy, and federalism (or inter-governmental dynamics) on e-government development. Gascó and Roy concluded that the evolution of e-government is likely to vary by tradition, contemporary structures, and across various levels of government.

Some comparative studies extend the breadth or application of existing frameworks. Some of the frameworks examined included e-government implementation strategies,

technical frameworks for interoperability, and digital divide frameworks. Chen et al. (2006) argued that most frameworks are created by researchers examining developed nations. They created a model that takes into consideration the factors needed for successful implementation in developing countries and illustrate that model through cases studies comparing the US to China. As early as 1994, Lally introduced a Technology-Environmental Fit (TEF) model that emphasizes that the characteristics of an emerging technology are modified by the political, economic, and social contexts of a country, particularly the country's industrial policy and cultural environment.

Some comparative studies seek to test theories. For example, Wong and Welch (2004) interrogated different perspectives on the effect e-government has had on governmental accountability. In a similar vein, Meijer (2007) examined political accountability in two countries, the US and the Netherlands, concluding that bureaucratic agencies are converging in their behavior, but political actors are not.

Accountability in E-government Wong and Welch (2004) used 1997 and 2000 CyPRG data from 260 agencies in 14 countries to test the commonly held expectation that e-government will lead directly to more transparent, interactive, open, and accountable government. Their research draws on assumptions about globalization pressures forcing public bureaucracies to change and national contextual differences. They found that globalization pressures are supported at the aggregate level, but that e-government accountability will diverge at both national and organizational levels because of domestic factors interacting with global pressures. The authors predict an accountability gap where real differences in countries' political structures will be exposed and will not be able to be closed simply by the introduction of technology.

Bolívar et al. (2006) examined whether country-specific contextual factors impact the degree of transparency adopted by government financial agencies around the world. The Department of Finance Web sites (or equivalent) of 12 countries were examined and countries were grouped according to three approaches – Anglo-Saxon, South American, and Continental European public administration – the results indicate that the way different countries use the Web for financial disclosure is influenced by their administrative cultures.

Political Accountability Meijer's (2007) exploratory study examines whether political accountability systems in the world are converging in an information age or whether preexisting differences are being reproduced. Using cases from the US and the Netherlands, a presidential system and a parliamentary system respectively, the article examines two levels of political accountability, bureaucratic agencies and political actors. Meijer concludes that bureaucratic agencies are indeed converging in their use of ICTs, but political actors are not.

Fundamental issues studies

Fundamental issues studies generally focus on governance and strategy issues, success and failure factors, research reviews, evaluations, and development of explanatory models and frameworks. Some articles brought to the fore universal topics that are salient in many countries such as e-voting, transparency, and e-procurement.

In 2001, Heeks examined the success and failure factors of e-government projects analyzing a set of international case studies. One major conclusion was that the context of development is important, and that the transfer of e-government systems or techniques from one country to the next will be problematic because of a 'country context gap' (p. 169). Davison, Wagner, and Ma (2005) developed a transition model for moving from government to e-government using literature on the practice of e-government, strategic alignment frameworks, and maturity models for technology adoption. They offered support for the model through cases of e-government worldwide.

Explaining Success and Failure of E-government

Heeks (2001) critiques the typical 'cookbook menu' of critical success factors for e-government initiatives and develops a contingency-based perspective which draws from the larger theories of organizational studies. Grounded in the assumption that there are situation-specific factors for all e-government initiatives which will determine success and failure, Heeks' introduces the Design-Reality-Gap model. 'Country-context gaps' are suggested to increase the difficulty of successfully transferring e-government systems between industrialized nations as well as between industrialized and developing countries. Heeks is the project coordinator for "E-government for Development" - an online resource and electronic discussion forum for practitioners in developing and transitional countries. The Design-Reality-Gap model is applied to other areas, such as transparency, public health IT systems, m-government, and government Web sites. For more information visit: http://www.egov4dev.org/index.shtml

Schware and Deane (2003) drew from experiences in countries such as Korea, India, Estonia, Philippines, Mexico, and Chile and their various responses to liberalizing telecommunication policies. The authors argued that access to an information infrastructure and the development of legal and regulatory frameworks are key to e-government success in any country. Yang and Rho (2007) explored how national characteristics account for differences among countries in the level of e-government services worldwide. Dutton and Peltu (2007) created an analytic framework to examine the embedded issues of Internet governance as it concerns national governments and their roles in policy and practice.

Regional studies

Regional studies often compare one region to another or to a larger comparative body. European regional issues are well represented in the articles we found in this group. They tend to address three broad areas: integration of online services, legal and policy infrastructure issues including e-governance, and strategies for e-government. Several articles in 2007 and 2008 examined the future of e-government as a European development strategy (Wimmer, 2007; van der Duin & Huijboom, 2008). European regional issues are heavily dominated by the goals of the European Commission (EC).

For example, Kubicek (2005) reports on research funded by the IST (Information Society Technologies) project PRISMA (Providing Innovative Service Models and Assessment) in the EC. The article highlights the push from the EC for the use of ICTs to provide greater citizen participation in the political decision-making process. Some regional studies provided a review of initiatives going on in the region which could be considered comparative or best practices.

Other regions investigated include Africa and South America. Basu (2004), for example, compares e-government regional issues of developing countries in light of the issues and strategies pursued by developed countries. Ojo et al (2006) proposes an e-voting framework for developing countries and evaluates the feasibility of its adoption based on the analysis of global e-readiness data.

Best practice studies

Best practice research (also called good practice and current practice research) varied widely in breadth of topics and methods for collecting the data. According to Eglene (2000), "[c]onducting current and best practices research is critical to developing a full understanding of a problem and all of its components from multiple and varied perspectives. In its simplest terms, research into current practice is an organized attempt to learn from the experience of others" (p. 1). The best practice articles in our review provided descriptive "snapshots" of how countries or municipalities around the globe are realizing digital government. In the sample articles, we found many descriptive case stories, but not structured best practice research such as standardized comparisons or evaluations of competing or alternative approaches.

M-government Across the Globe Trimi and Sheng (2008) and Lee, Tan, and Trimi (2006) present a survey of mobile government best practices in leading countries. Trimi and Sheng (2008) chronicle the best practices in North America, Western Europe, and Asia. Mobile government applications for alerting and emergency services, tracking systems, job postings, field inspections, traffic mapping, payment services, or voting are seen throughout the world. Challenges are still present which include improving interoperability and integration of information, navigating public and private service provider relationships, and the lack of incentives and institutional structures necessary for implementation.

In our review, best practice articles fell into several categories, mainly organizational and technical topics, e-governance, online participation, and reviews to ensure better democracy. Organizational and technical topics included describing ways to enhance digital government capability, create better municipal services, promote strategies for successful e-government implementation, or measure the impact of e-government. Brown (2002) reported the conclusions of the G-8 2000 summit and examined the nine initiatives outlined by the task force to help developing countries achieve e-readiness. The study argued that six cultural factors including policy discourse, legal issues, democratization, diversity factors, communication, and trust impact the ability of developing countries to build capacity. Lee, Tan, and Trimi (2005) presented a historical

review of best practices concentrating on policy vehicles that have been driving the development of digital government in general and mobile government in particular.

Transnational studies

We found several different kinds of transnational studies. Some transnational work focused on two or more countries working together to solve a shared problem. Other work investigated how the actions or issues of one country impacted another country. However, the majority of transnational research publications focused on pan-European issues that address the unification goals of the European Commission or report on projects commissioned by the EC in response to particular European objectives. The most frequently addressed European transnational issues focused on the technical side of interoperability and often involved a prototype or development project in addition to more traditional research.

Borderless E-government Adam, Werth, and Zangl (2003) report on the project, InfoCitizen, which examined the EU's main strategic goal of creating a "borderless Europe" – implying a set of integrated administrative practices and online services. The project aims to create a pan-European Information Architecture for European Public Administrations. Eleven organizations in five EU countries participated in the 24-month project. The goal of the project was a "proof-of-concept" creating a generic technical architecture, a common document language, and various source code to apply to legacy systems. The authors conclude that technological developments make "interoperability" conceptually and technically feasible although the heterogeneity of European Public Administrations and the differences in their legal systems pose significant challenges.

For example, Sagri and Tiscornia (2004) reported on an EC-funded project that aimed to increase access to low cost regulatory information and to address a 2003 EC Directive (part of its Action Plan for an Information Society) on the exploitation of public sector information aimed at establishing a set of common rules for semantic interoperability including legal and technical frameworks. They examined the state of the art in projects devoted to semantic interoperability and argued that open access to public sector information is an important policy, technical, and management issue in European countries today. Another article by Adam, Werth, and Zangl (2003) examined the EU's main strategic goal of creating a "borderless Europe" – implying a set of integrated administrative practices and online services. Similarly, Peristeras et al (2007) examined issues related to modeling cross-border public services.

Building Cross-Border Partnerships José A. B. Fortes and the Transnational Digital Government Research team from the USA, Belize, and the Dominican Republic engaged in a Transnational Digital Government (TDG) research project focusing on the sale and trafficking of illicit drugs across national borders as well as its negative repercussions such as money-laundering. The project concentrated on how IT facilitates the collection, dissemination, analysis, and exchange of related information across national boarders. Their Web site provides information on the challenges of conducting transnational research, strategies for building partnerships with regional governments, and provides access to published materials from the project. For more information visit: http://www acis ufl edu/transdg/.

Other transnational research was embodied in studies of how actions or issues in one country can affect others. For example, one study examined the influence US security policy has on Canada's security policy post 9/11 (Roy, 2005). Some transnational studies consider the technical, social, or political issues facing governments that are jointly affected by the same problem or need, such as the drug trade in the Caribbean; the topic of a US National Science Foundation grant awarded to investigators at the University of Florida to study transnational digital government in cooperation with the Organization of American States (OAS) and cooperating universities. Zheng (2007) looked at the issues of US and Chinese information policy development and practices on three multinational companies (Yahoo, Microsoft and Google) that work in a global regulatory environment.

How is international research accomplished?

Summary

International digital government research is conducted by individual scholars as well as by large and small organizations. The work is supported in a variety of ways from major, multi-year grants from government organizations, to self-funded projects sponsored by businesses as well as public and nonprofit organizations, to independent work by single investigators. Several patterns are apparent, mostly related to the missions or interests of the research sponsors.

Overview of method and framework

We conducted a Web search for organizations and entities that either sponsor research, conduct research, or do both. We examined only the information that the organizations themselves provide on their Web sites. Government agencies like the US National Science Foundation and the European Commission Directorates General, which sponsor research programs provide the most information about program goals, application and selection processes, grant awards, and research results. Intergovernmental entities like the United Nations, World Bank, and the Organization for Economic Cooperation and Development (OECD) post review information about their programs and publications, however less is provided about the amount of funding available to researchers or the process by which such funding might be obtained. Universities and non-profit research organizations provide access to their publications but little information about the funding structures used. With few exceptions, private sector companies provide little detail about how they select, fund, and conduct research.

Who is doing international DG research?

There appear to be three main categories of researchers – large intergovernmental organizations and multinational corporations (such as the UN, OECD, and major consulting firms), academic institutions and nonprofit research centers (some involving multi-organizational partnerships), and individual scholars. The large-scale projects are usually geared toward generating broad coverage of universal topics or practical knowledge to be used as a guide to furthering economic development and efficient incorporation of IT into public management. The smallest scale projects are usually conducted as part of traditional academic research activities without special funding, although there are exceptions depending on the scale of the project.

Intergovernmental organizations like OECD and the United Nations focus strongly on topics related to furthering the modernization of public administration around the world, but primarily in developing and emerging economies. Their interests lie in examining the role of electronic and mobile governments as a tool for meeting public sector reform agendas such as good governance, democracy, and inclusion. OECD produces a wide range of publications including best practices, framework development, and comparative studies.

Regional intergovernmental organizations conduct comparative and best practices studies, and, because most of them are organized with the purpose of enhancing the economic development of their regions, the studies are usually aimed at this aspect of digital government. The European Commission conducts studies of member countries or for the benefit of member countries sometimes drawing lessons or comparisons from additional countries of similar cultural or economic status.

Academic research represents the broadest range of topics, methods, and approaches to international digital government issues. No particular theme dominates, but rather, the variety of topics reflects the multidisciplinary nature of this study domain. We found several academic research centers in the US, EU, and Asia with units focused specifically on digital government research, including international projects or papers.

Independent think tanks, such as the Commonwealth Center, and several large multi-national companies, such as Accenture and SAP, conduct their own programs of international DG research. This research is usually done in-house. Accenture, for example, has conducted an annual benchmarking study of over 180 countries concentrating on the development of digital government capabilities worldwide. In addition, EC-funded research projects often include research partners from industry as members of large multi-disciplinary project teams.

Who is sponsoring international DG research?

A mixture of government agencies, international governmental organizations, private industry, think tanks, and non-governmental organizations have sponsored significant programs of international digital government research. (As noted above, many of these same organizations also conduct some of the work directly.)

Global intergovernmental organizations usually sponsor global studies encompassing most or all countries. Occasionally, they concentrate on a specific group of countries, usually defined by their common level of economic development. Most of these studies concentrate on developing countries with the aim to promote economic and social development. These organizations sponsor research that appears to concentrate on two main issues – economic development and improving the efficiency and effectiveness of governance through the use of IT.

This trend is especially dominant with organizations that have economic development as one of their overarching organizational goals, such as the World Bank. The United Nations, although interested in IT in connection with its potential to spur economic development, also collects data on general IT indicators, such as the level of access, digital divide issues, and others. Research sponsored by these global intergovernmental organizations often takes the form of benchmarks, although they sometimes include best practices or case studies that are geared toward their missions.

United Nations (UN)

Organization type:	Intergovernmental entity
Headquarters location:	USA
For more information visit:	http://www.un.org/

The UN Division for Public Administration and Development Management (DPADM) specializes in four thematic areas one of which focuses on ICTs for development. The central objective is to examine the role of ICT in promoting knowledge-based government and the role of electronic and mobile government for promoting readiness, participation, and inclusion. **Read the full organizational profile in Appendix B.**

Given their global membership, they seldom tackle politically-charged issues, such as democratization. Most studies sponsored by global intergovernmental organizations are done in-house by their own research staff, or in connection with another large organization.

World Bank

Organization type:	Intergovernmental entity
Headquarters location:	USA
For more information visit:	http://www.worldbank.org/

The Global Information and Communiction Technologies Department (GICT) within the World Bank works with both the public and private sectors to provide research, policy, investments, and other programs to promote access to ICTs in developing nations. **Read the full organizational profile in Appendix B.**

Among regional intergovernmental research sponsors, the European Commission deserves special mention. Through its Directorates General for Research and Information Society and Media, it sponsors a large number of international e-government projects, concentrating mostly on EU member states, sometimes in comparison with other developed countries or other countries of similar IT development level. The sponsored studies range from internal benchmarks to transnational studies, to IT development projects, to best practices, and others.

European Commission (EC)

Organization type:	Government Agency
Headquarters location:	Brussels
For more information visit:	http://ec.europa.eu/

Directorates-General for Research and The Information Society and Media are central to supporting the research and development efforts in the domain of information and communications technologies (ICT), including e-government. Network and service infrastructure stability and security, performance and reliability of electronic systems, and digital content management are just a few research areas investigated. **Read the full organizational profile in Appendix B.**

Although diverse in topic and approach, these projects all address in some way the overarching themes of European unification, including improving government functions through the use of IT, establishing EU-wide standards, supporting internal barrier free commerce, establishing pan-European services, and generally supporting a knowledge society. Projects are generally awarded to teams of multiple partners from various countries and different disciplines, often combining private companies with academic institutions, and often with the explicit goal of product development and deployment. The awards are usually large (several million Euros), but less than two years in length. Most include goals for deployment of new products or services.

Government research organizations fund mainly academic scientific research, although there are some significant variations among countries. For example, the US NSF funds university research to advance all aspects of science and engineering, except medical science. NSF grants are awarded through a peer review process and grants carry no requirement for product development or practical deployment (although these are considered desirable extended outcomes of the science). In comparison, the EC funds not only university-based researchers, but often funds work by private companies and public-private teams. Other national research agencies, such as the UK agency for Economic and Social Research, seem to have a focus similar to the US NSF, funding mainly university-based research.

US National Science Foundation (NSF)

Organization type:	Government Agency
Headquarters location:	USA
For more information visit:	http://www.nsf.gov

Digital government research funded by NSF has included topics such as intelligent information integration, digital government comparative management models, electronic transaction and electronic commerce technologies, drug interdiction, comparative privacy policies, information services for citizens, and natural language processing across different languages. **Read the full organizational profile in Appendix B.**

Global companies, such as SAP, also occasionally sponsor research programs or projects. IBM's Endowment for the Business of Government, for example, makes modest grants to academic researchers to conduct smaller studies and publishes white papers to help inform government practitioners on a variety of topics, some of which have international themes.

Funding Patterns

It is virtually impossible to generalize about the funding of DG research, partly because many organizations simply do not publish this information. The organizations that make this information publicly available, namely the EC and NSF, have wide variations among their projects, ranging from millions to thousands of dollars and spanning several months in duration to four years and more. The type of study, the number of involved entities, and the number of countries studied generally determine the amount, as well as the duration of project funding. Thus, we found best practice and case studies being fairly small in the amount of funding and duration, while large transnational projects that aim at developing a certain product or framework, are funded for longer periods and with larger amounts of money.

APPENDIX A: Methodology

The overall objective of the reconnaissance study was to identify and summarize the state of international digital government research. Two main efforts contributed to this study; online Web searches and a traditional academic literature review.

The purpose of the online Web searches was to identify organizations, research projects, and events that focused on international digital government research. This phase relied heavily on the use of Internet search engines and a set of keywords commonly used within the domain of digital government/e-government/e-governance. Web searches were conducted in English over a 12-month period during 2007 and were iterative in nature. Examining the various search results allowed for the identification of other possible resources that initially did not appear in the Web searches. Successful search results were stored in a database along with basic identifying information such as the main URL and contact information.

Organizations identified during the Web searches were classified by type into one of the following six categories: think tanks, university research organizations, non-profit research organizations, government agencies, intergovernmental entities, and private corporations. In addition, organizations were tagged as to whether they conduct or sponsor international digital government research. World regions of interest to these organizations were also identified and recorded in the database. Additional information, if available, was collected for organizations that sponsor research. This information included their annual funding devoted to international and comparative research projects, the number and types of grants they provide, and their major publications and events they sponsor.

Research project data were also collected. Where it was available, information was collected regarding sponsor, the main topic or problem addressed, key collaborators, grant amount, project duration, main methodologies used, countries included in the study, and key findings.

Finally, information was collected regarding the sponsors and organizers of major international events that focus on digital government research and appear to welcome international work. Information collected included the topics presented and world regions of interest.

The second major effort that contributed to this study was a review of research in relevant journals and conferences published in English in print and online from 1994 through 2008. Several sources were used during this effort, including two published libraries specializing in digital government research and numerous online library databases. EndNotes, a bibliographic software package, was used to manage citations throughout this process.

The first specialized library used during the literature review was published by the North American Digital Government Society. The library was compiled and is periodically updated by scholars at the University of Washington. The references included in this

library were published from 1994 through 2009. To collect these references, they systematically scanned traditional journals in information science, public administration, and public policy, as well as references from special issues on e-government in other journals. Research from general e-government conferences such as DEXA/EGOV, eChallenges, HICSS EGOV Track, and dg.o, in addition to topic-specific conferences (e.g. mGov and eVoting) were included in the library. References were included only if they were four or more pages in length and were peer- or editor-reviewed. The second library used was published by the Special Interest Group on Electronic Government at the Association for Information Systems, which was compiled by scholars at the Copenhagen Business School. The references obtained from both published libraries were combined and duplicates were removed, resulting in over 2,000 unique references. Our research team extracted an annotated bibliography for all references that included keywords similar to those used in the domain of international digital government/e-government/e-governance and isolated these references in a new EndNote library. The purpose of this step was to exclude references that were neither international nor comparative in scope.

In an attempt to ensure that the literature review was comprehensive and exhaustive, we then conducted searches on numerous library databases using keywords regularly used in the domain of digital government/e-government/e-governance. The library databases that were used in this process included: EBSCO Academic Search Premier, Emerald Fulltext, Social Sciences Abstracts, and Business Source Premier. This process identified several references from 1994 through 2008 that were not included in either of the two specialized libraries described above.

Each reference was then classified according to the type of study by two team members based on title and abstract. This strategy was employed to ensure inter-coder reliability. The types included benchmarks, comparative studies, best practice studies, fundamental issues studies, regional studies, and transnational studies. Both team members needed to agree on the classification in order for it to be classified successfully. The complete paper was obtained for further review in the event that the two classifications differed. The team members scanned the complete work and attempted to classify it once again, however, if the discrepancies remained, an expert in the field of digital government classified that particular reference.

To obtain a more detailed picture of this body of work, 20 percent of the 276 articles were selected at random from each of the research types listed above. To do this, the citations in each category were sorted by authors' last name and numbered, and an online random number generator (www.graphpad.com/quickcalcs/randomN1.cfm) was used to decide which references would be reviewed thoroughly. In total, 59 of 276 references were sampled (19 benchmark studies, 16 comparative studies, 7 fundamental issues studies, 7 regional studies, 5 best practice studies, and 5 transnational studies). We read these articles carefully and used them to help us write the summaries and several were selected to highlight as illustrations of each type.

APPENDIX B: Organizational Profiles of International Digital Government Research Sponsors

Organization Name:	***United Nations - Division for Public Administration and Development Management (UN-DPADM)***
Organization Type:	Intergovernmental Entity
Headquarter Location:	New York, with offices in Geneva, Vienna, and Nairobi
General Focus:	Maintaining international peace and security, developing friendly relations among nations, harmonizing the actions of nations, and cooperation in solving international problems and the promotion of human rights.
URL:	United Nations: http://www.un.org/ Division for Public Administration and Development Management: http://www.unpan.org/dpepa.asp

The United Nations was established in 1945 by 51 countries committed to international cooperation and collective security. Today, virtually every nation in the world is a member of the UN; current membership totals 192 countries. The Department of Economic and Social Affairs (DESA) within the UN Secretariat complies and analyzes a wide range of economic, social, and environmental data used by member states in reviewing common problems and formulating possible policy options; facilitates the negotiations of Member states in intergovernmental organizations on joint courses of action to address ongoing or emerging global challenges; and advises interested governments on ways and means of transforming policy frameworks developed in the UN into programs at the country level and, through technical assistance, helps build national capacities.

Within DESA, the Division for Public Administration and Development Management (DPADM) implements the UN Program in Public Administration and Development. Through the dissemination of information and knowledge, the delivery of technical and advisory assistance, and providing an international forum that fosters dialogue for the exchange of national experiences, the DPADM assists member states' governments to ensure that their governance systems, administrative and financial institutions, human resources, and policy development processes function in an effective, participatory, and transparent manner. The DPADM also identifies and responds to emerging global trends and challenges, such as information technology and knowledge management, while maintaining a strong focus in traditional areas of public administration, governance, policy analysis, public economics, public finance, and private sector development.

DPADM specializes in three thematic areas; governance and public administration, socio-economic governance and management, and knowledge management. The central objective of the Knowledge Management Branch is to examine the role of ICT in promoting knowledge-based government; and the role of electronic and mobile government (e/m-government) by focusing on e/m-readiness, e/m-participation, and e/m-inclusion. DPADM produces a number of widely-read publications such as the *United Nations Global E-government Readiness Knowledge Base*, and the *UN Global E-government Readiness Reports*.

Organization Name:	***Organisation for Economic Co-operation and Development (OECD)***
Organization Type:	Intergovernmental Entity
Headquarter Location:	Paris, with additional offices in Berlin, Mexico City, Tokyo, and Washington
General Focus:	Bringing together governments of countries committed to representative democracy and the market economy to support sustainable economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade.
URL:	http://www.oecd.org

The Organisation for Economic Co-operation and Development (OECD) originated in 1947 as the Organisation for European Economic Co-operation (OEEC) to administer American and Canadian aid under the Marshall Plan for the reconstruction of Europe after the Second World War. In 1961, OECD took over the OEEC and extended its membership to include non-European states. OECD is funded by 30 member states: *Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States.* OECD members are committed to representative democratic government and a free market to support sustainable economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade. In addition to the 30 member states, the OECD cooperates with over 70 non-member economies, and is currently discussing possible membership with Chile, Estonia, Israel, Russia, and Slovenia.

OECD is a provider of comparative data, analysis, and forecasts that are necessary for governments to compare policy experiences, seek solutions to common problems, identify best practices, and coordinate policies. By using its wealth of knowledge on a diverse range of topics, OECD works on global issues and seeks solutions to common challenges in: Economics and Trade; Society and Social Cohesion; Finance; Innovation; Sustainability; and Governance, which includes activities of e-government, regulatory reform, public sector budgeting and management, citizen participation, and fighting corruption.

OECD's organizational structure consists of three main bodies, namely the Council, committees, and the Secretariat. The Council's main objective is to set the oversight and strategic direction of the organization. Approximately 200 specialized committees, working groups, and expert groups comprised of subject-matter experts representing member states and invited non-member states focus on specific topics and global challenges. The Public Governance Committee is one example. Its main responsibility is designing and implementing a concentrated program that will: (1) identify the strategic challenges that governments face in modernizing public governance in a changing world, (2) assist members and non-members in achieving a more coherent and effective policy, and (3) promote key elements of a good governance framework to contribute to the improvement of the effectiveness, efficiency, transparency, responsiveness, and accountability of public institutions.

The OECD Secretariat is made up of approximately 2,500 economists, lawyers, scientists, and other professionals who support the activities of the committees, and carry out the work in response to priorities decided by the OECD Council. Two directorates within the OECD Secretariat focus on topics related to digital government, they are: the Public Governance and Territorial Development Directorate (GOV); and the Directorate for Science, Technology and Industry (STI).

The overall objective of GOV is to support countries in adapting their public sector governance frameworks to the changing needs of society and the economy. Its E-Government Project was created in 2001 to study

how countries are implementing e-government initiatives, and how they will affect governments in the future. The project goals are to help policy makers identify key challenges, impacts, and possible strategies that are necessary to take full advantage of the benefits of e-government, as well as to support them in exploiting information communication technologies (ICTs) as a means to embed good governance principles. Through outreach programs, GOV provides forums for countries to exchange ideas and challenges related to governance. The output of this work is available to policy makers, academics, and practitioners worldwide through publications of country studies, analytical reports, and policy briefs.

STI provides governments with analytical tools for policy formulation and advice on the scientific, technological, and industrial environment, as well as their relation to growth, employment, and citizens' well-being. The Information Economy Unit within STI is responsible for examining the economic and social implications of the development, diffusion, and use of ICTs. STI also analyzes ICT policy frameworks that influence the economy, productivity, and employment and business performance.

Organization Name:	***World Bank Group***
Organization Type:	Intergovernmental Entity
Headquarter Location:	Washington DC
General Focus:	Helping developing countries and their citizens alleviate poverty by focusing on building an environment for investment, jobs, and sustainable economic growth.
URL:	http://www.worldbank.org/

The World Bank Group was formally conceived in 1944 by delegates of 44 governments at the United Nations Monetary and Financial Conference – commonly known as the Bretton Woods conference. Today, membership stands at 185 countries. The World Bank Group's headquarters are located in Washington, D.C. and it has more than 100 field offices located throughout the world. The Group is staffed by more than 10,000 employees – consisting of economists, educators, environmental scientists, financial analysts, anthropologists, engineers, and many others – coming from about 160 different countries. More than 30% of the Group's staff members work in their overseas offices.

The World Bank Group is comprised of five organizations. The International Bank for Reconstruction and Development (IBRD) provides loans and development assistance to middle income countries in Latin America, Asia, Africa, and Eastern Europe. The International Development Association (IDA) provides interest-free loans and grants in the poorest countries. IBRD and IDA are commonly referred to as the World Bank, or the Bank for short. The International Finance Corporation (IFC) promotes growth in developing nations by financing private-sector investments, and offering technical support and advice to governments and private businesses. The Multilateral Investment Guarantee Agency (MIGA) encourages foreign investment in developing nations by providing guarantees to foreign investors against loss caused by non-commercial risks. The International Center for the Settlement of Investment Disputes (ICSID) acts as a mediator for settling investment disputes between foreign investors and their host countries.

The Group is the largest multilateral financier and provider of ICT policy in developing countries. The Group has provided more than 3 billion in US dollars in over 80 countries focusing on strategies to broaden and deepen public sector and institutional reform, improve access to information infrastructures, support human capacity to exploit ICT, and support ICT applications across a broad range of sectors. The Global Information and Communication Technologies Department (GICT) is a joint department of the World Bank and the International Finance Corporation (another member of the World Bank Group). GICT promotes access to information and communications technologies in developing nations. By working with both public and private sectors, GITC is considered the Group's core department of research, policy, investments, and other programs related to ICTs. GITC fulfils its mission by offering policy advice to the ICT sector, loans to governments to subsidize private providers of ICT infrastructure, investment capital for private provision of ICT infrastructure services, and grants for innovative projects. GITC coordinates the Group's relations and partnerships in the area of ICT for development with other donors and international organizations such as the International Telecommunications Union of the United Nations. GITC emphasizes sector reform; strengthening regulatory structures; internet, convergence, and e-strategies; access in remote and rural locations; IT-enabled industry development; postal service; knowledge sharing; and e-government.

Information for Development (*info*Dev) is a multi-agency partnership coordinated and served by an expert Secretariat housed in GITC at the World Bank, one of its principal donors and founders. Similar to the efforts of GITC, *info*Dev's mandate is to help developing countries and their international partners maximize the impact of ICT on development and poverty reduction. They provide research and analysis, support innovative pilot projects, and produce toolkits designed to help development leaders turn knowledge into action.

Organization Name:	***European Commission – Directorate-General for Research and Directorate-General for Information Society and Media***
Organization Type:	Government Agency
Headquarter Location:	Brussels
General Focus:	Research and technological development in Europe
URL:	European Commission: http://ec.europa.eu/ Directorate-General for Research: http://ec.europa.eu/dgs/research/index_en.html Information Society and Media Directorate-General: http://ec.europa.eu/dgs/information_society/index_en.htm

In March 2000, the Lisbon Agenda was set by the European Council to transform the EU into a competitive and dynamic knowledge-based economy, capable of sustainable economic growth. Together with the European Research Policy implemented in 1984, the Lisbon Agenda focuses on achieving these goals by investing in knowledge and R&D efforts. The key instrument of the European Research Policy is the Framework Programmes for Research and Technological Development (FPs), each covering a period of five years, with the last year of one FP and the first year of the following FP overlapping. The key entity responsible for managing the FPs is the Directorate-General for Research whose mission is to develop the EU's research policy, coordinate research efforts, support EU policies that affect research, and promote a better understanding of the importance of science and research-related activities. These FPs are designed to complement individual member states' research programs – helping Europe pool its resources. The two main strategic objectives of the FPs are: to strengthen the scientific and technological base in Europe, and to encourage international competitiveness, while promoting research that supports EU policies.

The most recent FP is the 7th Framework Programme for Research and Technological Development (FP7), which will last for seven years (2007-2013) instead of the traditional five with a total budget of EUR 53.3 billion. One of the prerequisites of FP7 is that any activity funded under this program must incorporate "European added value," in which transnationality is a key aspect. The five major categories of research within this framework are *Cooperation, Ideas, People, Capacities, and Nuclear Research*. *Cooperation* consumes the largest portion of the budget (EUR 32.4 billion). Its main focus is to foster collaborative research across Europe and other partner countries in areas such as health, and information and communications technologies. The *Ideas* category supports "frontier research" solely on the basis of scientific excellence, the *People* category provides support for research mobility and career development. The *Capacities* program strengthens the research capabilities that are needed to become a thriving knowledge-based economy. *Nuclear Research*, focuses on training, technological developments, international cooperation and dissemination, and exploration activities.

The Information Society and Media Directorate-General is central to supporting the research and development efforts in the domain of information and communications technologies (ICT), including e-government. Research sponsored by the Directorate-General falls within the *Cooperation* category of FP7 and takes up the single largest portion of the budget, currently EUR 9.05 billion. Network and service infrastructure stability and security, performance and reliability of electronic systems, and digital content management are a few of its research areas. Ares include supporting ICT innovation, R&D, and competitiveness within the EU; defining and implementing a regulatory environment to foster competition that supports investment, economic growth, the creation of job opportunities; encouraging the widespread availability, and accessibility of ICT-based services that impact the quality of life of EU citizens; and representing the EC in international dialogue and negotiations within the domain of ICT.

Organization Name:	US National Science Foundation (NSF)
Organization Type:	Government Agency
Headquarter Location:	Washington, with offices in Paris, Tokyo, and Beijing
General Focus:	Education and fundamental research in all scientific and engineering disciplines with the exception of medical sciences
URL:	http://www.nsf.gov/

In 1950, the U.S. Congress created the National Science Foundation, the only independent federal agency committed to the support of education and fundamental research in all scientific and engineering disciplines except medical sciences. NSF is one of the largest funding sources for research in the US with an annual budget of about $6.06 billion, supporting approximately 20 percent of all federally-supported basic research conducted by US colleges and universities. It supports research in many fields such as mathematics, computer science, and the social sciences, and funds the discovery of new knowledge that leads to societal benefits. The director, the 24 member National Science Board (NSB), and the deputy director serve six year terms, and are appointed by the President and confirmed by the Senate.

The Office of International Science and Engineering (OISE) promotes the development of an integrated, Foundation-wide international strategy, and manages international programs that are innovative, catalytic, and responsive to a broad range of NSF's interests by: serving as a focal point for international science and engineering activities both inside and outside NSF; facilitating collaboration between the science and engineering communities of the US and the rest of the world; serving as a liaison between the NSF and agencies, institutions and researchers throughout the world; and monitoring and reporting on science and engineering developments and policies worldwide.

NSF's research program is organized into seven directorates that encompass the wide-range of science, technology, and engineering research and education: Biological Sciences; Computer and Information Science and Engineering; Engineering; Geosciences; Mathematics and Physical Sciences; Social, Behavioral, and Economic Sciences; and Education and Human Resources.

The NSF Digital Government (DG) Research Program operated as a stand-alone program under the Computer and Information Science and Engineering directorate from 1991-2005. As of 2006, the NSF has awarded over $70 million for more than 170 DG research projects, of which seven projects totaling more than $7.4 million, were either international or comparative in nature. Examples of project areas that are of particular interest to the Digital Government Research program include: intelligent information integration, digital government comparative management models, electronic transaction and electronic commerce technologies, drug interdiction, comparative privacy policies, information services for citizens, and natural language processing across different languages. In addition to funding research projects, NSF also sponsors workshops and community building programs to help identify and present key issues within the domains of government that benefit from formal research partnerships between universities and government agencies at the national, state, and local levels.

The NSF DG Research Program is now incorporated into a broader cluster of programs called Information and Intelligent Systems. Multidisciplinary approaches are encouraged and partnerships with government agencies are required for most projects. Funded projects range in size from small exploratory research grants or workshops of less than $50,000 to projects that exceed $1 million. Investigations vary in length from a few months to two-three years. The DG research agenda is not directive, that is, it does not specify questions, methods, or outcomes (beyond the expectation of generating new knowledge useful to government). Instead, the research agenda has been built over time by the topics of interest to proposers as well as by NSF-funded workshops organized by researchers in a variety of fields.

APPENDIX C: Conferences of Interest to International Digital Government Researchers

Several conferences have emerged as dedicating themselves to international digital government. While most presumably started by attracting international participants, several have branched out to focus exclusively on scholarship dedicated to international digital government issues.

The Annual International Digital Government Research Conference (dg.o) is the official annual conference of the Digital Government Society of North America. dg.o is a forum to present and discuss interdisciplinary research on digital government and its applications in diverse domains. There is a strong emphasis on bringing together government professionals, managers, researchers, educators, students, and others interested in the linkages among democratic processes, government management, innovation, information, and technology. The conference features invited speakers, panels, research presentations, system demonstrations, posters, workshops, and discussion groups. All accepted posters and research papers are published in hardcopy in the dg.o proceedings and in electronic form at the Digital Government Society of North America site and in the ACM Digital Library. Selected papers may be invited for journal publication. *For more information visit:* http://www.dgo2010.org/

The International EGOV Conference (DEXA – EGOV) is an annual international conference clustered within the International Conference on Database and Expert Systems Applications (DEXA). This event, held in Europe, brings together leading researchers and professionals from all over the globe and from many disciplines. The series hosts distinct formats for state of the art contributions: scientific papers; project presentations, and workshops. A PhD student colloquium provides doctoral students with a forum for presenting their work, networking opportunities, and cross-disciplinary inspiration. Original research results reported in proceedings and post proceedings are the core of the *Lecture Notes in Computer Science* series. *For more information visit:* http://www.egov-conference.org/

(HICSS) The Hawaii International Conference on System Sciences has ten tracks dedicated to providing a unique environment in which researchers and practitioners in the information, computer, and system sciences can exchange and discuss their research ideas, techniques, and applications. HICSS introduced an Electronic Government track in 2001 to provide a forum for discussion and analysis of e-government design, infrastructure, and integration. The Electronic Government track now consists of eight mini-tracks for paper submissions, which cover a wide range of policy, research, and implementation themes. In 2007, HICSS 41 introduced the Annual Symposium of the Global Electronic Government Research and Practice Community as a compliment to the papers presented in the E-Government track. All accepted papers are part of the *Proceedings of the Hawaii International Conference on System Sciences* published by the IEEE Computer Society . *For more information visit:* http://www.hicss.hawaii.edu/.

The International Conference on Theory and Practice of Electronic Governance (ICEGOV) is sponsored by the Center for Electronic Governance at United Nations University - International Institute for Software Technology (UNU-IIST-EGOV). This conference, with a special focus on developing countries, provides a diverse international setting for networking and community-building, fostering a multi-disciplinary and multi-stakeholder approach to addressing the challenges of Electronic Governance. The annual series focuses on the state-of-the-art in practice, technology and research on various aspects of Electronic Governance. There are five main formats of contributions: tutorials, invited talks, panels and workshops (by invitation), regular papers (by submission), and as social events for networking and community building. *For more information visit:* http://www.icegov.org/.

eChallenges is an annual conference supported by the European Commission, which regularly attracts over 650 delegates from leading commercial, government and research organizations around the world. eChallenges is an international forum to share success stories and lessons learned from applied Information and Communications Technology (ICT) related research at the European level as well as regional, national and commercial initiatives. The conference combines keynote presentations, technical, legal and policy papers, business and government case studies, workshops and tutorials together for an exciting program. *For more information visit:* http://www.echallenges.org/e2009/

(ICEG) The International Conference on e-Government began in 2005 in Ottawa, Canada. This conference builds on the earlier European conferences on e-Government and invites researchers and practitioners to share research findings and practical experiences in an international university environment. One goal is to bring practitioners and scholars together so that practitioners can find ways to put research into practice, and researchers can gain an additional understanding of real-world problems. Selected papers from the conference are considered for publication in a special issue of the *Electronic Journal of e-Government*. *For more information visit*: http://www.iceg.net/

(ECEG) The European Conference on e-Government started in 2001 in Dublin, Ireland. The conference focuses on the latest research in matters of electronic government and electronic governance more generally. Selected papers from the conference are considered for publication in a special issue of the *Electronic Journal of e-Government*. *For more information visit:* http://www.academic-conferences.org/eceg/eceg2009/eceg09-home.htm

The Americas Conference on Information Systems (AMCIS) is organized by the Association of Information Systems (AIS). With 36 tracks in 2009, AMCIS covers a wide range of topics. The E-Government track at AMCIS hosts several mini-tracks on comparative e-government, trust and information security, implementation, interoperability, and e-government in developing countries. A doctoral consortium and an MIS camp are also held in conjunction with the conference. Selected authors are invited to revise their papers for publication in a special issue of the Journal of AIS. *For more information visit:* http://www.amcis2010.org/

The American Political Science Association (APSA) includes panels and papers on such topics as digital governance, voting technology, media and politics, the digital divide, and ICT and development strategies. *For more information visit:* http://www.apsanet.org/.

The American Society for Public Administration (ASPA) annual conference provides a professional development opportunity for students, practitioners and academics in the field of public administration. E-governance is one of the conference tracks. *For more information visit:* http://www.aspanet.org/scriptcontent/index_aspaconference.cfm.

APPENDIX D: Journal listings

This list of journals was found through our literature search and does not represent all journals, which may have published international digital government articles.

Dedicated digital government journals

Electronic Government, an International Journal
http://www.inderscience.com/eg/

Electronic Journal of e-Government (EJEG)
http://www.ejeg.com/

Government Information Quarterly
http://www.lib.auburn.edu/madd/docs/giq/title.html

International Journal of Electronic Governance
http://www.inderscience.com/browse/index.php?journalCODE=ijeg

International Journal of Electronic Government Research (IJEGR)
http://www.igi-pub.com/journals/details.asp?id=4298

Journal of E-Government
http://www.egovjournal.com/

Information, society, and organizations journals

Information Polity, International Journal of Government and Democracy in the Information Age
http://www.iospress.nl/loadtop/load.php?isbn=15701255

Information Technology for Development
http://itd.ist.unomaha.edu/

Information Technology & People
www.itandpeople.org/

Journal of Information Technology & Politics
http://www.jitp.net/

Public Organization Review
http://www.springerlink.com/content/106610/

Social Science Computer Review (SSCR)
http://ssc.sagepub.com/

The Information Society: An International Journal
http://www.indiana.edu/~tisj/

Transforming Government: People, Process and Policy
http://info.emeraldinsight.com/products/journals/journals.htm?id=tg

Public administration, policy, and political science journals

Asian Journal of Political Science
http://www.tandf.co.uk/journals/titles/02185377.asp

Australian Journal of Political Science
http://www.informaworld.com/smpp/title~content=t713404457

Governance: An International Journal of Policy, Administration, and Institutions
http://www.wiley.com/bw/journal.asp?ref=0952-1895

International Journal of Public Administration
http://www.informaworld.com/smpp/title~content=t713597261

International Review of Administrative Sciences
http://ras.sagepub.com/

I/S: A Journal of Law and Policy for the Information Society
http://www.is-journal.org/

(The) International Journal of Public Sector Management
http://info.emeraldinsight.com/products/journals/journals.htm?id=ijpsm

Journal of Public Administration Research & Theory
http://jpart.oxfordjournals.org/

Journal of Public Policy
http://journals.cambridge.org/action/displayJournal?jid=PUP

Public Administration and Development
http://www3.interscience.wiley.com/journal/2821/home

Public Performance & Management Review
http://www.mesharpe.com/mall/results1.asp?ACR=pmr

Management information systems and computer science journals

Communications of the ACM
http://cacm.acm.org/

Journal of Global Information Management
http://www.igi-global.com/journals/details.asp?id=99

MIS Quarterly
http://www.misq.org/

Other

Aslib Proceedings: New Information Perspectives Count
http://info.emeraldinsight.com/products/journals/journals.htm?id=ap

Benchmarking: An International Journal
http://www.emeraldinsight.com/Insight/viewContainer.do?containerType=Journal&containerId=11078

Decision Support Systems
http://www.elsevier.com/wps/find/journaldescription.cws_home/505540/description#description

Journal of Electronic Commerce Research
http://www.csulb.edu/journals/jecr/

Measuring Business Excellence
http://info.emeraldinsight.com/products/journals/journals.htm?id=MBE

Regional Studies
http://www.tandf.co.uk/journals/titles/00343404.asp

New Library World
http://info.emeraldinsight.com/products/journals/journals.htm?id=nlw

Online Information Review
http://info.emeraldinsight.com/products/journals/journals.htm?id=oir

The Electronic Library
http://info.emeraldinsight.com/products/journals/journals.htm?id=el

The International Communication Gazette
http://gaz.sagepub.com/

APPENDIX E: List of Publications

This appendix contains the full citations of all 275 publications reviewed in this study. They are organized alphabetically within type of study.

Comparative studies

Abanumy, A., Al-Badi, A., & Mayhew, P. (2004). *An exploration into the accessibility of e-government websites in two GCC countries.* Paper presented at the 4th European Conference on e-Government (ECEG), Dublin, Ireland.

Adler, M., & Henman, P. (2005). *Computerisation and e-government in social security: A comparative international study*: IBM Center for the Business of Government.

Akther, M. S., Onishi, T., & Kidokoro, T. (2005). E-government practice: What one country could learn from other. In M. A. Wimmer, R. Traunmüller, Å. Grönlund & K. V. Andersen (Eds.), *Electronic government* (Vol. 3591, pp. 145-150): Springer-Verlag Berlin Heidelberg.

Al-Mashari, M. (2007). A benchmarking study of experiences with electronic government. *Benchmarking: An international journal*, 14(2), 172-185.

Andersen, K. V., Beck, R., Wigand, R. T., Bjorn-Andersen, N., & Brousseau, E. (2004). European e-commerce policies in the pioneering days, the gold rush and the post-hype era. *Information Polity, 9*(3, 4), 217-232.

Awan, M. A. (2003). E-government: Assessment of GCC (Gulf Co-operating Council) countries and services provided. In R. Traunmüller (Ed.), *Electronic government* (Vol. 2739, pp. 500-503): Springer-Verlag Berlin Heidelberg.

Baker, P., & Fairchild, A. (2005). *The virtual workspace: Telework, disabilities and public policy.* Paper presented at the 5th European Conference on e-Government (ECEG),University of Antwerp, Belgium.

Berntzen, L., Healy, M., Hahamis, P., Dunville, D., & Esteves, J. (2006). *Parliamentary web presence: A comparative review.* In the Proceedings of the 2nd International Conference on e-Governance (ICEG), Pittsburgh, Pennsylvania.

Binz-Scharf, M. C. (2004). *Exploration and exploitation: Knowledge sharing in digital government projects.* In the Proceedings of the 5th Annual International Conference on Digital Government Research (dg.o), Seattle, Washington.

Botterman, M., Ettedgui, E., Graafland, I., & Ligtvoet, A. (2003). Citizens and e-government: An international comparison of the demand-side of e-government. In R. Traunmüller (Ed.), *Electronic government* (Vol. 2739, pp. 448-451): Springer-Verlag Berlin Heidelberg.

Capra, E., Francalanci, C., & Marinoni, C. (2005). *E-government skills and organizational culture as a key to e-government success.* In the Proceedings of the International Conference on e-Governance (ICEG), Ottawa, Canada.

Chadwick, A., & May, C. (2003). Interaction between states and citizens in the age of the internet: E-government in the United States, Britain, and the European Union. *Governance: An International Journal of Policy, Administration, and Institutions, 16*(2), 271-300.

Chen, Y., Chen, H. M., Ching, R. K. H., & Huang, W. W. (2007). Electronic government implementation: A comparison between developed and developing countries. *International Journal of Electronic Government Research*, 3(2), 45-61.

Chen, Y. N., Chen, H. M., Huang, W., & Ching, R. K. H. (2006). E-government strategies in developed and developing countries: An implementation framework and case study. *Journal of Global Information Management, 14*(1), 23-46.

Choudrie, J., Ghinea, G., & Weerakkody, V. (2004). Evaluating global e-government sites: A view using web diagnostic tools. *Electronic Journal of e-Government, 2*(2), 105-114.

Choudrie, J., & Papazafeiropoulou, A. (2006). Lessons learnt from the broadband diffusion in South Korea and the UK: Implications for future government intervention in technology diffusion. *Electronic Government, an International Journal (EG), 3*(4).

Commonwealth Centre for Electronic Governance. (2004). *Security vs. Privacy: A comparative analysis of Canada, the United Kingdom, and the United States*: Commonwealth Centre for Electronic Governance.

Cullen, R. (2008). *Citizens' concerns about the privacy of personal information held by government: A comparative study, Japan and New Zealand.* In the Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS), Waikoloa, Big Island, Hawaii.

Dawes, S. S., & Eglene, O. (2004). *New models of collaboration for delivering government services: A dynamic model drawn from multi-national research.* In the Proceedings of the 5th Annual International Conference on Digital Government Research (dg.o), Seattle, Washington.

Dawes, S. S., & Prefontaine, L. (2003). Understanding new models of collaboration for delivering government services. *Communications of the ACM, 46*(1), 40-42.

Deakins, E., & Dillon, S. M. (2002). E-government in New Zealand: The local authority perspective. *The international Journal of Public Sector Management, 15*(4/5), 375.

Dunleavy, P., Margetts, H., & Tinkler, S. B. J. (2008). Australian e-government in comparative perspective. *Australian Journal of Political Science*, 43(1), 13-26.

Durrant, F. (2002). E-government and the internet in the Caribbean: An initial assessment. In R. Traunmüller & K. Lenk (Eds.), *Electronic government* (Vol. 2456, pp. 101-104): Springer-Verlag Berlin Heidelberg.

Edwards, A. (2006). Facilitating the monitorial voter: Retrospective voter information websites in the USA, UK and Netherlands. *Electronic Government, an International Journal (EG)*, 3(3).

Esteves, J., & Garot, M. J. (2006). *Comparing e-citizenship development in Spanish and European cities.* Paper presented at the 6th European Conference on e-Government (ECEG), Philipps-Universita Marburg, Germany.

Fariselli, P., Bojic, O., & Culver-Hopper, J. (2004). Demand and supply of public information online for business: A comparison of EU countries and the US. In R. Traunmüller (Ed.), *Electronic government* (Vol. 3183, pp. 534-537): Springer-Verlag Berlin Heidelberg.

Ferguson, M. (2002). *Local e-government: Perspectives on strategy and implementation worldwide.* Paper presented at the 2nd European Conference on e-Government (ECEG), Dublin, Ireland.

Filzmaier, P., Stainer-Hammerle, K., & Snellen, I. (2004). Information management of mps: Experiences from Austria, Denmark, and the Netherlands. *Information Polity, 9*, 17-28.

Flowers, S., Tang, P., Molas-Gallart, J., & Davies, A. (2005). Contrasting approaches to the adoption of e-government: The UK and Netherlands. *Journal of E-Government, 2*(3), 53-81.

Foley, P. (2001). *Evaluating international government policies for the internet: Grappling with the problems of measuring success.* Paper presented at the 1st European Conference on e-Government (ECEG), Dublin, Ireland.

Frick, M. (2008). Translucent states: Political mediation of e-transparency. *International Journal of Electronic Government Research*, 4(3), 81-102.

Gasco, M., & Roy, J. (2006). E-government and multi-level governance: A comparative examination of Catalonia, Spain, and Ontario, Canada. *International Journal of Electronic Government Research, 2*(4), 57-75.

Gibbs, J., Kraemer, K. L., & Dedrick, J. (2003). Environment and policy factors shaping global e-commerce diffusion: A cross-country comparison. *Information Society, 19*(1), 5-18.

Gibson, R. K., Lusoli, W., & Ward, S. (2008). Nationalizing and normalizing the local? A comparative analysis of online candidate campaigning in Australia and Britain. *Journal of Information Technology & Politics*, 4(4), 15-30.

Glassey, O., & Glassey, O. F. (2004). A proximity indicator for e-government: The smallest number of clicks. *Journal of E-Government, 1*(4), 5-20.

Global Information and Communication Technologies Department (GICT), & Development Economics Data Group (DECDG). (2006). *Information and communications for development global trends and policies*: World Bank.

Gronlund, A. (2003). Emerging electronic infrastructures - exploring democratic components. *Social Science Computer Review, 21*(1), 55-72.

Guijarro, L. (2007). Interoperability frameworks and enterprise architectures in e-government initiatives in Europe and the United States. *Government Information Quarterly*, 24(1), 89-101.

Haque, A. Z. a. M. H. L. (2005). Privacy year in review: Canada's personal information and protection and electronic documents act and Japan's personal information protection act. *I/S: A Journal of Law and Policy for the Information Society, 1*(2/3).

Heinderyckx, F. (2002). Assessing e-government implementation processes: A pan-European survey of administrations officials. In R. Traunmüller & K. Lenk (Eds.), *Electronic government* (Vol. 2456, pp. 111-115): Springer-Verlag Berlin Heidelberg.

Hendriks, P., & Roozen, F. (2005). Inventory of citizen service numbers in Europe. In P. Cunningham & M. Cunningham (Eds.), *Innovation and the knowledge economy: Issues, applications, case studies*. Amsterdam: IOS Press.

Hermes, B., Seel, C., Schmitt, M., & Rousseau, A. (2006). *E-government project management: A cross-border oriented experience report.* In the Proceedings of the 2nd International Conference on e-Governance (ICEG), Pittsburgh, Pennsylvania.

Hoff, J. (2004). The democratic potentials of information technology: Attitudes of European MPs toward new technology. *Information Polity, 9*, 55-66.

Jankowski, N., Foot, K., Kluver, R., & Schneider, S. (2005). The Web and the 2004 MP election: Comparing political actor websites in 11 EU member states. *Information Polity, 10*, 165-176.

Kaaya, J. (2004). *The emergence of e-government services in East Africa: Tracking adoption patterns and associated factors.* Proceedings of the 6th International Conference on Electronic Commerce. Delft, The Netherlands: ACM Press.

Klischewski, R. (2004). Information integration or process integration? How to achieve interoperability in administration. In R. Traunmüller (Ed.), *Electronic government* (Vol. 3183, pp. 57-65): Springer-Verlag Berlin Heidelberg.

Kuk, G. (2004, June 14-16). *Network analysis of disconnect in the hollow state: The case of e-government service portals.* Paper presented at the European Conference on Information Systems, Turku, Finland.

Lally, L. (1994). The impact of environment on information infrastructure enhancement: A comparative study of Singapore, France, and the United States. *Journal of Global Information Management, 2*(3), 5-12.

Lee, T.-R., Wu, H.-C., Lin, C.-J., & Wang, H.-T. (2008). Agricultural e-government in China, Korea, Taiwan and the USA. *Electronic Government, an International Journal*, 5(1), 63-70.

Luttrell, D., & Ireland, E. (2004). *New service delivery models in government: The role of the contact centre in Ireland.* Paper presented at the 4th European Conference on e-Government (ECEG), Dublin, Ireland.

Mahrer, H. (2005). Politicians as patrons for e-democracy? Closing the gap between ideals and realities. *International Journal of Electronic Government Research, 1*(3), 51-68.

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Mendel, T. (2008). *Freedom of information: A comparative legal survey*: United Nations.

Morris, C. (2006). A comparative study of eAdoption activities in South Africa and Mozambique. In P. Cunningham & M. Cunningham (Eds.), *Exploiting the knowledge economy: Issues, applications, case studies*. Amsterdam: IOS Press.

Netchaeva, I. (2002). E-government and e-democracy. *Gazette: The International Journal for Communication Studies, 64*(5), 467 - 477.

Organization for Economic Co-operation and Development (OECD). (1998). *Information technology as an instrument of public management reform: A study of five organization for Economic Co-operation and Development (OECD) countries*: Organization for Economic Co-operation and Development (OECD).

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Organization for Economic Co-operation and Development (OECD). (2001). *Citizens as partners: Information, consultation and public participation in policy-making*: Organization for Economic Co-operation and Development (OECD).

Parna, O., & Tunzelmann, N. v. (2007). Innovation in the public sector: Key features influencing the development and implementation of technologically innovative public sector services in the UK, Denmark, Finland and Estonia. *Information Polity*, 12(3), 109-125.

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