

The following document is the Final Report for NSF Supplemental Award Grant No. IIS-0205152, Amendment No. 009, Proposal No. IIS-0905394, Proposal Title: “Extending the Sociotechnical Model of Cross-Boundary Information Sharing: A Workshop Proposal”

# **Information, Technology, and Governance: A Grand Challenges Research Agenda Workshop**

## ***Summary Activity Report***

**November 2011**

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Program Manager, Center for Technology in Government

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## Workshop Purpose and Approach

In February 2010, a group of leading social and information scientists and government practitioners came together to develop a new understanding of the way technology and social forces shape the workings of government. The workshop—*Information, Technology, and Governance: A Grand Challenges Research Agenda*—was sponsored by the National Science Foundation, with additional support from the National Association of Chief Information Officers (NASCIO). The Center for Technology in Government (CTG) at the University at Albany led the organizing effort of this two-day workshop with over 40 participants from across the country.

After a day and a half of intense discussion of grand challenges in digital government research, the workshop participants offered many thoughtful reflections about the role of IT research in government. While there was diversity among the practitioners with social scientists, computer and information scientists, and industry representatives—there was significant convergence on the important themes.

The *Information, Technology, and Governance : A Grand Challenges Research Agenda Setting Workshop* was organized to bring together leaders from government, academia, and the nonprofit community to identify and discuss three main topic areas:

1. Understanding the multiple contexts in which government and governance operate and how those contexts matter in technology adoption, use, and impact.
2. Leveraging the knowledge and expertise of the workshop participants about how value, risks, and complexity are understood and addressed by government decision makers and managers.
3. Recommending research themes, designs, and funding criteria for future work that will have both scholarly and practical value.

Taking an interactive and interdisciplinary approach, the workshop activities were a mix of plenary and small group sessions facilitated by members of the workshop organizing team and presentations from leading scholars and practitioners. Using a set of established facilitation methods and techniques, invited participants took part in several activities including:

- Introductions
- Grand challenge identification and affinity clustering
- Discussion of grand challenges
- Discussion of the addressing the capabilities needed to address grand challenges
- Identification of the main message and audience
- Closing thoughts

This document presents a non-attribution account of the contributions made at the workshop as well as a brief analysis of the discussions and findings. The information presented in this report begins to shed light on complexities of identifying and addressing grand challenges in information, technology, and governance.

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## Activity #1: Identify, Cluster, and Prioritize Grand Challenges

This visioning activity allows a group to brainstorm a set of ideas and organize them in a way that promotes a shared understanding and it sets the foundation for subsequent discussions. It also generates discussion and offers a technique to discover similarities and differences in perspectives. The physical product of the activity is a prioritized set of named “clusters” of questions.

Participants were given an overview of the “affinity clustering” process and then were asked to respond to the elicitation question:

- *What are the grand challenges of information, technology, and governance?*

Each participant wrote their grand challenges on 8x11 sheets of paper, one question per sheet. Then in a round robin fashion each was asked to read their challenge aloud to the group. As each question was shared the paper was posted on the wall. As the questions were posted the group begin to work together with the facilitators to decide which items were alike or related and to decide placement in emerging clusters. After all the questions were read aloud and posted to the wall, the group worked to refine the clusters. Once all challenges were placed into clusters, the group named each cluster with a statement that best described the ideas represented in that cluster. After all clusters were named, participants were each given four sticky dots and asked to vote on the clusters they thought were most important to address in the subsequent discussions at the workshop. The prioritized list of clusters that emerged from this activity are listed below followed by a full list of the items included in each cluster. The shaded clusters indicate the areas the group wanted to spend more time talking through in the afternoon.

Cluster	Votes
Cross boundary coordination	30
Rapid technology and innovation, and novel services	22
Rethinking government	21
Open Government and participation	20
Privacy, trust, and security	18
Managing risk, continuity of government , and increasing complexity	18
Information	14
Metrics	13
Transnational and globalization	11
Interdisciplinary, multi-sector, multi-method, multi-level	8
Societal change	8
New ways of connecting systems	7
Sustainable	5
Speed up legislation	3

### **Grand Challenge Cluster : *Cross Boundary Coordination***

- Many government jurisdictions to work among and within
- Policy and management framework to coordinate IT development and implementation across government levels
- How can different levels and functions of government be responsive to changes of relevant community in their use of IT?
- Compelling need for cross boundary solutions in a silo world
- Identifying patterns across various rich contexts
- Fed/state/local – complex ecosystem needing reform: fed mandates- funding; state mandates- funding; localities deliver services; examples: HHS FA/MA, HAVA; promotes costly silos (OMB circa 87); complicates delivery (above the fold)
- Widely sharing resources (IT, data, etc.) across jurisdictions without eliminating the division of powers
- Reform of federal-state relationship on program funding and IT impact
- Governance as a negotiated effort—more open to citizens and cross-unit oversight (more interdependence)
- How to manage, enable social-technical transition of using information in government
- Role of IT in distributed/de-centralized provision of public goods and services
- Allocation of decision rights for government IT investments
- Developing a vision for IT (principles, rationales, methodologies) going beyond “bigger, faster, and better” that vindicates the goals and objectives of digital government
- Identify the modular structures (operations and information) that enable flexible composition, reuse, innovation, and efficiency

### **Grand Challenge Cluster: *Rethinking Government***

- “Political cyber complex” – change the game: Treat government as a one continuum and redefine governance (from Congress to state legislature) to horizontal-ize government vs. siloed vertical constructs of government to better leverage taxpayer \$\$\$, flow of funds
- Understanding the full extent of the “legacy costs” problem in IT systems in government and approaches to overcome it. Understanding the existing baselines: existing inequities; existing business models
- Identifying the function of a COO to drive business change that IT can enable
- How do emerging information and technology change the way we understand and practice governance?
- IT viewed as strategic asset and not a cost center
- Citizens as employees: access to information; self direction
- How to facilitate the local nature of egov: egov from a citizen/user happens at the device/service points that cuts across federal, state, and local jurisdictions
- Getting politicians to have a long-term approach to technology
- Is “e” even relevant anymore? Isn’t it just “government”?
- Structure of ICT and government(s) “match”: distributed, decentralized, interdependent
- Satisfy/enable big policy/mission needs, not just neat technical solutions
- Role of the private sector in carrying out functions of government with government-like accountability

- Defining the end state of transformation: from what to what? IT as enabler, barrier, support tool

### **Grand Challenge Cluster: *Open Government and Participation***

- How can IT and web and broadband and cell phones help organize neighborhoods and citizens to provide data to and “do” government?
- Public meetings are hopelessly broken and single-threaded – one person speaks at a time. Can IT help fix this?
- Open government as an opportunity, e.g. outsourcing, crowd sourcing, private/public participation, new infrastructure
- Overcome old-fashioned, out-of-date government organizational structures/boundaries
- True 2-way dialog between government and citizens and other stakeholders
- Reaching citizens and helping them become strong e-citizens: new pathways are needed for cyber-security, education, career paths
- Preserving the core of democratic governance while venturing into new, networked approaches based on IT
- Foster online citizen participation: broad, diverse; civil, informative; productive
- How does government need to respond to the expectations citizens develop as a result of their individual use of the internet?
- The construct and design of the government operations platform (model) that can serve the citizens (citizen-centric) in real time, with meaningful data/information in the 21<sup>st</sup> Century
- Citizens demand understanding in constant interaction with stakeholders by managing channels
- Broadband- when every home has 2-way HDTV capable broadband, how can we use it to govern, interact with citizens? Education, healthcare
- Role of social media in governance: crisis response; knowledge management; interface design; trust

### **Grand Challenge Cluster: *Rapid Technology and Innovation, and Novel Services***

- People – Government employees. IT is now a key part of their jobs and becoming more so – how can we help them keep up—cops, utility workers, elected officials, etc.
- Why and how does rich context matter?
- How can technology help government improve its ability to innovate and to learn?
- Anticipating avalanches such as the rapid evolution of the Web and its impacts, etc.
- How do we get new technology to be brought sooner to the public sector?
- Can IT be used to supplement or replace elections to allow a truer “democracy” in addition to our representative democracy, e.g. polling
- What is the necessary balance between IT infrastructure and IT policy?
- Understanding and orchestrating the transformation in the business of government
- Adaptive e-gov services
- How do we ensure a permanent record to inherently transient and evolving activities, technology, and content? How to do identity authentication for service eligibility without visiting a window first or causing citizen angst
- Handheld government services (ala application download market)

- How to enable/foster government transformation through the use of ICT – mobile? Redesign government
- Designing government resources for mobile devices and users. From tech-savvy users to low literacy users: disenfranchised; digital divide; cell phone, not PC
- Cloud computing and software as a service – is government IT as we know it obsolete?
- Enabling I-technology for disadvantaged – services/participation
- 9-1-1, 3-1-1, N-11
- How will changing technology change public safety, e.g. 911 text messaging, video cameras, cell phones with cameras, video

#### **Grand Challenge Cluster: *Privacy, Trust, and Security***

- Balancing the fear of government knowledge of individuals with the inevitable pressures to improve identification, authentication, and authorization
- Absolute trust in e-gov services
- Maintaining privacy and confidentiality of information
- Reconcile the desire for more online services with the risk of data integrity/compromise/privacy issues
- Conduct IT research to address Homeland security issues that would result in dual use and have partnerships among academia, private sector, state/local government
- Providing privacy and security
- Enable agile responses to non-routine events (earthquake, pandemic, snow storm, terrorism)

#### **Grand Challenge Cluster: *Strategic Use of Information***

- Customized information dissemination
- Understanding the interplay of “I” and “T” in IT in government
- Making government information digestible and easily understandable by Joe Citizen
- Assuring information quality and “fitness for use” outside government
- Discovery of disparity and conflicting government regulations/information in general
- Redefining terminology (language). Ex: “retirement age” and “workplace” –office to reflect the new normal current needs
- Making sense of the mass of government information
- How to harness and control quality of information contributed by citizens

#### **Grand Challenge Cluster: *Metrics***

- Change the conversation about the value proposition IT investment has to effectively manage the business of government and need for sustainable investment strategies (funding) to restructure government operations
- Identify a set of metrics to enable the measure of ROI, social return, political return for e-gov systems
- Can we create a set of metrics that: (A) will be used to measure our progress and (B) gains broad buy-in
- Define good business metrics which can be used to produce business results
- Understand value-added ROI (framework)

**Grand Challenge Cluster: *Managing risk & continuity of government, and increasing complexity***

- What are the inherent risks involved?
- What are the consequence of reliance on IT?
- What are the implications of crisis and how government responds to it?
- Understand how government

**Grand Challenge Cluster: *Transnational & Globalization***

- How do government leaders respond to the Internet's destruction of physical distance? (compared to their traditional view, built on controlling a piece of geography)
- The global citizen – defined, needs described, outcomes/structures created to serve them
- Transnational problems and agreements for IT-based solutions (getting services from abroad), identification of trans-border information sharing

**Grand Challenge Cluster: *Interdisciplinary, Multi-Sector, Multi-Method, Multi-Level***

- Actually “work” in practice – not just plans or theory making
- How to link bottom-up needs to top down decision making RE IT/e-government
- Defining computing research challenges and interdisciplinary mechanisms to address them
- Developing methodologies to incorporate social and organizational incentives in design, deployment, assessment, and evolution of IT government infrastructure (within government and between government and citizens)
- From hub and spoke to collaborate
- Understanding and enabling government's and citizens' ability to create, curate, navigate, and annotate the multi-dimensional social and knowledge networks of the 21<sup>st</sup> Century – where nodes are people, documents, data sets, analytic tools, tags/concepts
- How can we conduct research that takes a multi-level perspective? (micro – meso –macro)

**Grand Challenge Cluster: *Societal Change***

- Identify central societal goals that can be best achieved with support of IT
- What role must IT play in other grand challenges? (c.f. adaptation to climate change)
- Generational differences in terms of expectations, comfort level and knowledge, RE use of IT and preparing for “born digital” governance

**Grand Challenge Cluster: *New Ways of Connecting Systems Sharing***

- Need standards
- National framework for data interoperability
- Co-production identity/trust: standards accreditations in a virtual environment (location transparency) for exchange of services
- Integration and interoperation of e-gov and social e-services
- Moving away from integration for process coordination and toward non-integrated process coordination strategies

**Grand Challenge Cluster: *Sustainability***

- Dependability management in egov services: metrics, methods, structures

- Modernization of legacy 10-20 year old systems
- Leveraging the genuine productivity-improving potential of IT in government environments that are resistant to structural and other kinds of changes
- Sustainable e-government processes

**Grand Challenge Cluster: *Speed-up Legislation***

- Can we separate IT and governance? Is it helpful to see independently?
- How do we get CIOs and other government IT people to recognize they are in policy making roles—and to become skilled in those roles?
- Technology and laws – how do we fix?
- Dynamic governance: policy- speed of law; IT – speed of light
- Stakeholder alignment: governor- policy on transformation; legislators- “law makers”

**Activity # 2: Small Group Discussion of Grand Challenge Clusters**

After identifying, grouping, and prioritizing clusters, the participants engaged in a plenary discussion about the clusters they wanted to discuss in the afternoon. It was not agreed that they would automatically take the top clusters, the group found that there were certain grand challenge clusters they wanted to discuss regardless. The following list shows the five clusters the group chose to discuss in their small groups.

<b>Cluster 1:</b> Cross-boundary coordination
<b>Cluster 2:</b> Rapid technology, innovation, and novel services
<b>Cluster 3:</b> Rethinking government
<b>Cluster 4:</b> Open government and participation
<b>Cluster 5:</b> Strategic Use of Information

After the group chose the top five clusters, they self selected into small groups—each focusing on one cluster. Each small group was charged with identifying the research and practice questions associated with that cluster. The following is a list of the questions that the groups identified for each cluster.



## **Cluster 1: Cross-Boundary Coordination**

This discussion focused on the issues related to the complex ecosystem of governments (local/state/federal jurisdictions) and the need to structure information-sharing across levels of government.

### **Research and Practice Questions:**

- What is meant by cross boundary? It could be several things such as cross jurisdictions, lines of business, geographic boundaries, departments, and across sectors (public private, nonprofit).
- Leadership (elected officials and others) - investments made by leaders who initiate an activity are often higher than those who join later - how to create a critical mass of participation? Example - creation of a public safety radio network or a public transit/light rail system.
- Management - the logic of collective action requires trust, e.g. to share data about perpetrators of a crime, and identity of undercover cops so they don't shoot each other; incentives for teams to conduct "swarming" activities for enforcement or swat access
- Information - as more information is shared, there is a collective feeling that there is a problem. Also as the problem becomes more clear, the collective will to act becomes stronger and the incentives or advantages of acting to each member of the collective becomes clearer ... examples are the climate change controversy and how more and more information became available to galvanize to action. Another - WTO when labor and environmentalists joined to oppose WTO. Do what extent does the quality of information motivate or demotivate people to take collective action. This is also a transparency issue, in that as data is shared with citizens for their own analysis and support of institutions like schools.
- What factors serve to increase trust as information is shared cross-boundary
- Education is certainly a grand challenge, as is healthcare and disaster response.
- Resources (e.g. taxes) - in this budget constrained environment, what motivates entities to share resources to address common issues or take collective action?
- For motivating for collective action, what techniques can and should leaders use in this digital age of cell phones and text messages and Facebook and Twitter to share information and motivate a group to take collective action, e.g. passing a bond levy or deciding how to design a billion dollar bridge.
- Crossing boundaries in routine and non-routine situations - non-routine situations include pandemics or World Trade Center - time limited, chaotic and ephemeral.
- Techniques for building "swift trust" have been examined.
- What factors can increase trust in cross boundary information sharing process?
- How to prepare and train leaders for Government for cross boundary goals?
- What is the motivation (logic of collective action ) to share information?
- How to apply theories of "collective action" to practice of cross boundary information sharing?
- How do you generate a critical mass of participation interest especially for rapid response and the same question for shared services?
- How does good leader identify distinct but complementary interest?
- How does quality of information motivate or not to perform collective action?
- Education, disaster response, healthcare – cross boundary things by nature

## ***Cluster 2: Rapid Technology and Innovation, and Novel Services***

Focus on how IT is deeply embedded in government operations. Discussion of the need to identify emerging technologies and rapidly implement them in government.

### **Research and Practice Questions:**

- What is the role of government in e-government innovation (Driver, Leader, Consumer)?
- How to leverage public-private partnerships/relationships?
- How do governments evaluate risks?
- What are the best practices for adopting innovative ICT/egov?
- What changes to policies, finances, practices are necessary to innovate?
- Is there a way to test new technology in a government context for small scale experiment, yet capture economies of scale when deployed?
- What are the aspects of context that are important ( business process, political context, interests from stakeholders, history, and performance indicators, finance, and accountability? )

## ***Cluster 3: Rethinking Government***

Focus on redefining technology as a strategic asset and not just a cost center. Discussion of the need to understand government's baseline capabilities and how to better meet the needs of citizens.

### **Research and Practice Questions:**

- What is transparency in next generation government?
- What are the ingredients in the next generation government?
- What is the legislative framework of government - with the transformation we will need to repurpose some resources?
- What are the context elements? - competitive landscape, legal barriers, technical trajectory, social/demographics, financial/fiscal.
- Customer focus - what are the needs in the future?
- How will societal and technological trends impact the services and delivery mechanisms?
- What will be important elements? Is it demographics, technology trends, workplace; themes of open government—transparency, collaboration, and participation?
- What are the fundamental issues to achieve transparency for next-generation government?
- What kind of legislative barriers need to be overcome?

## ***Cluster 4: Open Government and Participation***

Focus is on transparency and participation in government and understanding the measures of success.

### **Research and Practice Questions:**

- How do we define and develop (or source) the tools for the kinds of communications—appropriate, type, group, scale?
- How do we ensure that these tools increase/change level and quality of participation?
- How should government functions and boundaries given the rise in IT-based participation and access?
- How does different/increased/changed interaction affect expectations?
- How should the technology be used for citizen collaboration to do things? What is the role and utility of non-government SM networks? (citizen engagement)
- Do people carry over into government their experiences/expectations in using the internet? (quality of service)
- What factors make citizens feel comfortable participating online?
- How to organize data and info in these systems?
- What tools are appropriate for organizations at different levels (i.e., neighborhood)?
- What enabling technology (frameworks, policies, regulations) actually encourage citizens to participate?
- What conditions maximize participation? And what are the implications of that?
- What traditional boundaries need to be modified to better facilitate citizen participation?
- What kind of mediation frameworks are necessary to enable negotiations and resolve conflicts?
- How to foster citizen collaboration and self-organization to have them do things for each other?
- How does video everywhere affect government services?
- How do we ensure that open government is open to all? How do you get equal representation via online channels?
- What tools are appropriate for organizing at different levels? From neighborhood to block to national?
- Should traditional boundaries between government agencies be modified to better facilitate citizen participation?
- How does one manage the traffic generated once its easy to communicate at all levels?
- How to enable asynchronous participation, pursue privacy, enable different levels of access, and organize data and information?
- Does digital open government expand citizen participation/engagement or offer a new channel t the same groups?
- What are the attributes of the civic engagement investment model?
- What's the process by which citizens will come to expect that they should be able to participate online?
- If citizens participate more, how will this change their expectations of government?
- What role does media (24/7) play in facilitating participation? What role in thwarting? Will it be meaningful participation?
- What is the impact on political parties and other groups?

- What is the context or the information needed to do this research? (group communications, social psychology, computer science - scaling, government, technology adoption and use research, mathematics- model behavior of large # of people, network analysis science)

### ***Cluster 5: Strategic use of Information***

Focus on the information government uses internally and the information it provides to citizens. Issues of quality, disparity, conflicting goals, and terminology.

#### **Research and Practice Questions:**

- What are the most important aspects of the information - collection, integrity, use?
- What are the most influential factors about the data types of partnerships that exist? Public/private, multi-sources.
- What are the contextual elements necessary to study and learn about this area? value choices, technological choices, and operating choices?
- What the differing philosophies of data access - to share or to sell?

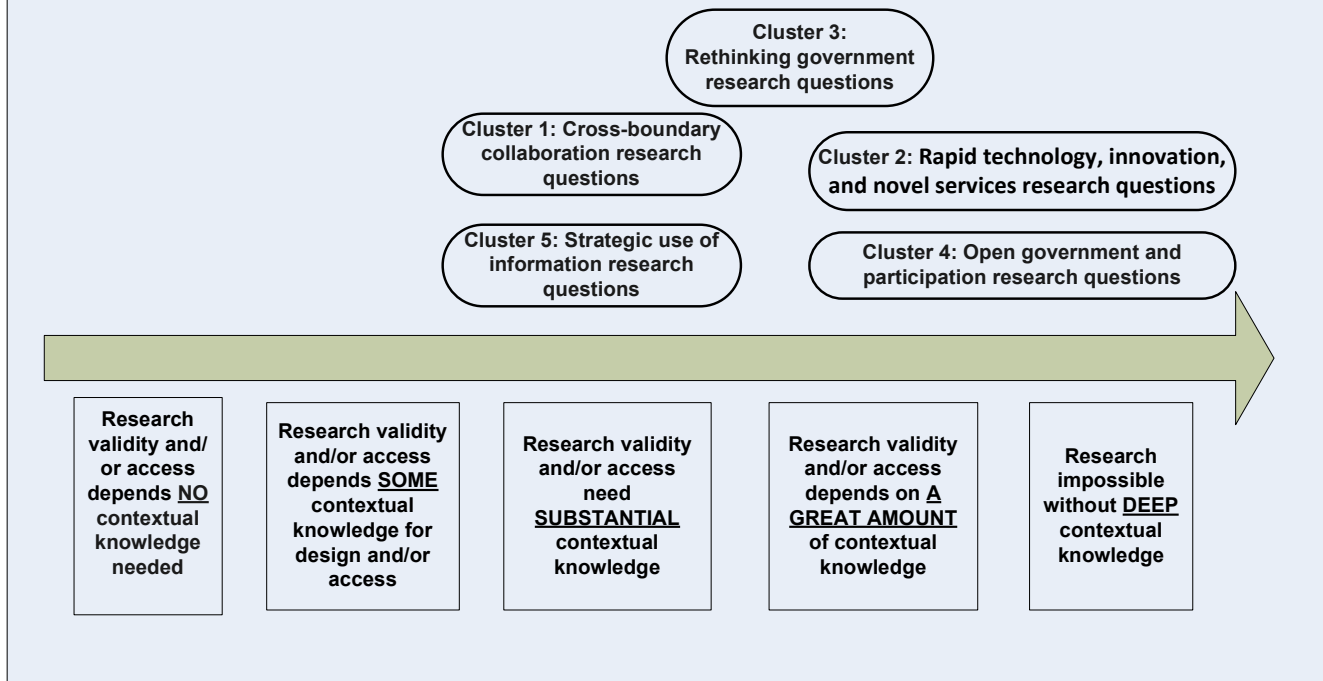
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## **Activity # 3: Placement of Clusters on Continuum**

As each small group identified research and practice questions associated with each cluster, they also were asked to discuss those questions in terms of contextual knowledge needed to effectively answer those questions. In the diagram below, *The Practice Continuum for Research*, each of the clusters are placed on the continuum to show a simple representation of the level of context that is necessary to answer different sets of research questions. More specifically, in order to engage in research that will answer the questions in any meaningful way, researchers must have access to and understand the contextual knowledge of the government operations, management, values, processes, and practices that are embedded in these questions.

As shown in the diagram below, the participants placed all the clusters into three categories on the continuum, “substantial, a great amount, or deep” to show that there is a considerable amount of contextual knowledge needed to effectively answer the questions identified in each cluster.

## Continuum of Contextual Knowledge Needed to Address Questions



## Activity # 4: Identification of Gaps in Addressing Questions

In a plenary session, the group reviewed the lists of questions within each of the clusters and then collectively identified and discussed the gaps that exist in addressing those questions. The group discussed the types of gaps that exist and discussed generally the new capabilities that the community must create in order to address the questions.

The following are the gaps that the group identified:

### *Working Across Disciplines*

- Problems forming partnerships between IT and social science (and everything in between). It's not for a lack of wanting to partner it is knowing how to do it and funding mechanisms that provide incentives.
- Understanding what it takes to collaborate between social scientists and computers scientists – to define the problem jointly and develop a proposal together.
- There must be constant dialogue and communication among the computer scientist and social scientists.
- Research focus on the use of technology, rather than computer science alone. This requires bringing a host of experts from different disciplines, such as labor management

- Constant dialogue between computer scientist and social scientists is needed
- There are not a lot of opportunities to work across disciplines. We will need to create them.

#### *Working across stakeholder groups*

- In order to address these types of research questions there needs to be involvement from multiple stakeholders and many levels. Also an understanding of end to end processes and solutions. This is difficult to get access to and expensive to understand.
- Everything is interconnected in digital government. One can't work on a single layer (e.g., user interface) alone, this requires reengineering an entire system.
- Academia sometimes has difficulties in working with practitioners - this will need to be addressed.
- There are not a lot of opportunities for researchers and practitioners to work together.
- Expanding the reach to the citizens will require a new way of working.
- There is a misalignment of incentives and needs - we must figure out a way to address that.
- Computer science has been expanding to social connections in design and development, and in developing future technologies

#### *Funding*

- There must be engagement among with funding organizations outside NSF. Diversifying funding may be the only way to address these questions.
- Rewards and funding systems do not align with the integration of IT and social science - so this vision needs to go after other mechanisms.

#### *About DG research*

- In order to do the research that will benefit government in 20 years we need to think beyond the latest budget crisis. We need to think very far in the future and then determine how to get there.
- We need to articulate what we (digital government) bring to the table how we can influence.
- There has always been a debate about value choices, such as should government be larger or smaller, but there is the need to deliver services and we need to make sure there is research to support this.

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## Activity # 5: Identification of the Report's Main Message and Target Audience

At the end of the workshop, the participants discussed the fact that their discussions over the last two-days have to be shared with those who can facilitate change. They identified the audience and main message.

### Who is the audience?

- Those who have direct funding oversight such as NSF, the current administration, IT industry, DHS and DOD, and Congressional appropriations
- The Secretary of Education
- Newly elected governors in US
- National Associations - NGA, NASCIO, NCSL
- Communities with funding - where interest needs to be created: health, education...
- Partnerships - DHS Centers of Excellence, Academy and industry
- Media - News and Academic - associations: AOM, public and nonprofit divisions

### What is the main message?

- There used to be an NSF program dedicated to the study of government and now we need a new program because the work is not done.
- The grand challenges all have economic impacts that everyone is interested in.
- The message is not about IT – it is about addressing societal issues.
- We must highlight partnerships – to facilitate conversation among digital community: IT people and social scientists.
- Investment in understanding the long term issues – long term is far more important.
- This is all about grand challenges about the impact of not paying attention to them.
- That there are opportunities for researchers to help – it is sometimes hard for researchers to know where to help.
- Government environment is heterogeneous and pluralistic – you need to be in it to study it.
- Other areas such as the hard sciences have articulated their vision – for example the *Science 2020* report. Digital government needs a similar resource to guide the upcoming work. It should cover areas such as open government, privacy, data sharing and governance.
- Investing in a partnership between computer science and applied science.
- The study of government and how it intersects with management and policy offers a plethora of opportunities such as digital warfare, digital governance, techno-inspired innovation (“imagine future”) and governance of the process.
- The main message is not about IT it’s about the grand challenges that face our society.
- Grand challenges are closely linked to priorities already articulated in government - energy, education, and health.
- Open innovation can become a core construct of all the aspects of government.
- Multidisciplinary research is the only way this field of study can attain new and innovative understandings.

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## Appendix A: Workshop Organizing Team

Center for Technology in Government (CTG), University at Albany, State University of New York

- Theresa Pardo, Director
- Meghan Cook , Program Manager
- Evgeny Styrin, Visiting Scholar
- Senem Guney, Faculty Fellow
- Anna Raup-Kounovsky, Program Assistant

National Association of Chief Information Officers (NASCIO)

- Douglas Robinson, Executive Director

Minnesota State Office of Enterprise Technology

- Gopal Khanna, Chief Information Officer

Clark University, Graduate School of Management

- Jing Zhang, Assistant Professor of Management

University of Washington, The Information School

- Hans Jochen Scholl, Associate Professor



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## Appendix B: Workshop Agenda

### Information, Technology, and Governance: A Grand Challenges Research Agenda Workshop

National Science Foundation  
Arlington, Virginia

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Agenda  
Tuesday, February 23, 2010

- 8:00 a.m. Registration and Breakfast**
- 8:30 a.m. Welcome and Introductions**  
Theresa Pardo, Director, Center for Technology in Government
- 9:15 a.m. Panel: Transitions and The Changing Nature of Government**
- Larry Brandt, HCSS and SEW Coordinator, NCO/NIRTD (invited)
  - David McClure Associate Administrator, Office of Citizen Services and Communications, GSA (invited)
  - Bill Schrier, Chief Technology Officer, City of Seattle, Washington
  - Doug Robinson, Executive Director, NASCIO
  - Sharon Dawes, Senior Fellow, Center for Technology in Government University at Albany
- 10:30 a.m. Break**
- 10:45 a.m. Identifying the Grand Challenges in Information, Technology and Governance** (plenary)
- 11:30 a.m. Understanding the Centrality of Practice**
- 12:00 p.m. Lunch** (provided)
- 1:00 p.m. Identifying Grand Challenge Research and Practice Questions Within a Practice Continuum** (small group discussion)
- 4:00 p.m. Understanding the Interactions of Practice, Technology and Governance** (plenary)
- 6:30 p.m. Coordinated (non sponsored) Dinner**  
Dan and Brad's: Hilton Arlington and Towers

**Information, Technology, and Governance:  
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**National Science Foundation  
Arlington, Virginia**

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Agenda  
Wednesday February 24, 2010

**8:00 a.m. Breakfast**

**8:30 am Review of First Day's Work**

**9:15 a.m. Identifying Gaps in Current Capabilities in Addressing Grand Challenges** (small group discussion)

**10:00 a.m. Break**

**10:15 a.m. Understanding the Collective Capabilities to Meet the Grand Challenges**  
(plenary)

**11:15 a.m. Final Reflections for the Agenda**

**12:00 noon Wrap-up and adjourn**

## Appendix C: Workshop Participants

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