Models and Metrics for Evaluating Local Electronic Government Systems and Services

Professor Toni Carbo, and James G. Williams, Professor Emeritus
School of Information Sciences, University of Pittsburgh, USA
tcarbo@mail.sis.pitt.edu
jellybeanjw@atmc.net

Abstract: We do not yet have good measures for Digital Government or agreement on what we should be measuring. We also lack a common understanding of models of the processes used to plan, fund, develop, implement, operate, and evaluate systems in different contexts. This paper reviews the processes of government and examines examples of models and metrics appropriate for different contexts for systems to be successful and describes a proposed research project to examine local digital government services in Pennsylvania and develop replicable models and measures for evaluation of systems and services.

Keywords: e-Government, digital government, metrics, measures, local, models

1. Introduction and background

For this paper, we define Electronic Government (e-Government) as the use of information technologies (IT) and, in particular, the Internet, to deliver government information and services and to involve citizens in the democratic process and real-time government decision making in a much more convenient, customer-oriented (citizen-centric), cost-effective and potentially altogether different and better way. The ultimate goal is the transformation of government to be truly citizen-centric. E-Government is not only about putting government services online; it involves a fundamental change in the way public services are delivered and managed. E-Government can be applied to such diverse services and agencies as city planning, social services administration, physical or information infrastructure management, emergency management, public records and archives, community or economic development, health care, education, and property assessment. We do not yet have a good model for local governments and citizens that provides for them a context for understanding and implementing services and systems using different information technologies. An appropriate model is needed to: 1) understand the needs of government officials and citizens; 2) encourage the adoption of existing solutions wherever possible; 3) address ethical and policy issues; 4) support scalability; 5) ensure the protection of privacy and security; and 6) provide for benchmarking and metrics.

The benefits of e-Government usually include improved: quality of citizen services, internal efficiencies, law enforcement, education and information, promotion and outreach activities, safety and security, health care services and management, and involvement of citizens in the democratic process. Many believe that e-Government can provide seamless services to draw agencies together, leading to more citizen-centric services. Just as E-business has been transforming the private sector, e-Government has begun to transform the public sector. However, unless one has appropriate models and metrics, the transformation to e-Government can be costly and may include some risks, such as political, operational and technology risks. There are several barriers to developing e-Government, such as resistance to change; legal and regulatory barriers; limited budgets and budgetary frameworks that discourage collaboration; inequitable access to the Information Highway; uneven levels of information literacy; social, cultural and political issues; and many others.

If the goal is to develop and implement e-Government, it is useful to begin by examining functional objectives. Functional objectives of e-Government systems and services usually include:

- Availability of data and information across multiple delivery channels
- Reliability of transactions across multiple delivery channels
- Reasonable economic, social, and political returns

ISSN: 1479-439X

- Adequate security and auditing capability
- Trustworthy and transparent systems and services
- Wide reach to all citizens in language they can understand
- Genuine re-engineering (not just shuffling) of processes within government
- Collaboration and partnerships among government, the private sector (both for and not-for profit) and community organizations

Many questions have not been addressed or have been answered only partially. These include: 1) How can we make e-Government truly citizen-centric? 2) Do we have objectives that are correct and realistic? 3) How well are we achieving these objectives fully and cost effectively? and 4) Are these objectives jointly determined and agreed upon by the citizens and the government agencies? We need better models of the processes used to plan, fund, develop, implement, operate, and evaluate successful e-Government in various political and social, cultural, and economic contexts. Also needed is better information about the total impact of e-Government on government agencies, communities, and individual citizens. A third critical omission are adequate measures to determine whether the effective implementation is related to the information literacy level of government personnel, citizens, and those who teach and train citizens and government personnel.

Government, like most businesses, has a number of core processes that are essential to the successful operation of the enterprise, some of which may be more important in specific socio-economic and cultural situations than others. Based on extensive experience with businesses, government agencies, and other organizations of the second author, we define these core processes as:

- **Procurement**: Enables government to procure and/or tender
- **Receipts**: Enables government to receive monies from the general public towards taxes, services, fines and other dues
- **Payments**: Enables Government to pay the recipients (suppliers, citizens for pensions, refunds, etc.)
- **Information**: Enables the government at all levels to access/create/acquire, gather, manage, organize, preserve, remove, and disseminate information about citizens, organizations, companies, research and development, activities, etc. Enables the citizen to access information about actions of the government, rules, regulations, services, etc.
- **Lodgment/Transact**: Enables the general public to submit and/or process applications, register documents to the government for various services and obligations, and obtain other services
- **Public Complaints**: Enables the public to relay grievances effectively and conveniently to the government
- **Public Safety and Health**: Enables public awareness and involvement in their safety and health
- **Public Records and Archives**: Enables citizens to access records generated by and for the government that are not exempted by law

Among the questions that can be asked about these core processes and, more importantly, the services they support once they are a part of an e-Government system are: 1) Are they involving the community they are intended to serve – are they truly citizen-centric? 2) Are they used widely and successfully? 3) What kind of impact do they have on social, cultural, political, personal, and economic conditions? 4.) Are they cost effective and supported by a sustainable funding strategy? 5) Are they utilizing community resources wisely? 6) Are they easily and conveniently usable by the citizens and government workers whom they are intended to serve? 7) How can these services and processes be improved through regional and inter-jurisdictional cooperation? 8) How should we educate and provide continuing education for leaders in e-Government? In recent years limits on some of these processes have been imposed in the interest of security protection, making it even more important to understand how well these processes are working; and how citizens are being affected; and how we can build the best systems and services.. These questions are part of a larger context of critical questions related to e-Government.

2. Significance of the problem

While an increasing number of governmental units are incorporating or expanding the use of information technologies (IT) into many of their activities, little is known about whether citizens are getting the information and services needed or about the state-of-the-practice of e-Government at the local community level across the nation. Also, we lack effective and agreed-upon measures to evaluate the quality of e-Government. Most existing measures are quantitative (e.g., number of websites, decrease in response time to questions, etc.), but few include qualitative measures related to policy and ethics, such as level of satisfaction by citizens with the quality of service, or whether privacy policies are included on websites and whether local government officials are aware of the need for privacy protection, etc. Although some efforts are being made to develop metrics, no systematic set of quantitative and qualitative measures has been developed for widespread use. In addition, many sociocultural, economic, and political implications of the use of IT to provide government information and services (e.g., increased expectations of citizens for more and better services and concerns about violation of citizens' privacy) have not been addressed sufficiently. Finally, many local government officials are being asked to take on e-Government responsibilities with little or no education or training, and no comprehensive educational program exists to provide the competencies needed for effective e-Government or to provide continuing education modules for individuals to gain the competencies needed and to update their knowledge and skills. A project has been proposed and initial work has begun at the University of Pittsburgh to provide models and metrics, for development and evaluation of e-Government programs at the local level.

3. Questions to be addressed

Among the questions we have identified to be addressed are:

1. What models and metrics can be developed for e-Government systems and services to be successful in meeting their objectives within different political, cultural, and socio-economic contexts?
2. Can a single model and a single set of metrics be used for evaluating in all contexts/situations and stages of development, or are multiple models tailored to the political, organizational, personal, ethical, technological, and sociocultural, and economic factors of a community needed?
3. Can an adaptive model be constructed based on a synthesis of multiple models using a set of component and attribute values and relationships that best fits a particular context?
4. Can the models and metrics for e-Government be used to develop programs to educate individuals to plan, develop, implement, operate, and evaluate such systems?
5. How can the needs of citizens best be taken into account for e-Government at various stages in the process of funding, planning, development, operations, and evaluation to provide true citizen-centric services, and how should citizens' needs be integrated with the technology, information content, and governmental functions?
6. What has been the impact of security concerns in terms of changes in availability of information and services through e-Government systems and services?
7. What competencies are needed for experts to develop and manage e-Government? What are the components of a graduate education program to build these competencies and what continuing education modules should be developed to help keep these competencies current in a rapidly changing environment?

4. Multiple models and metrics

An evaluation requires a model of the object of evaluation and a system requires a model of the applications it is intended to support. Without a model, it is impossible to determine what variables to measure, what attributes to observe, what data to gather, what questions to ask, what relationships to explore, and what scales of measurement to employ. Our hypotheses are: 1) Multiple models of e-Government are required to represent and subsequently plan, fund, design, develop, implement, operate, and evaluate adequately e-Government realistically; and 2) The synthesis of model components,

component relationships, and component attributes from various models can be used to form a adaptive, dynamic model for a particular context based on a set of contextual parameters that will explain a specific instance of an e-Government development or implementation. In this Kantian approach, theoretical models and empirical data complement each other and are inseparable and truth is a synthesis. Also, multiple models provide synergism and help explain different and changing contexts; and models have different components that are technological, organizational, economic, social, political, ethical, and personal. The approach that will be taken in this proposed project is to develop conceptual models of e-Government, transform these into logical models, and finally transform the logical models into physical (implementation) models using the components and attributes identified by community surveys so that the attributes can be measured both quantitatively and qualitatively. All models and metrics must be validated to ensure that they are realistic representations of what they are supposed to represent. Model validation has two parts: (a) a comparison of model components, component attributes and component relationships with data collected from the real world; and (b) a comparison of model components, component attributes, and component relationships with expert judgment. Expert judgment is used to assess the definitions, relationships, attributes, and internal consistency of each model. Data collected from communities via its leadership, IT personnel, and citizens will be used to develop, verify, correct, and enhance the models and associated metrics, and representatives from the various groups will be an essential part of the design, planning, study, and evaluation.

5. Previous research on digital-government systems and services

Several studies addressing the evaluation of e-Government were examined for measures to use in this proposed study. The most detailed and useful set of measures, nearly all of which are quantitative, are included in a study by the highly reputable Gartner Consulting Group entitled “Best Practices in County E-Government Counties” (Gartner Consulting Group, 2003). The study used award-winning counties to learn how to launch successful e-Government systems and avoid low-value initiatives and activities. This study gathered data from locations that were somewhat homogeneous in that they are affluent with sizable metropolitan areas. Numerous updates and revisions have been developed by them, including the “Gartner Enterprise Architecture: a Home for E-Government,” 29 July 2003; “Best Practices in County E-Government,” 13 February 2003; “The State and Local E-Government Competitive Matrix,” 2002; 19 February 2003; and “Meeting IT Leadership Challenges in Government,” 8 April 2004 (http://www.Gartner.com). Several other studies provide some useful measures, but all have serious limitations for examining local government activities and for developing both qualitative and quantitative measures. Among these limitations are the problem of building effective and workable online communities as a whole (Smith, 2003) and also the currency and relevancy of the studies undertaken, as they can become outdated quickly due to the rapid increase of IT. Additionally, many of the studies are limited to national data, and do not examine regional and local areas. However, many of these studies can be useful in developing an understanding of e-Government, despite these limitations.

Others, such as two studies by Darrell M. West of the Center for Public Policy at Brown University (West, September, 2003a and West, October, 2003), examine national government web sites and do not include any sub-national units such as local government or regional units. One West study (West, September, 2003b) does examine websites of more than 1,900 city government websites in the 70 largest metropolitan areas. It uses website data to measure variations across cities, examining such factors as privacy policies, executable online services, disability access, and foreign language translation features. This study is helpful in providing some useful measures at the local level, at least for the most populous cities. Other studies, such as the Organisation for Economic Co-operation and Development (OECD) study (OECD, 2003), provide guidelines and a conceptual model for implementing an e-Government system. Some studies, such as the “E-Government Satisfaction Index," conducted by Larry

Freed (Freed, 2003), survey federal government web sites using the University of Michigan's American Customer Satisfaction Index (ACSI) methodology to analyze what is useful and what is not desirable on web sites and do provide some criteria as to what customers prefer on a web site. The "Digital State Survey" (Center for Digital Government, 1999-2003) conducted annually since 1999 examines distinct sectors of E-Government and is valuable for detecting e-Government trends at the state level for cities of various population sizes. One very useful study, "Promoting Electronic Government (**PEG**)," is a two year UK government "Invest To Save" project, undertaken to support local government modernization through more citizen-focused services using electronically-enabled delivery channels ("Promoting Electronic Government", 2002). PEG involved the private sector as well as local government and drew on the experience of pioneering authorities that have demonstrated the opportunities for continuous service improvement within the context of best value. The project provides mechanisms for gathering, assessing and disseminating best practice and practical support and organizes materials around nine Critical Success Factors for electronic service delivery, such as improving customer access and service processes; using information in service delivery; and providing strategic procurement.

The U.S. Office of Management and Budget (OMB) has been working to implement the E-Government Act of 2002, issuing an "E-Government Strategy" in April 2003, an implementation guidance memo on August 1, 2003, and reports on numerous initiatives. (United States Executive Office of Management and Budget, 2003 and 2004; also see their website). Several of OMB's reports provide some measures at the national level, which may be useful to adapt for the local level. In addition, a report by the UN, *Benchmarking E-Government: A Global Perspective* (United Nations, 2002), offers some models, evaluation, and benchmarking criteria for e-Government on an international basis, using a citizen-centric approach and providing a "best practices section" based on web content, system architecture, and linking policy.

Although most of the studies on e-Government have concentrated at the state and national level with a few at the county level, a study entitled "Local E-Government: Perspectives on Strategy and Implementation Worldwide" (Ferguson and Baron, 2002), focuses on local government where over 80% of all citizen transactions occur. The report provides insight into achievements in implementing e-Government around the world, and into what is needed to transform local governments and their interactions with citizens, customers, and other organizations and agencies. It also provides sources for best practices for emerging local e-Government, basic models for building e-Government, and ways to address needed cultural, structural, process, and technology changes.

Even though several studies have developed conceptual models, evaluation criteria, and metrics, we identified no comprehensive U.S. studies that focus on citizen-centric metrics or that include a widespread baseline comparison, cost savings, return on investment, metrics useful for multiple models, indexes of success for stages of e-Government systems (e.g. publish, interact, transact, transform), or qualitative measures across a wide spectrum of socio-political environments. Upon reviewing several sources and examining e-Government applications, and also building on the authors' experience with information policy, we identify the key factors for measuring e-Government as being related to: 1) governance structure, including the basis for decision-making; 2) privacy issues; 3) content management (e.g., whether standard, global templates are used to separate content from presentation); 4) policies related to authentication, advertising, fees/payment, etc.; 5) funding; 6) information architecture; 7) web site applications and accessibility; 8) maintenance of systems and services; 9) marketing strategies; 10) information literacy and fluency; and 11) quality.

Some of the best models for citizen-centric services are coming from the private sector (both for-profit and not-for-profit). For example, commercial web portals, such as AOL's www.GovernmentGuide.com or its related sites www.benefitscheckup.com (with the National Council on the Aging) and http://mygov.governmentguide.com,

provide extensive "one-stop-shopping" services, are heavily used, and are easy for citizens to use. Data from the use of these and other commercial sites will be used, when it is available.

It is important to recognize that citizens look for and get information and services from a wide range of information sources and media. These often start with a conversation with another individual and may lead to or include various media, such as network or cable television and radio; print materials, such as magazines and newspapers; cultural institutions such as museums, libraries and archives; educational institutions; religious and community groups; the workplace; commercial services and advertising; non-governmental sources on the Internet, etc. Also, meeting the information needs of citizens often requires information from many different sources, including different levels of government, the private sector, healthcare services, etc. The U.S. Government's firstgov.gov services provide access from a single portal to a wide range of information sources. For example, people looking for art information for children can easily start at firstgov.gov and click on kids.gov, which leads to sources not maintained by kids.gov under categories of: Government, Organizations, Education, and Commercial. An examination of the features of many of these and related websites from individual states provides a good set of features which could be evaluated by a standard set of metrics. Any models and metrics, as well as educational programs, must incorporate an understanding of the multiple sources used by citizens.

6. Methodology

6.1 General methodology

Building on these studies, the proposed project will create a model based on the citizens' viewpoints, which is expected to be quite different from a model based on a government agency's viewpoint. Many e-Government services to date have created by agencies based on existing services and on their understanding of what is wanted and needed, rather than being designed from the citizen's needs and interests. Often little data is available about what local government officials and citizens really want and need. Our assumption is that metrics for development and evaluation need to be tailored to the technical, personal, ethical, organizational, political, social, cultural and economic characteristics of a community and government agencies that serve the community. In addition, metrics must incorporate the stage of development of the e-Government system and services in that community, recognizing that multiple delivery mechanisms are needed. No "one-size-fits-all" model or single set of metrics is necessarily appropriate for all e-Government systems and services. Success metrics may well vary depending on the project. For example, successful connection of information in databases from several different agencies at different levels of government might increase the potential for the violation of individuals' privacy. Another factor to be considered is timing, such as the impact of breaking news (such as stories in the media about elevated levels of security or a medical breakthrough) and calendar deadlines.). It is evident that metrics need to be tailored to specific situations.

The proposed study will use the Commonwealth of Pennsylvania, which has more government entities per capita than any other state in the U.S., as a microcosm for the U.S. Building on measures from earlier studies, we will document and develop conceptual models of e-Government; then define components, component attributes, and the component relationships for each model. Based on the information from the Commonwealth of Pennsylvania and using existing frameworks and metrics from earlier studies, we will propose parameters and quantitative and qualitative measures for the attributes and relationships. Among measures to be included are: 1) innovation and use of IT to deliver government information and services; 2) efficiency; 3) return on investment; 4) ease of use; 5)focus on citizens' needs; 6) ease of navigation across levels of government; 7) protection of privacy and inclusion of privacy policies; 8) security and ease of auditing; 9) inclusion of qualitative and quantitative measures; 10) evidence of public and private partnerships; and 11) effective evaluation mechanisms .

The proposed project will incorporate an Advisory Committee of experts, to assess the validity of the models and propose

additional models in three areas, provide the perspectives from citizens and from personnel from governments at all levels to the researchers, and provide other input and advice. We plan to focus on three areas: Emergency Management, Public Records and Libraries, and Community Development. We will define the components, component attributes, and component relationships for each model and will then propose parameters and measures for the attributes and relationships. The Advisory Committee will assist in assessing the validity of the models in terms of definitions, components, attributes, relationships, and proposed metrics. The Committee is also expected to propose additional models for e-Government systems in these three areas.

6.2 Survey and Interview State, County, and Municipal Authorities and Citizens

After the conceptual models are defined for the three areas of e-Government practice, we will develop survey instruments to collect data from the appropriate constituent populations based on each conceptual model's components, attributes, and proposed set of measures. The survey will also incorporate a representative sample of citizens from a diverse set of community contexts to validate model components, component relationships, and attributes, and more importantly, will gather parameter values for the attributes and metrics proposed in the conceptual models. The surveys will be used to develop new models and metrics, enhance existing models and metrics, and eliminate models and metrics that do not fit any context. The State of Pennsylvania is a representative sample for future surveys because of its diversity of population, cultures, and socio-economic factors.

For government entities the survey will include what functions and services they have currently implemented for e-Government services, what they are planning for new services, the process used to make their system a reality, how security and privacy issues have affected their systems, how citizens have been involved, and what metrics they have gathered about current e-Government. For the citizens, the survey will determine what the citizens' needs are for e-Government for themselves and their communities, what their objections are, how e-literate they are, etc. The survey instruments and interviews will capture general data on citizens' needs; an inventory of services and related data (e.g. governance, policies, funding, organization, technology, architecture, marketing, service offerings, ethics, public policy, etc.); and in-depth data on the three areas of investigation defined above. Additionally, the survey will attempt to discover the impact of 9/11 and other security issues on the e-Government systems and services across the state and provide an analysis and synthesis of them.

6.3 Data collection via interviews

We will identify from the state-wide survey ten communities with no e-Government services, ten communities with the best systems and services, and ten communities with the poorest services systems based on the criteria we establish. We will develop an interview instrument and schedule interviews, focus groups, and possibly public hearings, with the appropriate citizens and government officials in each of 30 selected communities to get an in-depth understanding of the history, development, implementation, and current operation of their government and e-Government system, if one exists, to discover patterns for success, mediocrity, failure, or lack of an e-Government system. The study will acquire the socioeconomic and cultural data for all communities in Pennsylvania (much of which we have from earlier work); select a sample of citizens from a set of strata to include demographic data to interview across a diverse section of socio-economic classes to get a citizen-centric view of the use, needs, and objections for e-Government systems and services.

6.4 Data analysis and model and metric refinements

The study will use the criteria we develop as a guide to codify all the data acquired from the survey and interviews so that statistical analysis can be performed and model parameters and metrics can be identified and refined. This will be done by assigning a rating or weight to each of the factors acquired or discovered via the survey and interview process. This same method will be used for e-Government

system architecture components, relationships, and processes. For example, technologies that may work well for an affluent or large community, may not work as well for smaller and/or poorer communities. The ranking would be based on what has been very successful, successful, somewhat successful, and unsuccessful in the communities surveyed and interview data as well as what has been reported in the literature. All the factors related to e-Government systems and services will be quantified so that an index can be assigned to a community and its e-Government status as well as its potential to improve or begin e-Government systems and services. Using a variety of statistical techniques such as correlation, regression, and cluster analysis to find patterns and relationships in the data gathered, we will use the results of the statistical analysis to determine parameters for what metrics fit which models at what stage of development and their attributes and relationships under what socio-economic, political, technological, personal, service, and ethical contexts.

6.5 Model and metric construction and validation

Based on the data analysis we will generate a set of rules that will dynamically build a synthesized e-Government model for selected Pennsylvania communities based on the parameterized sub-models and use the synthesized model to build a set of metrics based on the survey, socio-economic, cultural, and interview data collected about the communities in the content areas. We will then use the data collected and analyzed about Pennsylvania communities to validate the model(s) and the metrics. The validation process will involve comparing the synthesized model and set of metrics produced by the set of rules with the actual data collected about the communities and their e-Government system(s) and services, as well as using expert judgment from the principals and the Advisory Committee to compare the models and metrics produced by the model and set of rules with published evaluations and the expert's evaluations. When the synthesized model and metrics are in conflict, the rules for model building and metrics will be revised. After the model and metrics building process has been validated, we will attempt to build an index metric similar to an economic index that can be used by a community to show three things: their current status in terms of an existing e-Government system (scale from 1 to 5); their capability of improving a currently existing system; and their capability of developing and implementing a system when one does not currently exist. Results of the proposed study will be presented at professional conferences and submitted for publication in several print and electronic journals.

7. Summary

We believe that, using Pennsylvania as a case study, we can develop a set of models and metrics to help in the evaluation of e-Government at the local level. Building on previous studies, and recognizing the need to understand socio-economic and cultural factors, as well as the situation and context dependence of any model, this proposed project should provide results that can be adapted for different communities and countries. The authors welcome comments on the ideas and approaches advanced in this paper.

8. Acknowledgements

This paper is based on a proposal submitted with colleagues at the University of Pittsburgh to the National Science Foundation and on a paper presented at the 4th European Conference on e-Government, July 17-28 June, 2004, Dublin, Ireland. The authors wish to acknowledge the contributions of Professors Louise Comfort, Donald King, and Jose-Marie Griffiths to the original proposal. We also thank Annette Kaltenbaugh for her assistance.

References

AOL. Websites: GovernmentGuide. <http://www.GovernmentGuide.com>, <http://www. benefitscheckup.com>, and <http://mygov.governmentguide.com>.

Bell, Peter, Reddy, Pavani, and Lee Rainie. "Rural Areas and the Internet." *Pew Internet & American Life Project*. (February 2004): <http://www.pewinternet.org/reports/pdfs/PIP_Rural_Report_pdf>.

Center for Democracy & Technology. *The E-Government Handbook for Developing Countries*: *A Project of InfoDev and the Center for Democracy and Technology*. Washington, D.C.: Center for Democracy & Technology, November 2002.

Center for Digital Government. "Digital State Survey." (1999-2003): <http://www. centerdigitalgov.com/center/02digitalstates.phtml>.

Council for Excellence in Government. *E-Government: The Next American Revolution*. Washington, D.C.: Center for Excellence in Government, 2001.

Council for Excellence in Government. "Linking Resources to Results: A Discussion Paper." *Council for Excellence in Government and the Committee for Economic Development*. (2003): < http://www.excelgov.org/usermedia/images/ uploads/PDFs/linking_r_to_r.pdf>.

EDC Center for Media & Community and the NYS Forum. *E-Government for All: Ensuring Equitable Access to Online Government Services.* http://www.nysfirm.org/documents/pdf/reports/eGovforAll.pdf

Executive Office of the President of the United States, Office of Management and Budget. "Implementing the President's Management Agenda for E-Government: E-Government Strategy." (April 2003): <http://www.whitehouse.gov/omb/egov/ downloads/2003egov_strat.pdf>.

Ferguson, Martin and Fred Baron. "Local e-Government: Perspectives on Strategy and Implementation Worldwide." From the *2nd European Conference on e-Government*. (2002).

Freed, Larry. "American Customer Satisfaction Index: E-Government Satisfaction Index." *ForeSee Results*. (September 2003) <http://www.idt.unisg.ch/org/ idt/ceegov.nsf/0/9252408f342f09b8c1256df2003bb87f/$FILE/eGovBench.pdf>.

Gartner Consulting Group. "Best Practices in County E-Government Counties." (February 2003): <http://www.cira.state.tx.us/Docs/docs/bestpractices.pdf>.

Gartner. For numerous studies see: http://www3.gartner.com.

Governing. "The Government Performance Project: How We Grade Them." *Governing.com*. (February 2002): <http://governing.com/gpp/2002/gp2how.htm>.

Hart, Peter and Robert Teeter. "2001 Survey." *Council for Excellence in Government*. (2001): <http://www.excelgov.org/usermedia/images/uploads/ PDFs/ egovsupfinal.PDF>.

Organisation for Economic Cooperation and Development. "The e-Government imperative: main findings." (March 2003): <http://www.oecd.org/dataoecd/60/60/2502539.pdf>."Promoting Electronic Government." United Kingdom. <http://www.peg.org.uk/>.

Smith, Jillaine. "Benchmarks for Building Extranets and Online Communities." *Benton Foundation*. (March 2003) <http://www.benton.org/publibrary/capacity/ extranet_benchmarks.doc>.

United Kingdom. "Guidelines for UK government websites: Framework for local government." *Office of the E-Envoy*: *Leading the drive to get the UK online*. (June 2003): <http://www.e-envoy.gov.uk/assetRoot/04/00/59/61/04005961.pdf>.

United Kingdom. Office of the Deputy Prime Minister. *Implementing Electronic Government Return 2003: Proforma*. (July 2003): <http://www.e-envoy.gov.uk/assetRoot/04/00/59/61/04005961.pdf>.

United Kingdom. . Office of the Deputy Prime Minister. *Support for e-Innovation* (September 2003): <http://www.localegov.gov.uk/Nimoi/sites/ODMP/resources/ e-Innovations%20Guidance%20-v4.pdf>.

United Nations Division for Public Economic and Public Administration. "Benchmarking E-Government: A Global Perspective." (2002): <http:// unpan1.un.org/intradoc/groups/public/documents/un/unpan003984.pdf>.

United States Executive Office of Management and Budget. *E-Government Strategy*. (April 2003): <http:// www.whitehouse.gov/omb/egov/2003egov_strat.pdf

United States Executive Office of Management and Budget. Office of Information and Regulatory Affairs. *Information Quality: A Report to Congress. Fiscal Year 2003*. (April 30, 2004) http:www.whitehouse.gov/omb/inforeg/fy03_info_quality_rept.pdf

West, Darrell M. *Achieving E-Government for All: Highlights from a National Survey*. Working Document. (October 22, 2003). http://www.benton.org/publibrary/egov/access2003.html

West, Darrell M. *Global E-Government, 2003*. (September 2003): <http://www.insidepolitics.org/egovt03int.pdf>.

West, Darrell M. *Urban E-Government, 2003.* (September 2003b): ahttp://www.insidepolitics.org/egovt03city.pdf

