Acknowledgment

Our thanks extend to everyone who donated time and energy for this symposium. Special appreciation goes to the speakers and participants who helped spark the discussions and exchange of ideas summarized in this report. It is rare when researchers from various academic disciplines, business, state and federal government, public interest groups, nongovernmental and other organizations have the opportunity to come together and discuss important issues. We hope that the symposium dialogue and interaction will result in innovative projects and productive partnerships for the participants.
We first want to thank the participants for supporting this effort and taking part in this symposium. We found the discussions to be tremendously informative, and we greatly appreciate the sharing of information that took place.

Major areas of interest and concern emerged during group sessions. These are presented in the form of both synopses of discussions and complete lists of the ideas generated by the groups. Participants were also asked to develop research projects or agendas within the context of six key areas: standards, policy, process, models, management/role perception and measurement. These are the major areas of inquiry where research initiatives can begin. We believe that identifying these research issues and questions are an important aspect of meeting the challenges in today’s world of rapid developments in information technology. We hope that the exchanges and networking facilitated by the symposium will result in the realization of many of these project ideas.

To maximize this potential, we would like to encourage continued discussion and interaction among symposium participants. One way we are facilitating this interaction is by hosting a listerv to allow participants to further explore the issues raised during the symposium and refine research questions. Our goal is to move beyond the development of research questions to the formation of active research partnerships. We believe that thoughtful interdisciplinary research is essential to successfully meeting the challenges generated by rapid developments in information technology.

We hope that this report will reactivate contact and discussion among participants. We look forward to continuing the dialogue on these important issues and to assisting groups with their research agendas.

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Vice President for Research  Director, Institute for Science,
Texas A&M University  Technology, and Public Policy,
George Bush School of Government  and Public Service, Texas A&M University
On October 7-9, 2001, a symposium entitled The Future of Citizen and Government Interaction in the Information Age was held at Texas A&M University in College Station, Texas. This event was designed to bring together a diverse group of participants who could share their expertise and insights into the challenges and emerging opportunities for governance and citizen participation presented by developments in the sphere of information technology.

The symposium was hosted by three organizations that are a part of Texas A&M University: the Office of the Vice President for Research; the Institute for Science, Technology and Public Policy in the George Bush School of Government and Public Service, and the Academy for Advanced Telecommunications and Learning Technologies.

The symposium goals included 1) identifying critical unanswered questions and information needed for future decision making and policy development in answer to the rapid developments of information technology, 2) developing an ambitious research program to addresses the needs identified by the attendees; and 3) providing a starting point for long-term research partnerships among participants. It is hoped that, ultimately, this effort will contribute to more efficient and productive decision making and more effective approaches and models for citizen-government interaction in the future.

To facilitate interaction and productive discussion, symposium attendance was limited to approximately fifty invited participants. Half of the participants represented federal and state agencies, non-governmental organizations, businesses, and other related groups. The other half included Texas A&M University scholars from a diverse set of academic disciplines, ranging from computer science to the social and natural sciences. To maximize dialogue and interaction among attendees, the symposium format included facilitated small group discussions followed by plenary sessions. The four sessions focused on: 1) Perspectives on Citizen and Government Interaction: Current and Future Trends; 2) Emerging Challenges of Citizen and Government Interaction in the Information Age; 3) Arenas for Citizen and Government Interaction; and 4) Identification and Discussion of Research and Development Needs. The overall objective of the first three sessions was to identify unanswered questions and information gaps in the field and other significant and researchable topics.

Topics that emerged during discussions were diverse, as might be expected in such a new area of inquiry. Nevertheless, themes recurred throughout the Symposium discussions, and we have tried to identify these without losing the detail of the free-flowing discussions. Examples of the themes that recurred regardless of the topic under discussion include access and gatekeeping, privacy and security, freedom and accountability, as well as issues associated with the rapidity of changes in information technology. Complete lists of ideas and concerns generated by the small group discussions are also included in this report, classified under some key categories, for a meaningful presentation. Before the final session, participants were asked to prioritize the issues that had been generated during group sessions. In order to provide some structure for this final discussion of research topics, participants were asked to think in terms of standards, process, policy, models, management, role perception and measurement. Given the breadth of many of the topics that emerged during the discussions, we believed that this categorization would contribute to more succinct and easily managed research project ideas.
The George Bush Presidential Library Complex
The first section of the report summarizes remarks by the two keynote speakers who were asked to share their thoughts on IT and stimulate participants to reflect on their own diverse experiences. The next four segments of the report cover the issues and questions raised at each point in the three days of discussion. The reader will find repetition across the sessions that underscores the importance in the minds of the participants of some of these issues. At the end of each of these session summaries, the full lists of ideas generated by the groups are presented in order to insure retention of details. The concluding section attempts to condense the symposium discussions.

Keynote Speakers

Two keynote speakers provided unique and insightful comments on the IT phenomenon. Summaries of their comments follow.

What I Know That May Surprise You
Mr. Alan Cooper,
Cooper Interaction Design, California
Monday, October 8, 2001; 11:30 a.m.

Mr. Alan Cooper, the co-founder of Cooper Interaction Design founded in 1992, is a software author and designer. The mission of his firm is to address the “design gap” in today’s software development process. Known as the “Father of Visual Basic,” Mr. Cooper has become an outspoken champion of the customer, the forgotten person in the electronic product development process. He not only serves as a speaker on software development issues but also actively participates in several professional design groups. He received a Windows Pioneer Award for his contributions to the software industry by Bill Gates in 1994 and a Software Visionary Award in 1998.

Mr. Cooper offered the symposium participants an entertaining and provocative explanation of how talented people and companies continuously create aggravating products based on technology that miss the mark in terms of meeting customer expectations. Using the business structure of the industrial age to develop software and other technological products increases the need for capital, lowers product quality and reduces customer satisfaction. Mr. Cooper recommends an interactive design process as a powerful tool and solution to the developing software economy.

Science, Technology and Politics
Dr. D. Allan Bromley, Sterling Professor of Sciences,
Yale University
Monday, October 8, 2001; 7:30 p.m.

Dr. D. Allan Bromley is one of the world’s leading nuclear physicists and is the first Sterling Professor of the Sciences at Yale University. He was also Dean of Engineering from 1994-2000. He has carried out pioneering studies on both the structure and dynamics of nuclei and is considered the father of modern heavy ion science, one of the major areas of nuclear science. As the first person to hold the Cabinet-level rank of the Assistant to the President for Science and Technology and as the Director of the Office of Science and Technology Policy from 1989 to 1993, Dr. Bromley was particularly qualified to speak to the symposium participants. His insightful presentation outlined the historical relationship between science and technology prior to and since World War II and the role of politics in the development and growth of these two areas.

Dr. Bromley outlined the ways in which technology has changed the nature and quality of our lives. He pointed out that technology is the driving force behind our economy and that continued economic growth requires a continued growth in the sphere of technology. He is optimistic about the future of science, the study of what is, and technology, the creation of what never was. He observed that it is the interaction between science, technology and politics that provides for breakthroughs in medicine, production of quantum computers as well as other advances that meet the needs of society.
Keynote speaker Mr. Alan Cooper

Keynote speaker Dr. D. Allan Bromley
Objectives

The goal of this session was to set the stage for the rest of the discussions by introducing different current perspectives and predictions of the future of citizen and government interactions in the information age.

Highlights

Four speakers representing different information technology arenas were asked to make opening remarks during this session. These speakers were Dr. W. Richard Adrion, Mr. Gary M. Bachula, Dr. Michael Freckleton and Dr. Howard J Silver.

Dr. W. Richard Adrion, the Division Director of Experimental and Integrative Activities for the National Science Foundation (NSF) observed that sustainability is one of NSF’s major concerns. New areas of research investment include digital governance, interface software developments, nanotechnology, biocomplexity and social implications of technologies. There is an effort to provide greater access to those with disabilities or who otherwise might not have access to electronic information through the Universal Access Program. He also mentioned FedStats, a federal program created in an effort to integrate the more than thirty separate statistical databases in the U.S. federal government.

Dr. Gary M. Bachula, Vice President for External Relations from Internet2 (Washington D.C.) outlined his organization’s involvement in creating the next generation of the Internet and a new web backbone that will be ten thousand times faster than a T1 line. The application possibilities for these include electronic voting and topic specific broadcasting. They are also working on middleware, which is software that connects two or more applications across the Internet or local area networks managing security, access and information exchange.

Dr. Michael W. Freckleton, Director, Office for Applied Solutions in Operational Medicine (Brooks Air Force Base, San Antonio) reflected upon the humanitarian and civic assistance goals of his organization in times of dire needs. Pointing out that the vast majority of the South Texas population do not receive adequate health care, he explained how his organization is working to bridge this health care gap through various thoughtfully crafted plans utilizing information technology.

Dr. Howard J. Silver, Executive Director, Consortium of Social Science Associations (Washington, D.C.), talked about the relationship between the Internet and the future of democratic politics, including how the Internet was supposed to eliminate some of the intermediary roles of the government, how the media’s impacts on politics are changing due to the increased availability of internet-gained information and why the Internet might become an option available for voting in the future thereby adding new dimensions to the concept of direct democracy. He also discussed the implications of webcasts, law enforcement, copyright and encryption issues and web sales tax for democratic governance.

Following the opening remarks by the four distinguished speakers, participants at large were asked to comment or add to the opinions expressed. The participants added that speed vs. deliberation, access vs. gatekeeping, participation vs. efficiency, and process/policy interchanges were issues that all the participant groups needed to address for the rest of the symposium as being integrally related to citizen and government interaction in the technologically developed information age. Remarks and discussions also focused on the possible working definitions of various topics to be discussed by the various groups in the symposium, tangible outcomes and goals of the symposium, existing bodies of research in the field, nature of audiences and participants, possible funding agencies for the various research topics and challenges arising from different sectors for specific research agenda, usage of technology by wrong hands, universal access to technology as well as using the internet for medical voice and opinion and reaching out to the sections of population in need of greater medical care and attention.
Session II
Emerging Challenges of Citizen and Government Interaction in the Information Age

Objectives
Thinking in unrestrained ways, the participants were asked to offer as many ideas as they could during this session on the social, cultural, economic, legal and educational issues that citizen-government interaction in the information age raises and to identify as many unanswered questions and needs as possible.

As in all the sessions that followed it, this session comprised two parts: (a) concurrent small group brainstorming sessions and (b) a follow-up plenary session at which critical unanswered questions emerging from each of the small group discussions were summarized for the group as a whole. Four groups generated ideas on:

1. New models of government and social structure in the information age;
2. Policy, societal, and related challenges of information technology and standards currently in development;
3. Formation and dynamics of communities and social movements and their impacts on citizen and government interactions in the information age; and
4. Ethical and value driven challenges of citizen and government interactions in the information age.

Highlights

Group I: Session II
This group focused on elements that will be required in effective government and citizen interaction models and the formal and informal social structures that will be necessary to deal with this technology. The issues that repeatedly surfaced in this discussion were: privacy and security issues, information issues such as who owns the information transmitted via information technology means, who decides what is public information, how can information be collected and arrayed more effectively, how to determine the value of information and how to guarantee access to it. Several support and infrastructure issues were raised by this group including issues like incentive structures, ways to ensure universal access, the need for an equitable and sustainable method for financing IT. Questions regarding the roles to be played by various social institutions were also posed. There was speculation on the respective roles of government, business, and the public.

Group II: Session II
This group was asked to discuss the various challenges that the developments in information technology currently pose to social relationships, policy-making and standard setting. The group identified a variety of challenges to the agreed-upon need to set standards. These included: setting standards that would define truthful information, standards for equitable access, standards that would curb abuse of IT without curbing creativity, and standards that would adequately define and protect individual privacy. There was also a concern with overall ethical standards. Determining the roles that various entities will play was also seen as a significant challenge. The respective roles of the public and private sectors were seen as a key challenge. The extent of the role citizens should play in setting security and privacy standards was raised as an important question. The variety of challenges presented by IT was also illustrated by the number of “how to” questions that arose. Examples included how to store identity particulars, how to instill ethical standards, how to prepare the public for full engagement with IT, how to prevent the creation of communities isolated from IT participation, and how to identify the many unintended consequences that are expected.
discussion reiterated many of the issues that emerged in Groups 1-3. Topics included: the ethical aspects of establishing the accuracy of technological information, protecting the individual’s right to control personal information and informing a voting public in a climate of disparate access to equipment and knowledge.

Issues List generated by Session II discussion groups
This section presents a complete list of ideas and issues generated by the four concurrent group sessions. For organizational purposes, the research topics, issues and questions are grouped under six key categories: standards, process, policy, models, management/role perception and measurement. Symposium organizers observed that much of the discussion in Sessions II and III can be meaningfully classified under these specific categories. The reader will note that sub-themes like authentication, authority, control, security, privacy, access, information ownership, and legal policies cut across these six key categories.

New Models of Government and Social Structure in the Information Age

Standards
- Who owns the information?
- What are the future goals versus the need for privacy, security and control?
- Should information be accessible at all times to all people? What is perceived privacy? What is the ability of individuals to access information that is free to the public?
- How are standards for the security of individuals and agencies set? What are the implications of technology for the security of individuals?

Process
- How can public information be collected and articulated?
- What are the future goals versus the need for privacy, security and control?
- How can we shorten the digital divide, that is, the distance between technologically developed societies and non-technologically developed societies?
- How has technology changed our concept of size and time?
- What would be the process of judging public information? There are enormous amount of information that is public information, but that has never been “practically public.”
- What would be an ideal process of taxation?
- How can we ensure universal usage of IT?
- How is faith in government going to affect poverty and technology?
- How can we assess the new population trends affected by IT?
- How can we build upon the information we have collected with the help of IT?
- How can the public’s informational goals be assessed and articulated in such a way that the specific solutions using technology can be developed?

**Policy**

- Who will pay for the new technology?
- What are the implications of technology for the security of individuals?
- How can we bridge the digital divide?
- Is there a need for a new taxation policy?
- How is faith in government going to affect poverty and technology?
- How can we structure the incentive systems?
- How to ensure compliance with governments?
- How can we reconcile variations of definitions in IT – Total Cost of Ownership (TCO) not applicable to government (ex: money spent on student)?
- What is the role of technology in a government; how is information communicated across agencies?

**Models**

- Is there a corresponding business model to citizen and government interaction?
- What new technologies can be used to identify today’s problems and their solutions?
- Is there a model for built environment in IT that influences our local politics?
- How can the public’s informational goals be assessed and articulated in such a way that the solutions using technology be developed?

**Management/Role Perception**

- Is there enough trust in the government to allow the gathering of information?
- Who owns the information?
- What role should the government play?
- How can the business of government be separated from delivery of services?
- What is the role of technology in a government? How is information communicated across agencies?
- What social values stimulate the creation and use of information technology?
- How technical does society need to be?
- Is there enough trust in the government to allow the gathering of information?

**Measurement**

- How do we measure changes in technology vs. changes in behaviors concerning technology?
- How is the value of universal access assessed?
- How can we place a measurable value on addressing information and knowledge?

** Standards **

- Is there a definite notion of access or does it need to evolve?
- What are the parameters of responsibility of the private and public sectors to inform individual of data and information pertaining to the individual? How do we set a standard about this issue?
- What are the best successful standards and practices?
- How do we craft a standard for the ethical and value implications of truthful information and disinformation?
- What are the rights of the individual regarding the right to know and to control personal information?

**Process**

- How can identity particulars be stored?

- Regarding the nature of the public deliberation process in an increasingly IT-pervasive society, how can the preparation of the voters, filtration of information for the voters, and prevention of abuse be coordinated while taking into account individuals from all sectors of life?

- Is there a definite notion of the equalization of access to equipment and data for all citizens, or does it need to evolve?

- How can individual interest in privacy be articulated? Who are their stakeholders?

- How can social capital be maintained and the creation of isolated communities prevented?

- Is there a way to manage information and teach ethics so that authorities release only truthful and useful information? Will truthful information be identified?

- How can people be prepared for a technology intensive future so that development of individual and community are not lop-sided? — a social capital issue.

- How is the nature of fundamental tensions such as speed vs. deliberation, participation vs. efficiency, and access vs. gatekeeping, determined?

**Policy**

- How do you reconcile individual privacy and the government’s need to know? There is a need for proactive regulatory and legislative processes and an urgent need for ensuring the full democratic nature of the process through specific public policies.

- How do we arrive at a balanced view of appropriate law (reactive law issue)? How are the uses of law as a reactive mode determined?

**Models**

- Is there a need to build a model for maintaining social capital and preventing the creation of isolated communities?

- Are the developments in the technological world sustainable for communities? What will be the model of a technological world that is sustainable for the communities?

**Management/Role Perception**

- Who controls the technology to deliver access? Who controls IT developments?

- How is the impact that programmers have on users’ thinking addressed? Does there need to be a redefinition on the roles of the programmers?

- What role do the citizens have in influencing the security and privacy standards of the systems they use?

- Who determines the nature of fundamental tensions such as speed vs. deliberation, participation vs. efficiency, access vs. gatekeeping?
**Measurement**

- Where is the current “state of the art” headed with regard to identity theft issues? How is this path measured?
- What is the nature of unintended consequences? How are unintended consequences measured? What, if any, efficiency is achieved at the expense of what was unintended?
- How is sustainability of technological developments measured?

**Group III**

**Formation and Dynamics of Communities and Social Movements and Their Impacts on Citizen and Government Interactions in the Information Age**

**Standards**

- What does community mean when you are no longer face-to-face? Is there a standard definition for this community?
- How can computers become “invisible” in order to reveal human powers?
- How can people work in small groups and use synergy to solve problems?

**Process**

- Definitions of democracy: What theory of democracy are we working with (e.g., direct, representative)? What kind of representative democracy is emerging through the internet world? Is a multifaceted, managed democracy vigilant for the negative outcomes?
- How is an appropriate response path to the public structured, and in this context, what is the difference between e-government and e-governing? How can the needs of each be anticipated?
- Who are the stakeholders at the various levels (global, state, city and spatial and temporal)?
- What does community mean when you are no longer face-to-face? What kinds of communities will technology create? Will it play a facilitating role? What will be their rules/protocols? How do changes in political community change as our communication changes? Is there an optimal level of hierarchy?
- How can we enable social science research in the technology field?
- How will changes in communication affect our politics and policies?

**Policy**

- How are the various regulations, rules and procedures with regard to the legitimacy and accountability issues structured?
- How does society decide between openness to government versus privacy and security interests? How is mass citizen input made legitimate?
- Is there a need for policy thinking in the sphere of service delivery motivation?
- What is the incentive for government to share information?
- How do we think about policy as reactive vs. technology as proactive?

**Models**

- Are there models for predicting what happens if technology is only available to the elites? What will happen if technology breaks down walls to bring all the ranks of society together and facilitates the decrease of disparity between rich and poor?
- Are there models for making decision-making information and tools available to various communities at different levels of society?

**Management/Role Perceptions**

- Who will perform gatekeeping functions? Who will watch the gatekeepers? How are gate-keeping functions extended to new communities? Who is in control? If you open-up decision making, will there be a loss of control? Who will hold citizens accountable?
- Stability and regulation: Who would ensure a balance between the two? How?
- How can we manage the negative effects of technological change?
-Can public officials increase communications with constituents without decreasing efficiency? How are competing “subaltern” views addressed?

-Who is accountable for providing IT services? What will be the driver for citizen-government interaction? Will it create a profit?

Measurement

-What are the relative efficiencies of the private and public sectors? How can a way to measure these efficiencies be developed?

-How are the social impacts of information technology measured?

-How are access, gatekeeping, accountability and efficiency assessed?

Process

-How can the identity information be stored?

-What is the nature of public deliberation process in an increasingly IT-pervasive society: What is the best way to coordinate the preparation of the voters, filtration of information for the voters, and the prevention of abuse, while taking into account individuals from all sectors of life?

-How do we equalize access to equipment and data for all the citizens? Is there a definite notion of access or does it need to evolve? What should be the social and political process behind such developments?

-How can individual interest in privacy be articulated? Who are their stakeholders?

-How can social capital be maintained while preventing the creation of isolated communities?

-How do we reconcile capturing “all” the information and distinguishing true information from disinformation? Is there a way to manage information and teach ethics so that authorities release only truthful and useful information?

-Social capital issues. How do we prepare people for a technology intensive future so that development of individual and community are not lop-sided?

-How can the nature of fundamental tensions, such as speed vs. deliberation, participation vs. efficiency, and access vs. gatekeeping be determined?

Policy

Group IV

Ethical and Value Driven Challenges of Citizen and Government Interactions in the Information Age

Standards

-Is there a definite notion of access, or does it need to evolve?

-What are the parameters of responsibility of the private and public sector to inform the individual of data and information pertaining to that individual? How can a standard for this issue be set?
- How do you reconcile individual privacy and the government’s need to know? There is a need for proactive regulatory and legislative processes, and an urgent need for ensuring the full democratic nature of the process through specific public policies.

- How do we maintain social capital and ensure that information technology does not create isolated communities.

- How can the uses of law as a reactive mode be determined?

**Models**

- How can social capital be maintained, and the creation of isolated communities prevented?

- Are the developments in the technological world sustainable for communities? What will be the model of a technological world that is sustainable for the communities?

**Management/Role Perception**

- Who controls the technology to deliver access? Who controls IT developments?

- How will the impact that programmers have on users’ thinking be addressed? Is there a need for their definition on the roles of the programmers?

- What role do the citizens have in influencing the security and privacy standards of the systems they use?

- Who determines the nature of fundamental tensions like speed vs. deliberation, participation vs. efficiency, and access vs. gate-keeping?

**Measurement**

- Where is the current “state of the art” going with regard to identity theft issues? How can this path be measured?

- What is the nature of unintended consequences? How can unintended consequences be measured? What, if any, efficiency is achieved at the expense of what was unintended?

- How can sustainability of technological development be measured?
Session III
Arenas for Citizen and Government Interaction

Objectives
In this session, small groups of participants were asked to address various relevant issues and research questions with regard to arenas for citizen and government interaction. As in Session II, this session was comprised of two parts: (a) concurrent small group brainstorming sessions addressing relevant issues and specific questions to consider and (b) a follow-up plenary session presenting key critical unanswered questions emerging from each of the small groups for the development of strategic plans. The concurrent small group sessions were:

1. Future of providing services and conducting transactions between citizens and government
2. Management and accessibility of public and private information
3. Managing information technology: regulation, standards, codes of conduct and individual freedoms
4. Future of public participation, civic engagement and the political process

Highlights
The four concurrent small group sessions addressed the various transaction and service possibilities between the citizen and the government in the information age, efficient management of public and private information through regulations, standards and codes of conduct, various dimensions of future political processes centering on evolving modes of public participation and civic engagement in the days to come.

Group I Session III
This group discussed the standards, processes and regulations for protecting private and public information in a hierarchy of access, ideal modes of e-communication with government, definite roles of authentication, gate-keeping and educational literacy in the arena of government and citizen transactions, possible roles of new evolutionary interactive models and expectations down the road as well as specific role impacts of governmental infrastructures on IT industry.

Group II Session III
This group mainly focused primarily on ideas of anonymity, site accession regulatory and authentication processes, coexistence of various legal paradigms with IT, redesigning of the governmental infrastructures for IT, training and retraining of various segments of the citizenry, standards affecting equalization of access, efficient coordination among gatekeepers, technology transfer and cultural imperialism, private sector involvement in long-term sustainability as well as accommodation of language differences and language standards. The group raised important contemporary issues ranging from reassessment of the roles of the state and the individual in an IT-defined world and building of new knowledge management systems to the specific effects of IT on traditional socio-political infrastructures.

Group III Session III
This group addressed the roles of government, private sector, individual citizens and other decision-making bodies in setting the parameters of individual freedom and the framing and implementation of mandatory policies, regulations, standards and codes of conduct. This group emphasized the need to think about ideal “best practices” models in terms of control strategies, incentives and sanctions at the local, national and global levels. The need to measure and revise existing standards in accordance with developments in IT was also pointed out.
Dr. Mark McLellan facilitates group discussion.
Group IV Session III

This group dealt with the various possibilities that increasing citizen and government interaction would open up in the future, creation of democratic IT forums, use of the Internet in facilitating efficient and effective citizen participation and expectations, streamlining governmental processes for quicker government response, future changes in state laws and boundaries along with IT developments and the thoughtful creation of environment conducive to civic engagement in IT.

Issues List Generated by Session III Discussion groups

This section presents the complete list of research ideas emerging from the four concurrent group sessions. As in the previous session, for organizational purposes, the research topics, issues and questions addressed by the four groups are grouped under six key categories: standards, process, policy, models, management/role perception and measurement.

Group I

Future of Providing Services and Conduction Transactions Between Citizens and Government

Standards
- How is the hierarchy of access determined? Does a standard need to evolve for this?
- How are the values of minimum universal access determined?
- How much information would we like the government to have?

Process
- How can personal information be protected?
- E-governing vs. services: How can the pattern of access be understood?
- How can we communicate with the e-government?

Policy
- What policies need to evolve/be reformulated with regard to authentication, gatekeeping and educational literacy?
- How can we communicate with the e-government? Do definite policies guiding such communication need to be developed?

Models
- What would a system with instant access look like?
- Is there an appropriate model for e-government or e-citizen? What kind of modeling and expectations are there down the road?
- How can new solutions to old paradigms through a new model of citizen-government interaction be addressed?
- How can authentication, gatekeeping and educational literacy with respect to technological development within a new model be accommodated?

Management/Role Perception
- What should and should not government be involved in?
-How will the government provide technological access to everyone?
-Who would take up the gatekeeping role?
-What should the government’s role be in relation to the private sector?
-Who gets access, and how much?
-How can the influence of government infrastructures on IT be studied?
-Who would address issues like socio-economic differences and new solutions to old paradigms?

Measurement
-Will privacy decrease with the development of IT? How can such a decrease be measured?
-What benefits does the academic world gain from technology? How can this benefit be measured?
-How will the influence of IT on governmental infrastructures be measured?

Group II
Management and Accessibility of Public and Private Information
Standards
-Who should be retrained for IT?
-What should be the standards to address the issues of IT requirements for elderly?
-Should the system be comprised of both horizontal and vertical information flow? How should it work?
-When would it be appropriate to interact with a database or the internet? What would the authentication process look like? What are the various applications of authentication?
-Do we really want technology to spread everywhere? How do we allow people to choose technology? This is the issue of cultural imperialism: transfer from “us” to “them.” Is there a need for policy in these areas?

-How can language differences and language standards for IT developments and IT communication across the world be incorporated with one another?

Process
-How will the process of regulatory control over site access be structured?
-How can the private sector become involved in long-term sustainability?
-How can there be coordination among the multiple gatekeepers?
-Who would decide issues like retraining and how?
-Is it possible for IT to impact belief systems? In what ways?

Policy
-Is there a single person who has sovereign rights to all data? Is specialization needed?
-What would be the policy for regulatory control over site access?
-What are the impacts of complete technology distribution to underdeveloped countries? Technology transfer and issues of cultural imperialism: transfer from “us” to “them.” Is there a need for policy in these areas?
Models

- Can the existing legal paradigms coexist with IT? Will there be a paradigm shift? Is there a need to start over?
- What is the best way to identify and explore the proactive models (Congress, courts, advisory boards) in a rapidly IT oriented world?
- Is there a need to structure specific models for information sources required by IT? What role does the Federal Information Commission have in this?
- Should the system be comprised of both horizontal and vertical information flow?
- Is there a need for an ideal model that takes into account language differences across the cultures? English is the lingua franca of the internet, and this may be one reason why many people do not have access.
- Are we reaching a place where states will become less important and individuals more important?
- What is the best way to build a knowledge management system? How can the “knowledge is power” paradigm be broken?

Management/Role Perceptions

- How can the various aspects and applications of authentication be assessed?
- Who owns data, and at what point should it become private?
- Is there a single person who has sovereign rights to all data? Are boundaries needed?
- What are the costs of technology driven health care?

- What are the respective roles of individuals, states, and nongovernmental organizations in the technology driven world?
- How can the issue of criminal use of technology be approached?
- Who is redesigning government to fit technology?
- Can the existing legal paradigms coexist with IT? Will there be a paradigm shift? Is there a need to start over?
- Technology transfer and issues of cultural imperialism: transfer from “us” to “them.” What is the best way to study the empowerment effects of universal access?
- Who owns data and its derivatives? Is there any one person who has sovereign rights to all data? Are boundaries needed?

- How would volunteerism fit into the whole scenario?
- Since the senior citizen population is steadily growing, how will this affect the infrastructure of telemedicine care? Do people want to be in charge of their health care?

Measurement

- What are the impacts of removing the choice of anonymity?
- What particular effects on traditional infrastructure would telecommuting have?

Group III

Managing Information Technology: Regulation, Standards, Codes of Conduct, and Individual Freedoms
Standards
- What role does the government have in framing and implementing standards with regard to technology, business and content?
- Standards setting—public/private; Certifying compliance with standards.
- Who are the standard bodies? Who sets codes/standards? At what level?
- Individual freedoms
- Responsibility and authority, liability and security: How will the standards be set?
- Regulation of material available to children
- How will the standards for management be revised?

Process
- What is the best way to check the qualifications of decision-making bodies making regulations?
- How can certifying compliance with standards be ensured?
- How would the processes of information access and information use be distinguished from each other?

Policy
- Self-regulation and licenses: Who sets the IT codes/standards? At what level?
- How is certifying compliance with standards ensured?
- What are the mandating standards and who sets them?
- How can conflicts between existing law and technology be balanced?
- How can a standard taxation policy with regard to IT be developed?

Models
- What are the best practices (ideal models) in terms of control strategies, incentives and sanctions?

Management/Role Perception
- What is the role of government at the domestic and global level in managing IT authority?
- What is the appearance of changing management in an IT world?
- Who distinguishes knowledge management from flat information?
- Who decides the outcomes of the conflicts between existing law and technology?
- Who sets codes/standards? At what level?

Measurement
- What is the best way to measure incentives/returns on IT investments?
Future of Public Participation, Civic Engagement and the Political Process

Standards

- How do we think about framing a standard to handle the tension between efficiency and broad participation?
- What is the appropriate level of government involvement? Federal? State? Regional (e.g., multi-state)?
- Is it important for the public to have anonymity in the Internet forums? Who is responsible for insuring privacy?
- When the intelligence community discovers information that could be of use to U.S. industries how should that information be shared?

Process

- Will the ability of citizens to question their government digitally overwhelm current government capacity to respond?
- How can the level of government involvement be determined?
- How will the state laws and boundaries change as community expectations change with the Internet?
- What is the best way to streamline government processes to enable government to respond more quickly?
- If we move toward voting on the internet, how can we assure participation by every citizen?
- What is the best way to show the public how technology can be used?
- What is the best way to effectively coordinate collaboration among government agencies, universities and industry to address the research required to address the public participation?
- Should participation be made easier regardless of the level of knowledge of those participating?
- How can an environment be created that will be conducive to engagement with new technologies? How do you motivate the public to participate?
- What is the best way to engage the non IT literate or non IT accessible public?
- How are interactions with the government facilitated that still allow the government to tag information as being “classified”? Can new information technologies speed the declassification of information?
- Will increasing government-citizen interactions create more security leaks?

Policy

- How can a democratic IT forum be created when existent inequalities are exacerbated? Will any standard policy help in this regard?
- What is the purpose of citizen participation? Is it to make policy or to advise policy makers? Is it acceptable to make people feel good about being led?
- Does more citizen participation always yield better policy or better democratic governance?
- How can the internet be used to facilitate greater citizen participation in government policy formation?
- Can use of technology be made easy enough and secure enough to encourage more people to join the democratic process?

Models
- Can government-to-government interaction and public equality be protected?
- What is the infrastructure required to allow government-to-government interaction and access by the public?
- What are good models for democratic discussion on the internet?
- What about the global level of analysis? Is internationalization a relevant point? What would be the appropriate model for such internalization?

Management/Role Perception
- What is the best way handle the overload of public expectations of efficiency, effectiveness, and participation?
- How can the government hope to keep up with the public expectations for instant access to information and services?
- How does the government adjudicate the value of increased inputs from citizens?
- What is the effect of increased public participation in IT? Should greater citizen participation result in direct government action (democracy) or just more input for delegated decision-makers (republican form of government)? At what level of government should citizen participation be implemented?
- Can flat networks work with hierarchical governmental bureaucracies?
- Can IT improve the information that voters use to choose? Will they take advantage of it?
- Should there be government support of industry?
- When do citizens want to participate in local government policy making?
- Should the government be more proactive in using the technology to inform the public and solicit inputs?
- Who protects my privacy: government, Microsoft or me?

Measurement
- How will the changes in government structure and operation be measured?
- What is the best way to measure citizen participation? What level of participation do citizens prefer in relation to city, state, and federal government?
- What is the best way to measure the difference between virtual Internet participation and traditional (in person) participation?
Session IV
Research Implications

Objectives
After Sessions II and III, the symposium staff reviewed the issues and information needs identified by the discussion groups. A review of these group discussions summarized in the previous section of the report makes it clear that there were issues, such as security and privacy, access and ownership of information, and the setting of standards, that were consistent in most of the group discussions. Each of these issues has a variety of dimensions. For example, most of the issues have, at a minimum, policy, regulatory, management, and measurement or evaluation components. If one is to address an issue in its entirety, all of these components need to be explored. At this stage, however, the simultaneous consideration of these issue components introduces more complexity than groups could deal with in the short period of time available.

Given the recurring nature of the issues, the symposium organizers chose to focus the attention of the participants on the component parts of issues. We arrayed the issues identified in Sessions II and III under seven components: Policy, Process, Standards, Access, Models, Measurement, and Management. Participants were asked to self-select into one of the component groups for the final session. Brainstorming and identifying research ideas took place within these self-selected group topics, and groups developed brief summaries of research questions and issues and, in a few cases also identified specific research projects.

Like the previous sessions, this session comprised two parts: (a) concurrent small group brainstorming sessions focusing on the self-selected issue areas of policy, process and standard, and (b) a follow-up plenary session presenting key research ideas and projects emerging from each of the small group sessions.

Highlights
The symposium participants identified research and partnership agendas to address some of the challenges and issues that were identified in the earlier sessions. Prior to the start of this session, participants voted on approximately seventy unanswered questions. Priority areas identified by participants were classified under one or more of the following headings: 1) Policy, 2) Process, 3) Standards, 4) Access, 5) Models, 6) Measurement, and 7) Management. The symposium participants then self-selected into one of the groupings. Two of the groups felt that their research questions were closely related and chose to combine into a single group. Summaries of discussions emerging from these concurrent group sessions are presented in the following section.

Research Issues List Generated By The Session IV Discussion Groups

Policy Issues
The three group sessions on policy issues (one of which combined with a process issue) focused on the themes of narrowing the “digital divide,” interfacing among databases, citizens and agencies, and on the implications of technology for the security of individuals. The highlighted policy issues included authority over and ownership of information, proactive/reactive legal stances centered on IT developments, the establishment of ideal system models, and specific policies involving all levels of government, society and multinationals through standardization procedures designed to narrow the digital divide. The specific research questions that were generated by the three groups on policy issues are listed on the next page.
The Jack K. Williams Administration Building
Texas A&M University
Discussion Group 1: Policy

Theme Question: What are the implications of technology for the security of individuals (anonymity, privacy, identity verification, authenticity, medical records, government’s need to know)?

-Who owns information about individuals? Who owns information on servers?
-What are the expectations and limitations on ownership of information?
-What are the legal implications of the recent terrorist attacks?
-Should a proactive legal stance with a forum focused specifically on IT law be established?
-How is identity conceptualized?
-Who controls identity information on the web? How?
-How can public reaction to different I.D. systems be studied?
-Who can be trusted? What role should companies play in authentication?
-What kind of policy should regulate voting system technology?
-How can different models be used to separate information? What kinds of models should be used? Should the use of these models be regulated by policy?
-How will system models in distributed and central systems through specific policies be established?

Discussion Group 2: Policy

Theme Question: Issues of the “Digital Divide” (how to narrow the divide among populations in the U.S.; universal access; needs of special populations like the elderly, deaf, blind; issues of power, international technology issues; ‘cultural imperialism’)?

-Can an email identity to every third world citizen be provided as part of the policy? Is the world community ready for universal access? Does it have infrastructure in place?

-How can a strategic plan for connecting everyone through email identity be developed?
-Training to utilize access must be part of the process. What kind of policy thinking does this require?
-Solving the digital divide issue must be a multi-national effort: How can subsequent standardization problems be solved?
-How can sustainability and maintenance be ensured and public and private support and participation be drafted in all these efforts?
-How can funding be coordinated from international multi-lateral groups working on this project? What is the best way to get NGOs involved?
-What is the best way to improve government level infrastructure? What is lacking from a management perspective?

Discussion Group 3: Policy & Process

Theme Questions: How to interface among databases, publics and agencies (policy aspects like turf issues, horizontal vs. vertical information sharing)? How to interface among databases, publics, agencies, levels of government and industry (issues like technical/logistical aspects, horizontal versus vertical information sharing)?

Policy

-Who should have authority over policy development and implementation that is decided through policy making?
-What statistical models of assessment of cross-agency integration exist that can be evaluated? Are there models of successful integration within similar issue areas of public policy?
-Which levels of government should be included in the solution if the scope of the solution is a policy question? Should policy focus on an internal or external perspective on problem solving? Horizontal vs. vertical scope: Should there be sharing among agencies, or should there be a single-agency focus?
Process

- Can different existing databases be linked together to form a “one stop e-service”? Should decision support for citizen decision-making from multiple agencies/information sources be integrated with the objective?

- Many programs are currently in place that link up a number of businesses and households through telephone, email, etc. Technology exists for business and household connectivity but coordinating the use of existing infrastructure remains a standardization problem. What is the best way to achieve that? Can standardization be achieved through linking money to educational use of technology?

- In the process versus outcome decisions, the interface should be process oriented in solution delivery. How can the value of connectedness be defined through this process?

- The process of interface development can be horizontal and/or vertical. What is the best way to distinguish and study both models? How do we define the problem, identify stakeholders and determine a handful of core benefits for both?

Process Issues

The three group sessions on the process issues (one of which combined with a policy issue) addressed the various impacts of IT on different kinds of citizen participation, the set of social values stimulating the creation and use of information technologies, and the multiple ways to interface among databases, public agencies, levels of government and industry. They discussed important ideas such as vertical and horizontal interface development, statistical modeling of cross-agency integration, limitations of current technologies and possibilities of next generation technologies, public learning processes in the sphere of technology, the parameters of social diffusion of technological innovation as well as the relationship between formal education and adoption of innovation.

Discussion Group 4: Process

Theme Question: What is the impact of IT on the kinds of citizen participation; representatives vs. participative voting behavior and other democratic processes, being heard, hierarchy of access; health care delivery, education, PDAs (Personal Data Assistants)?

- How will the next generation of Portable Document Formats (PDFs) be designed? What features and behaviors should be included in next generation PDFs?

- How will the optimal outcomes for the next generation of health care delivery be determined? What is the impact of IT and its unintended consequences on health care? What are optimal outcomes for health care delivery (social vs. personal)?

- What forms and structures of medical literature are needed for diagnostic databases? How do we empower patients to take a more active role in their own healthcare? How do we empower patients through IT to make their own decisions?

- How should next generation technology (PDAs) be used in education? What do we want to do in the various fields of education that we cannot do today? Can we improve motivation in education and change behavior through IT?

- What are the limitations of current technologies?

- How are people adapted to learn historically and/or biologically? Are we following this process in IT development?

- Can we simulate complex medical scenarios in order to help plan the next generation of IT? Can we simulate complex medical interactions between patients and doctors/health care systems?

- What should the relationship between citizens and government be in an IT driven age? What issues are involved in giving people access to the government? Who has access and how do they get it? Is it desirable to have equality of access? What are the role possibilities of IT in this?

- How has online IRS filing changed behavior regarding paying taxes?
Theme Question: What social values stimulate the creation and use of information technologies (could include value issues such as individual vs. state sovereignty)?

- What are the uses of technology among college students? Who is more/less likely to create and use? Who are early adopters (and deviants)? What is the motivation of those who use technology? What effects do age differences have on use?

- How do we define creation and use? Can both agency-based and communal motives (social values) play into technology creation and adoption? What constitutes the concept “communal”?

- What is the nature of the social diffusion of innovation?

- What is the adoption environment?

- What about the technologies that were never adopted? Is there a problem with only looking at successes?

- Are mainstream members of society (e.g., organized religion) late adopters of technology? Is adoption initially deviant behavior? Is there a relationship between deviance and adoption?

- Is there a relationship between formal education and adoption?

- Who (what universities) are the early adopters? Are they small engineering, technical colleges or private/public colleges? Is early adoption the best way to go?

- How can the good technologies to study be identified?

Standards Issues

The group on standards issues addressed the needs for the government, industry and citizens to be involved in the standards setting process. This group particularly emphasized the need to track existing research on standards and generated ideas on specific steps of a pilot project for examining the process to identify best practices in terms of standard bodies.

Theme Question: Who needs to be involved in the standards-setting process (roles of government, industry, public, qualifications of decision makers)?

- Why are standards needed? Is it a problem that no standard body exists with regard to IT developments?

- What issues are already being addressed?

- What standards are appropriate to be set at a national level? Regional level? Is a unified, efficient standard required?

- Should the industries needing the technology drive the selection of standards?

- Should standards depend on different types of users?

- Should standards be market driven?

- What standards are appropriate or important to allow the country to move forward in a proactive manner?

- Who decides which standard to use? Who decides who should own the process?
Proposed Pilot Project

A project was proposed to identify all existing standard bodies and best practices, as well as the roles of government, industry and the public.

1. Document what is already present: limit and classify the already existing standards. Identify existing standards bodies. Pick one each from IT, content, business, and training groups for model/study.

2. From there, determine where you want to go with the project. Also, determine what will be left out of the project.

3. Identify the best practices and the success stories. Find the commonalities in the best practices (what forums exist and who supports them?).

4. Does a model exist? Formulate a plan to determine the role of government, individual and public in the standard setting process. Since education permeates into everything, determine the role of education in the standard setting process. Look at impact of technology on this process.
Information technology is expanding and changing at a phenomenal rate, and the area of citizen and government interaction is one of the newer areas of development. The wide variety of issues and information gaps identified by the symposium participants illustrates the fluid, multifaceted and complex nature of the topic at this state of its development.

The symposium organizers had hoped the culmination of group interactions would be a series of well-defined research projects. However, it became clear early in the discussions that the development of a succinct set of research questions would not be possible. This is a field that is producing both technical innovations and application possibilities at a rate that makes reflection on the essential questions difficult. Nevertheless, a number of issues emerged and reemerged during the group sessions. These issues were at the forefront of participants’ minds regardless of the topics under discussion, and they are listed below in the language used by the participants themselves. They are not mutually exclusive categories, but the repetition of themes captures, we believe, a sense of the participants’ priorities.

- accountability and authority; efficiency and gatekeeping
- changing models of government and social structure
- creation of isolated communities
- digital divide
- ethical dilemmas related to information ownership and information storage
- filtration of information for the citizens
- legitimacy and authentication
- multifaceted modes of communication with the e-government
- proactive and reactive legal paradigms
- process/policy interchanges
- socio-cultural parameters of technological innovation
- sustainability of technological developments
- technology transfer and cultural imperialism
- universal access
- vertical and horizontal interface development

Clearly articulating research questions requires that the researcher have a good grasp of the variables involved. However, these issues are both multidimensional and continuously evolving, resulting in a constantly shifting landscape of variables and conditions. The issues listed above all carry technical, ethical, policy, and regulatory components. They are also issues that derive from the complexities of the technical-social interface. Symposium participants clearly saw the importance of social involvement in the resolution of issues as well as recognition of the far-reaching social impacts of the technology. The multidimensionality of the issue areas definitely highlights the need for interdisciplinary research and approaches to them. However, in spite of the acknowledged importance of the social dimension of information technology and citizen-government interaction, it was evident during the course of the symposium that technically oriented discussions tended to dominate most of the sessions. In hindsight this should not have been a surprise given the centrality of technology in this field of human interaction.

We believe that this particular symposium format is an innovative one that will facilitate a dialog between the technical community and the community that is more focused on the social, behavioral, and policy aspects of technical innovations. We also believe that the symposium can act as a key step toward the discussions that will result in more conceptual clarity and focus. The next step is already under way as teams of Texas A&M University scholars continue the dialog with participants at other locations and outside the university setting.
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Wei Zhao  Associate Vice President for Research, Office of the Vice President for Research, Texas A&M University
Agenda

Sunday, October 7, 2001
5:30 p.m.  Reception and Registration

6:15 p.m.  Dinner and Welcome
           Opening Remarks

6:45 p.m.  Session I: Perspectives on Citizen and Government Interaction:
           Current and Future Trends
           • By discussing different perspectives regarding citizen and government interactions in the
             information age, participants set the context for the small group sessions in the remainder
             of the symposium.

           Featured Participants:
           • W. Richards Adrion — Division Director of Experimental and Integrative Activities,
             National Science Foundation, The NSF Digital Government Program Helping Federal
             Agencies Employ IT for Citizen Action, Arlington, VA.
           • Gary M. Bachula — Vice President for External Relations, Internet2; The View from
             Internet2: Citizen Government Interaction in an Era of Unlimited Bandwidth, Washington, D.C.
           • Michael W. Freckleton — Director, Office for Applied Solutions in Operational
             Medicine, Brooks A.F.B.; A Vision for the Future Regarding Homeland Defense, San
             Antonio, TX.
           • Howard J. Silver — Executive Director, Consortium of Social Science Associations,
             Politics and Social Relations in the New Information Technology Age, Washington, D.C.

           • Followed by group discussion

8:30 p.m.  Adjourn

Monday, October 8, 2001
8:00 a.m.  Continental Breakfast

8:30 a.m.  Opening Remarks and Preview of Day

8:45 a.m.  Emerging Challenges of Citizen and Government Interaction in the Information
           Age — Concurrent Small Group Sessions
           • Discuss the relevant issues, guided by specific questions to consider
           • Identify critical unanswered questions and information needed to make educated
             decisions and to develop strategic plans
Agenda

Group One: New models of government and social structure in the information age

Group Two: Policy, societal, and related challenges of information technology and standards currently in development

Group Three: Formation and dynamics of communities and social movements and their impact on citizen and government interactions

Group Four: Ethical and value-driven challenges of citizen and government interactions in the information age

10:15 a.m. Break

10:30 a.m. Emerging Challenges of Citizen and Government Interaction in the Information Age — Group Presentations and Discussion

11:30 a.m. Lunch

Keynote Speaker: Alan Cooper
Founder and Chairman of the Board, Cooper Interactive Design
Best selling author, The Inmates Are Running the Asylum and About Face: The Essentials of User Interface Design, Palo Alto, CA.

1:00 p.m. Arenas for Citizen Government Interaction — Concurrent Small Group Sessions
• Discuss the relevant issues, guided by specific questions to consider
• Identify critical unanswered questions and information needed to make educated decisions and to develop strategic plans

Group One: Future of providing services and conducting transactions between citizens and government

Group Two: Management and accessibility of public and private information

Group Three: Managing information technology; regulations, standards, codes of conduct, and individual freedoms

Group Four: Future of public participation, civic engagement, and the political process

2:30 p.m. Break

2:45 p.m. Arenas for Citizen and Government Interaction — Group Presentations and Discussion
Agenda

5:00 p.m. Reception
Presidential Conference Center

6:30 p.m. Dinner
Presidential Conference Center

7:30 p.m. Keynote Speaker: D. Allan Bromley
Science, Technology and Politics
Sterling Professor of the Sciences at Yale University, Former Assistant to President George
Bush for Science and Technology, and the Former Director of the Office of Science and
Technology, New Haven, CT.

Tuesday, October 9, 2001
8:00 a.m. Continental Breakfast

8:15 a.m. Research and Development Needs — Concurrent Small Group Sessions
• Brainstorm and discuss research questions and ideas relevant to the topic
• Identify and outline a specific research project for consideration post-symposium
• Each group prepares a brief summary of the highlights of their research questions and
ideas as well as their recommended project

10:30 a.m. Break

10:45 a.m. Research and Development Needs — Group Presentations and Discussion

12:00 p.m. Lunch and Closing Remarks

1:30 p.m. Optional - Tour of George Bush Presidential Library and Museum
Symposium Team

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