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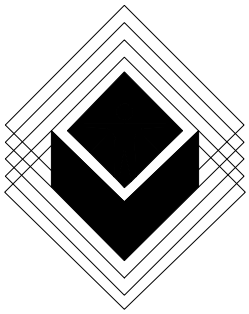
A Step Beyond Research: Fostering IT Innovations in Government

Workshop Summary



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A Step Beyond Research: Fostering IT Innovations in Government, involved 32 scholars from Europe and North American in an exploration of the issues and opportunities for applied research to support IT innovation in government. The October 1997 invitational workshop was hosted by the Center for Technology in Government at the University at Albany/SUNY and funded in part by an Innovations in American Government grant from the Ford Foundation. The workshop activities focused on the sharing of ideas to improve the value of information technology (IT) research to government practitioners. It also sought to establish and strengthen communication and collaboration among government IT researchers.

This report is a summary of the discussions that took place during the workshop.

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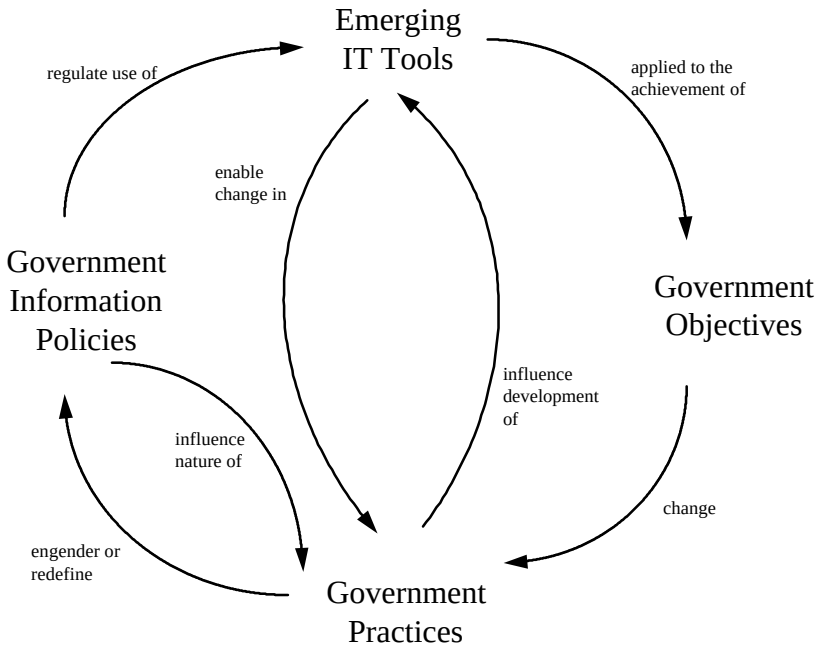
Workshop Objectives

The workshop was organized around three specific objectives:

- Gather together leading researchers in IT innovation in government and provide an opportunity to learn about and understand one another's interests, programs, and methods.
- Identify specific research questions and potential partners for future collaborative research efforts.
- Begin to create a virtual community of scholars that extends into the future.

The workshop was predicated on a belief that IT innovation in government can be fostered by applied research. It recognizes that government is striving to improve productivity and effectiveness by rethinking missions, reengineering processes, and implementing information technology (IT) solutions. Experience has shown that IT offers substantial potential benefits to organizations, but it also gives rise to new management and policy challenges. Government program managers and government information resource managers are faced with new challenges as priorities shift and program goals and objectives change with the political, economic, and social environment. The effective use of information and information technology tools are essential to meeting these shifting goals. As a consequence, technology and government objectives, practices, and policies are interlinked in anongoing circle of influences, as shown in the figure below, all of which contain opportunities for applied research.



While many factors outside the boundaries of the figure have an impact on those included, the preliminary papers and workshop design focused on the relationships among these four elements.

Pre-Workshop and Opening Activities

A number of activities were conducted prior to the workshop to increase awareness of issues of current importance to government practitioners and to summarize the types of research being conducted by the individuals invited to the workshop. The pre-workshop activities included the development of two papers and follow-up discussions among the participants over the workshop listserv and these were used to develop a conceptual framework to organize the workshop activities.

The first paper, "Government Information Technology Issues: The Practitioner Perspective," summarized and categorized issues that practitioners themselves are addressing. These issues were derived from a number of sources including recent conference and meeting agendas of practitioner organizations, recent articles on government IT issues from the popular press, and CTG's project proposal database describing the management and service delivery problems that New York State agencies have sought to address through innovative uses of IT. The topics identified were categorized as program-specific, public management, interagency/intergovernmental/cross program communications, and technology-specific issues.

The second paper, "Information Technology Issues: The Researcher Perspective," reviewed the last ten years of publications of individuals invited to participate in the workshop. Additional literature dealing with government IT research was also included in the summary. This review was limited in several ways: it depended almost exclusively on materials found in books and peer-reviewed journal articles published in English and indexed electronically, although some preliminary Web searching was also conducted. The issues thus uncovered were discussed in four categories: program-specific topics, public management topics, information infrastructure and society, and issues in technology transfer.

Based on the findings reported in the papers and reactions from the participants over the listserv, a framework was developed summarizing areas for government IT research. Since the workshop was concerned with the value of research to practice, the practitioner perspective was the central feature of this framework

The column headings in the middle portion of the framework show that issues of interest to practitioners may fall within specific program areas. For example, the issues may be specific to such program categories as economic development, health and human services, and environment and natural resources. Not all issues of importance to government practitioners fall within a programmatic category however. Some apply to all state government agencies, or all local government agencies, or all federal agencies. Others are shared by all levels of government and may be of importance to the non-government sector as well.

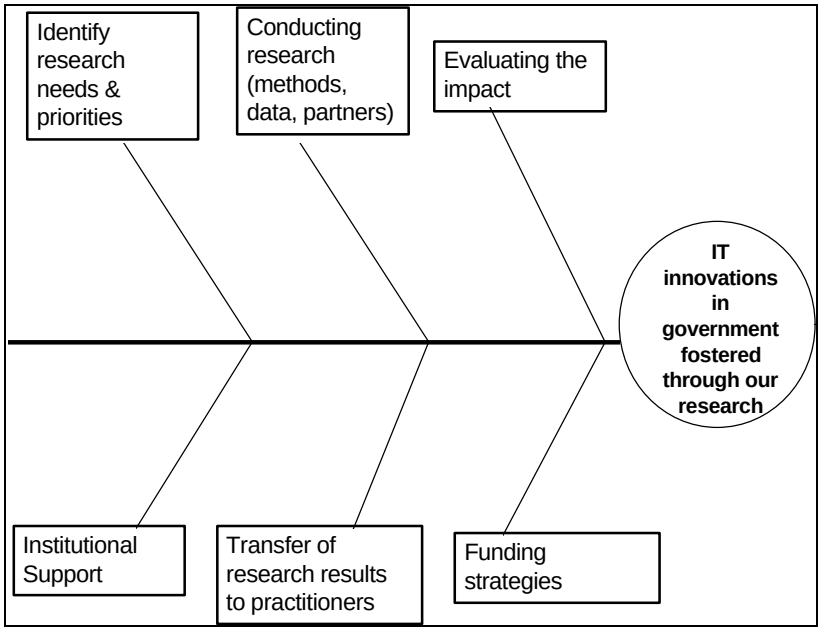
Information Infrastructure and Society					
Practitioner Perspective					
What do they care about?	**Who Cares?**				
	Program Areas		Levels of Government & Sectors		
Service Delivery					
Public Management					
Technology					
R&D and Technology Transfer					

The rows represent broad cross-cutting areas of practitioner concern. The service delivery row represents issues around what services should be offered, how they should be delivered and to whom. This category or row can be conceived of as the factors that make up the relationship between government and the public: citizens, businesses, communities. The public management category speaks to the operational aspects of achieving service objectives and includes such issues as hiring and maintaining and IT-skilled workforce, budgeting for IT, and procurement. The last row covers those issues related to technologies that government practitioners can or want to use to operate and manage public programs. Examples of technologies identified in the papers include, the Internet, intranets, Electronic Data Interchange (EDI), geographic information systems (GIS), and data warehouses.

The pre-workshop activities also focused on identifying and categorizing government IT research. While much of the identified research fits well within the practitioner framework, two additional broad categories of research were also identified. The first is Information Infrastructure and Society. This type of research focuses on the broad societal changes resulting from the proliferation of information technology, its changing nature, and its infusion into all aspects of social, economic, and political life. It includes such issues as equal and universal access to technology and information, personal privacy, and globalization of the economy. The second broad category is research and development and technology transfer. These investigations look at how research is conducted, including methods, funding strategies and the effective transfer of results to practitioners. In the framework, these are represented as overarching concerns. The first, information infrastructure and society, deals with overarching concepts and outcomes. The second, R&D and technology transfer, deals with the specific methods and tools for studying all these phenomena and linking research results to practice.

The Initial Premises

The objectives for the two-day workshop focused on sharing strategies and methods for improving research and development and the transfer of research results to government practitioners. The first discussions were organized around the premise that the overall value of any particular research activity is a function of how effectively each of these activities is carried out. By extension, the overall contribution of applied government IT research is a function of effectiveness in each of these areas across all research. The specific activities that contribute to the overall value of research to practice are shown in the fishbone diagram below.



The individual "bones" that make up the research enterprise include factors that address the selection and prioritization of research topics, the methods that are suitable to investigate them, the strategies and mechanisms that lead to funding and institutional support, the transfer of results to practice and the assessment of impact on both practice and the research effectiveness.

First discussions

The participants briefly commented on these preliminary frameworks, noting especially that

- the practitioner perspective did not capture a set of issues that one member characterized as "all by all," meaning the need for strategic models for change
- the programmatic areas identified in the framework could have included additional areas such as transportation and public finance
- the "levels of government" portion of the framework did not account for the increasingly important role of quasi- and non-governmental organizations (quangos)
- the researcher's perspective was indeed an incomplete survey of recent work, particularly with regard to non-English and European sources
- the fishbone was missing at least one important bone: understanding and facilitating organizational change

As a result, the basic framework above was enlarged to capture the strategic change idea, the involvement of quangos, and the two additional program areas. The other comments were noted for later discussions.

Identifying opportunities for research

Using the modified framework discussed above, participants were asked to "locate" their own interests by placing colored dots in the appropriate cells. The goal of the exercise was to assign the participants to small discussion groups reflecting similar research interests. The results of this exercise showed areas of emphasis, but few clear-cut groupings. The participants noted, for example, that there even though there were few dots in the technology row, technology plays an important role in most of the other areas. Others noted that they were interested in subsets of cross-cutting issues and could not reflect that interest in the available cells. Upon further discussion, the following categories were identified for small group discussions of future research topics and the participants selected which group to join:

- Service Delivery
- Technology
- Strategic Models for Change
- Information Infrastructure and Society
- Public Management

Each group was assigned a facilitator and asked to address the following questions:

> *Describe 2-3 projects that address government needs and which you would like to be involved in the next three years.*
>
> *Your description should include elements such as:*
> 1. *What problem will it solve; what is the research question?*
> 2. *What indicates that this is important to government practitioners?*
> 3. *What is the practitioner audience; with which practitioners might you partner?*
> 4. *Where might the data come from?*
> 5. *Which research method(s) might be useful?*

Each group identified a number of research questions or projects associated with their category. Appendix B contains a complete list of the research ideas generated by each group. Given the time allowed for this discussion, only one or two of the identified research questions could be further developed within each group. The topics each group selected for expanded discussion are shown in Table 1 below.

Table 1. Research Project Ideas Developed by Small Groups				
Service Delivery Group	**Technology Group**	**Strategic Models for Change Group**	**Information Infrastructure and Society Group**	**Public Management Group**
Conditions and models for effective self-service	Integrated support for emergency management	Identifying and realizing benefits of cross-boundary IT projects	Infocracy: Network development and extension	Developing instruments to support the evaluation of the impacts of IT
	Factors that should govern IT-in-Government research policy	Collaborative management styles	Accountability and oversight issues	
		Funding and pricing mechanisms		

Service Delivery

The service delivery group focused on a project for designing models for effective self-service. Many government organizations are striving to improve the delivery of their services to citizens while simultaneously reducing the cost of service provision. On the other hand, citizens are demanding improved access to government services based on similar improvements in access to service from the private sector. Government agencies are therefore interested in identifying strategies or mechanisms that would allow citizens to use technology to access information and services when they want and where they want. In other words, government agencies are interested in providing mechanisms for citizens to serve themselves. Not all services can be provided in this manner and for those that can be, there are a number of issues that need to be addressed.

Research topic - Self service services

The service delivery group focused on the identification of these issues and methods for addressing them. In particular, the group identified the following research questions associated with the development and implementation of effective self-services.

- Which services or types of services lend themselves to a self-service model?
- What capabilities are required to support the delivery of self-services on the part of government and the users of the services?
- What types of infrastructure are required to support the delivery of self-services?
- What are the costs and benefits of delivering services to citizens using a self-service model?

The group also identified a number of different types of practitioners with whom this type of research might be conducted. In particular, those government agencies that have a high volume

of relatively simple transactions such license renewals or reservations were identified as appropriate, as well as agencies that provide basic information services such as statistics, spatial data sets, and reports. The group also identified advocacy groups and public libraries as potential partners. Methods included prototypes, pilot projects, and evaluations with the types of agencies identified above. In addition, the use of focus groups to obtain information from customers, front line workers (those that currently provide services to citizens), and legislators was discussed. The group emphasized the need for an inter-disciplinary approach to this type of research and indicated that the disciplines of public administration and public policy should be included along with other social sciences, and the technologist or computer scientist perspective.

Technology

The technology group discussed two threads of research. The first focused on developing integrated support for emergency management. The second focused on factors to govern IT-in-government research programs.

Research topic - Emergency management

Emergency management was identified as an appropriate programmatic area for this research based on the critical need for communication and information in what are often rapidly evolving, largely unpredictable situations. Emergency management situations require instantaneous decision support capabilities including access to a wide array of dynamic information in a timely manner. The problem that this research would address is the provision of effective decision support, in terms of technology tools and information for groups dealing with disasters or emergency situations.

A number of methods were identified for working with organizations or groups responsible for responding to and mitigating the effects of disasters, as well as the organizations or individuals responsible for providing information to the emergency management groups. In particular, modeling and social network analysis were identified as possible methods for the research. The development of a prototype and simulations for a test case was also suggested as a method for research in this area.

Research topic - Factors that should govern IT-in-government research

This area was identified as important due to the assertion that there is much redundancy and overlap in IT-in-government research. The group further indicated a need to prioritize the areas for research so that funding for research can be allocated based upon these priority topics. Case studies and documentary research were identified as suitable methods for addressing this issue.

Strategic Models for Change

The strategic models for change group discussed three specific research activities under the general theme of understanding and managing risks and returns of cross-boundary collaboration.

Research topic - Identifying and realizing the benefits of cross-boundary collaboration
The group indicated that the stakeholders in cross-boundary IT projects include citizens, the administrations or government agencies, and the private sector. This area was identified as important based on surveys conducted by CEFRIO and based on discussions at its recent international conference attended by 500 individuals from seven countries.

The group identified high-level managers and decision makers from both public and private sectors as potential partners for the research. Case studies identifying positive practices were suggested as a method for conducting the research.

Research topic - Collaborative management styles
The second area for research identified by the Strategic Models for Change group was case-based research on collaborative management styles. The purpose of the proposed research is to increase understanding of the risks and returns of collaborative management styles and methods. This was identified as important to practitioners because there is a negative history for cross-boundary work, many difficulties in obtaining resources and funding to support this type of activity, a strong tradition of "silo" type thinking, and fear among practitioners about the prospects for success in this way of working.

The group identified government executives, program managers and decision makers, and those practitioners responsible for service provision as appropriate partners for the research. The method suggested focused on the identification of success and failure cases in all levels of government and the gathering of information about each of the cases through focus group discussions. In order to identify the cases that would be studied, the group indicated that networking, development of criteria for case selection, development of mechanisms for inviting groups to participate, and methods for analysis would also have to be identified.

Research topic - Funding and pricing mechanisms
The group also looked at research in funding and pricing mechanisms in terms of the importance of resources and cost factors in the ability of organizations to provide support for cross-boundary collaboration. This was identified as important based on surveys that demonstrate that pricing (cost projection) is the key to gaining support for any type of IT effort.

Department heads (including budget directors), legislative oversight organizations, and private stakeholders were all identified as potential participants for the research. Data for the research could be obtained from projects that are already in the early stages, in particular those projects involving state and local governments. This data could be combined with existing theory to support the research. Specific methods for this research include case studies, surveys and additional theoretical work.

Information Infrastructure and Society

The Information Infrastructure and society group discussed two research projects. The first, looked at ways to use networks to integrate information and services to citizens. The second explored topics related to government responsibilities for accountability and oversight.

Research topic - Infocracy: network development and extension

Discussion of this topic focused on the problem of integrating information from different networks or organizations to support service integration. This was identified as important to practitioners based on government's need to effectively meet citizen or client needs while effectively managing their own scarce resources. The potential for using the NII as an infrastructure to support "one-stop shopping" and the issues associated with attempting to do so was a focus of discussion in this research area.

The group identified social services organizations including government, private organizations, and quangos as potential practitioner participants in the research. Telecommunications oversight groups, such as the FCC, and citizens were also included as potential research partners. Data to support the research in this area could be derived from partners and users involved in the development of a network to support the integration of services. A comparative study approach was recommended by the group where micro-level analysis would be conducted to study the decision premises from the perspective of individual networks and then compared to a macro-level study focusing on the spread and interrelationships among networks.

Research topic - Accountability and oversight

This research area was focused on identifying how to jointly realize twin goals of the government information infrastructure: (1) agency accountability and oversight and (2) the protection of individual privacy. This was identified as important to practitioners in terms of the need to reduce risk associated with "killer issues," the need for government agencies to reduce overhead costs while improving the quality and quantity of services, as well as the need to obtain better feedback on program performance.

Oversight agencies such as the US Office of Management and Budget (OMB) and substantive agencies such as the US Health Care Financing Administration (HCFA) as well as citizen and client groups such as Computer Professionals for Social Responsibility and the Electronic Frontier Foundation were identified as potential partners for the research. Private companies such as Verisign and other certification authorities were also suggested as project participants as were other private sector firms. The group identified system logs on both expert and routine use as well as self-reported and ethnographic data from agency and client users as data sources for the research. The group also indicated that cost-benefit assessment should be used in the context of this research and that variations in system types should be studied to determine differences in results. For example, differences in transactional versus other types of systems could be examined, different types of architectures could be compared and evaluated as could differences in specific types of tools for security functions such as authentication. The overall goal of the research would be to recommend system designs under varying circumstances that maximize government's ability to maintain accountability and oversight while simultaneously maintaining individual privacy and organizational autonomy.

Public Management

The public management group focused on research that would support the development of instruments for use in evaluating the impact of information technology.

Research topic - How to measure and evaluate the impact of IT in government
In particular, this research would enhance understanding of the cost-effectiveness and cost-benefit relationships in the IS/IT domain. The tools developed as a product of the proposed research would assist in answering the questions "was it worth it?" and "where should we invest?" This area of research was identified as important to practitioners in terms of adhering to government laws and policies that call for evaluations of IT impacts both prior to and after implementation. The burden of publicness in terms of public interest in the stewardship of tax dollars was identified as another critical reason for addressing this issue as was the need to demonstrate accountability and transparency of government purchases and operations. Lastly, the notion of demonstrating the quality of government services was identified as a rationale for focusing efforts in this area.

The following types of organizations or groups were identified as possible participants in the research: Government CIO Councils, Budget Offices and Finance Ministries, municipal leagues such as the International City-County Management Association (ICMA), state or provincial associations such as the National Association of State Information Resource Executives (NASIRE), and major government funders of IT development projects such as the US Agency for International Development (USAID). The group also identified the private sector IT industry, citizens and taxpayers, as well as public officials as potential research partners. Data to support the research could be obtained from best and worst practices, government accounting systems, and agency practices. Users or recipients of services could also provide feedback and additional information to support the research. A multi-disciplinary approach to the research was recommended by the group. Suggested research methods include case studies, literature review, surveys, and the use of focus groups with practitioners, citizens, researchers, and policy makers. The overall products of the research would be tool kits comprised of evaluation criteria and tested evaluation methods.

Barriers and enablers to conducting government IT research

A second small group discussion identified the barriers and enablers to conducting research in government IT. The purposes of this exercise were to (1) facilitate the sharing of ideas about strategies that have been used to successfully conduct applied research and (2) identify existing obstacles or barriers that need to be addressed in order to increase the value of research to practice. Rather than discuss these barriers and enablers in the abstract, each of the groups was asked to identify these factors in the context of the research proposals developed during the first small group discussion. Categories for barriers and enablers were derived from the fishbone diagram described above. Groups were asked to address the following:

> *Identify barriers and enablers to conducting research in this area. Use the specific project proposals we developed as examples. Think about enablers & barriers in activities such as:*
>
> *1. Getting funding*
> *2. Getting practitioners involved*
> *3. Getting institutional support*
> *4. Getting the results used*

Following the small group work in identifying the barriers and enablers, the results were aggregated during a plenary session. The barriers and enablers to government IT research identified by the participants are shown in Appendix C and summarized below.

Practitioner Issues: involvement in research and adoption of research results.

Applied research in government use of IT, by its very nature, requires the interest and involvement of government practitioners. That involvement may take many forms from sponsor, to advisor, to hands-on partner, to evaluator, to adopter. The discussion groups identified a number of barriers to obtaining and holding the attention of practitioners and to delivering value from the research effort.

- Sharply divided programs and organizational structures mean that practitioners and their resources are focused on individual programs and the singular role of their own organizations. There are few incentives or mechanisms that even allow, much less encourage or reward collaborative efforts that cross organizational or sectoral boundaries.
- Research has largely failed to explain or demonstrate the cost-benefit factors associated with government IT investments. Practitioners can seldom make a case for research participation without justifying how it will benefit their agencies or programs.
- Strong practitioner ties to what already exists means that applied research needs to take into account existing IT investments, operational systems, human factors, and organizational limitations.

- Research and practice represent two different cultures with inadequate views of one another. Practitioners may view researchers as having their heads in the clouds; researchers may believe practitioners have their heads in the sand.
- Research competes with more demanding priorities. Government managers have many competing demands for their time, resources, and attention. They are generally not interested in research unless it helps them solve real, near-term problems.
- Researchers are often not clear about the role they want practitioners to play in applied research--subject? advocate? partner? funder? adopter?

A number of enablers to practitioner involvement in applied research were also identified:

- Include practitioners as full partners in discussions that define the problem, the project, its expected results, and its costs and benefits.
- Involve practitioner partners in active rather than passive roles; choose change agents and activists as partners.
- Take time to develop an awareness and understanding of the organizational culture and constraints of the agencies and managers involved in a research project.
- Bring in a neutral facilitator to help broker and build the relationship.
- Recognize that an approach that is organization- or program-centric will be more appealing than one that is technology-centric.
- Identify and publicize effective existing practices and give public credit to the organizations who developed and use them.
- Produce practical results such as prototypes, demonstrations, management models, and other tools, not just reports.
- Deliver a relatively steady flow of interim products and results, not just a final product.
- Ask practitioners to disseminate and "market" good results to their peers.

Resource Issues: Obtaining funding and institutional support for applied government IT research

The groups also discussed barriers and enablers to obtaining funding and institutional support to conduct the kinds of research projects they had defined earlier. Government program agencies, government research agencies, foundations, and academic institutions were among the organizations discussed as potential supporters of applied government IT research. Barriers discussed included some repetition from the list of practitioner barriers and added others:

- Most funding is available to investigate narrowly defined problems. The "stovepipe" problem in government operations is replicated in the way government research is defined and funded. There is little support for cross-cutting or longitudinal work
- Research funding is premised on some inappropriate (sometimes unstated) assumptions and expectations. For example, there is more support to investigate new technologies than to understand how to integrate technology into business processes or how to understand the links between technological change and social change.

- Neither funders nor researchers do a good job of developing cost-benefit cases for research.
- In many academic institutions, applied research is not highly valued or encouraged for tenure-track faculty.
- The ability to influence the agenda of funding agencies takes long-term effort on the part of researchers who are willing to work on committees, act as reviewers, etc.
- There are few opportunities outside the competitive grant-giving process itself for funders and researchers to build relationships or discuss research themes, priorities, and problems.
- Researchers need to publish results; some sponsors may not want results to become public. For example, social science research may reveal conflicts and weaknesses in government organizations that they cannot afford to have made public.
- There are few mechanisms for sharing sponsorship of research across different funding sources.

Again, a number of enablers were identified that can help support applied government IT research:

- Public-private partnerships and other coalitions can be useful where there are benefits to all parties.
- A case can be made that IT-related research and the useful knowledge it generates is very low cost compared to the amount that government spends on technology procurements.
- Failed or problematic government initiatives can promote new ways of thinking and encourage applied research to test new ideas.
- Projects that set out to produce replicable and transferable results are more likely to funded.
- Research proposals where the researcher is willing to share costs, match funds, and contribute to research as a form of public service, can be more attractive to sponsors.
- Projects that address current problems of practice seem to attract more support from government agencies (although these are often more narrowly defined than researchers would like them to be).
- A track record of useful research results makes a researcher more attractive to government program agencies.

Building a community of researchers

The first day's discussions were structured to generate and develop as many specific ideas as possible for future research projects and collaborations. The second day of the workshop was less structured and more focused on drawing out the themes and values that might be the foundation for an ongoing community of government IT researchers. These discussions identified a wide range of topics and priorities, shown in Table 2 below.

Given the large number of topics and limited time to discuss them, the participants were asked to vote for the topics that they would most like to explore in greater detail. After some discussion and combining of ideas, discussion groups were organized around the four topics at the top of the list. Major IT trends were included in the discussion of distinctly governmental characteristics and all the groups were free to include elements of any other topic in their discussion

Table 2. Topics of Ongoing Interest to Workshop Participants
What is Distinctly Governmental about these Issues
Organizational Change Issues
European vs. American Experiences, Challenges
International Consortium of Government Research Centers with Individual Affiliates
How are PA Concepts Changing as a Result of Information and Communications Technology (ICT)
Major Trends in Government Use of IT
Field Network Research Instead of Case Studies - Multiple Research Centers
What is the Changing Face of Graduate Education
How to Involve Both Technologists and Government Practitioners in the Dialogue
Role of End-User/Citizen vs. International Government User
Innovative Ways to Service Citizens and Communities
Ways to Easily Find Each Others Current Work
Develop Methods for Improved Collaborative Funding
Relationship Between Technological and Social Changes
Email Based Journal Scanning System
General Continuous Networking
What are the Core Phenomena in Which People are Interested

The results of the small group discussions were presented and discussed in a final plenary session and are summarized below.

What is Distinctly Governmental About These Issues?

This discussion group enumerated a number of trends in government use of IT and identified characteristics that make some issues and trends uniquely governmental. This was indicated as important in terms of eliminating redundancy in research and in terms of justifying investments in research that is in fact germane to government.

The group identified a number of trends in government use of information technology:

- Increasing collaboration between government and industry to promote effective use of IT
- Growing interdependency between government and non-governmental organizations for the delivery of services
- "Me-to-ism"- the tendency to adopt IT as a high status activity without sufficient cost-benefit analysis
- Greater organizational egalitarianism due to email, and the WWW
- Adoption of intranets as fostering real rather than superficial invention
- Increasing concern about government's ability to attract and hold IT professional staff
- Use of COTS
- More potential and higher expectations for sharing of systems across states
- Chief Information Officer as a new leadership position
- Increasing level of marketing by government agencies
- Telework; alternative offices
- The never-ending workday due to email, pagers, voice mail
- Rising citizen expectations about ease of use of government services
- Increasing concern with public access
- Breakdown of boundaries within governments and among levels of government.

A number of issues were identified as distinctly related to government:

- Government has a greater need to deliver and the public expects a higher, more reliable level of security, privacy, and integrity of information.
- Public accountability requirements mean government actions must be fully and publicly documented.
- The fishbowl effect makes government very risk averse and reluctant to try new ideas.
- The scale of a single government program must range from very large to very small in order to accommodate all citizens and communities.
- Government agenda setting is a political process involving many interests outside the agencies.
- Government is the sole provider of unique systems and services such as licenses and welfare benefits.
- Government must be concerned with the competence of all citizens to engage in IT-intensive services. It cannot have "preferred" customers.
- Civil service system of employment is a complicated mixture of discretion, powers, and limitations that produces unique workforce issues.
- Government is an influential IT customer as well as a regulator of IT businesses.

In the plenary session discussion of this topic, several participants noted how little weight had been given to political factors such as the electoral cycle, and the difference between elected, appointed, and civil service positions and what powers they have to act. Other comments revolved around the changing concepts and practices of public administration that have emerged

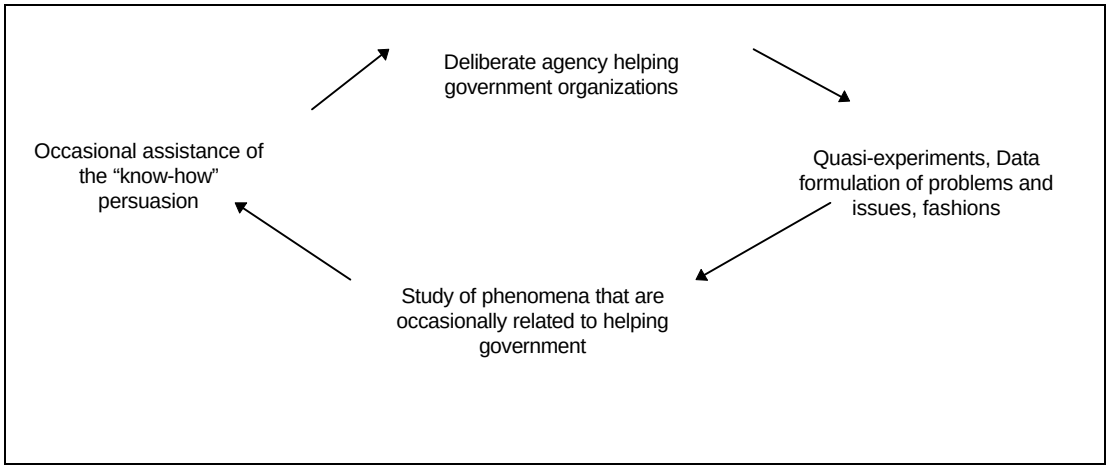
with the infusion of IT into government operations--the changing definitions of such terms and "centralization" and "decentralization" for example.

Organizational Change Issues

The concept of organizational change was discussed at many points during the workshop. Many participants saw this area as a key place for research contributions from social scientists. There were many discussions of the common failure to assess how exiting organizations adapt to new technologies and the social changes they engender in the environment. Some of the research topics related to this broad area of interest include:

- The boundaries of organizations
    - How are they defined?
    - How are they maintained?
    - What is their degree of flexibility and permeability?
- The objectives of the organization
- The processes or tasks it carries out
- The organizational structure
- The people in the organization (in terms of number, kind, culture, social networks, values, leadership, organizational citizenship, and group decision making)

In discussing organizational change, this group pointed out that change can be either intended (planned change) or consequential (as a result of some other driving activity). The diagram below was developed to illustrate how research can be focused on these two aspects of organizational change. The first is associated with the idea of deliberate agency, taking the perspective of organizations attempting to foster specific changes. The effects of the deliberate change processes can be studied as a phenomenon using such methods as quasi-experiments. The results of these studies of organizational change may then inform other organizations attempting to facilitate deliberate change in government organizations.



The group also discussed the relationship between technology and change. Technology change can be viewed as either requiring or enabling organizational change. Similarly, organizational change can be viewed as either requiring or enabling the use of technology.

Two ideas were outlined that could lead to future activities among the workshop participants. These were characterized as "virtual field work" and "virtual theorizing" where those of us who spend too little time in the field can become virtually involved in the work of others who spend most of their time there. Conversely field researchers would benefit from the ability to tap colleagues whose work is more theoretical to help assess, evaluate, and explain what field research uncovers in the world of practice. This could be accomplished by forging specific relationships or by organizing some kind of virtual chat room or electronic clearinghouse where people from both kinds of research programs can exchange ideas.

During the plenary discussion of this topic, one participant pointed out that often one individual within an organization can substantially impede organizational change. This assertion seemed widely accepted by the group. Several other participants noted that psychologists have devised typologies that can help identify such people and suggest useful roles for them, emphasizing the value of multi-disciplinary approaches to this topic. Others noted that the public sector is difficult to change by design, and that this is generally considered to be a useful, positive, feature of democratic institutions. Finding what the public and private sectors have in common in the realm of organizational change might be a way to target those areas where change is most possible.

European vs. North American Experiences, Challenges

This group discussed benefits and mechanisms for conducting comparative or global research on government information technology issues. This topic was seen as important for a number of reasons. The participants discussed the benefits of studying the similarities and differences of issues across countries or regions of the world. The group also discussed the benefits of taking a global, not just a comparative, perspective. The benefits of a global perspective included the ability to identify issues that have true global reach and that might attract multiple sponsors, such as information technology companies and multi-national corporations, who are acting in a global arena. Another benefit of examining government IT issues from a either a global or a comparative perspective is the potential to develop or identify exemplary models that could be adapted to particular situations in a given country or region. One of the participants cited a project that originated in the Netherlands that specifically called for cross-country comparative analysis that resulted in a particularly enlightened and valuable view of the issues. The comparative approach was also identified as beneficial in that it allowed for increased variability or options for problem solving.

Another justification for the importance of this kind of research and the sharing of ideas across countries was that some critical areas are being addressed in only a few places. For example, there is little awareness among American researchers of advanced work going on in Europe that addresses such important topics as classification theory, personal privacy and physical conservation of documents.

The group also discussed the importance of communication across countries. One member noted that while there is a vague awareness that there is interesting work going on in other countries, the human connection in terms of who one might contact in other countries to discuss their research is strikingly lacking.

Some of the other identified goals of conducting global or cross-country research included the identification of key common themes. It was indicated that there currently exists only a limited understanding of what aspects of government IT issues are culturally unique and which are present everywhere.

The group also discussed general mechanisms for moving forward in this area, suggesting it would be important to first ascertain if any existing group is currently addressing any of these issues. A critical question that needs to be answered prior to moving forward is who would be the audience for this type of research. The idea of a multi-client approach including multiple countries, and both public and private sectors was raised and was widely supported by the group. It was also noted that electronic communication should be used to support these efforts. Other specific implementation ideas included:

- Editors of journals could solicit and encourage research and submissions from international researchers around a variety of topics.
- Identify focal points in various countries or regions in terms of individuals interested in reaching out and sharing.
- Identify and examine models from the business community, such as multi-national corporations that have experience with this type of research.
- Create a database of research that is multi-disciplinary, multi-lingual, descriptive, and evaluative and focused on carefully selected themes or domains.
- Identify research methods that have been or could be used to conduct comparative research in this area.

Another issue discussed by the group was how this type of research might be funded. International corporations were identified as one potential funding source as was the European Commission. Later, in the plenary group, international organizations such as the World Bank and UNESCO were also suggested. A number of ideas were also discussed to make this type of research more attractive to potential funders. For example, the idea of pre-arranged agreements with funders and editors of journals to ensure that the results are published was suggested. Another idea was to arrange with the funders for a pre-publication review of the materials so that they can be accessed and used in a timely manner. The concept of multiple products for multiple audiences was also discussed. The notion of comparing issues across developed and developing countries was also identified as important.

Lastly, a number of issues were identified as suitable for this type of research:

- Document and records management
- Cross-sector work and communications
- Inter-agency data sharing
- Trends in public administration related to IT
- Privacy
- The government of the future

Specific follow-up tasks related to this research were also identified by the group:

- Information about the Kennedy School initiative, Visions of Government in 21st Century, will be distributed to the workshop participants.
- Several members will discuss the feasibility of conducting an international project on service to citizens in conjunction with the Council on Excellence in Government's International Summit on Service to Citizens.
- Continued electronic communication about projects and other proposed activities among participants.

International Consortium of Government Research Centers

The concept of an International Consortium of Government Research Centers was developed as a mechanism to facilitate the ongoing sharing of ideas among the members of the government IT research community. The group addressing this topic identified a set of values that would characterize such an effort. It would:

- Support existing research centers as opposed to creating a new center
- Promote government IT research as science-based
- Foster international comparative research, awareness, and collaboration
- Facilitate educational, cross-cultural exchanges such as visiting scholars and students

Additionally, the group identified some operational strategies including using English for operations while also developing and promoting multi-lingual resources and an overall global balance in terms of membership and research. They identified existing institutions as a foundation for membership. The group also indicated that the consortium would serve to promote the electronic availability of research and virtual strategies for communication and operations. Within the small group discussion, a suggestion was made to establish an interim organizing board comprised of five to seven members from North America, Europe, and Asia who would develop a mission statement, define kinds of membership, identify potential resources, define likely member services and suggest ways to foster partnerships with practitioners and IT companies.

This group also discussed the idea of executing one or two initial projects characterized as "low-hanging fruit" with high appeal, such as developing and maintaining a Web site and a listserv,

offering a journal scanning and reporting service, and providing a way to identify opportunities to exchange faculty or students among the member organizations.

One of the critical points raised during the plenary discussion of this topic was that the creation of a formal organization was perhaps more than necessary given the goals. In particular, it became clear that the term 'consortium' meant very different things to the participants from Europe and Canada than to those from the US. The European and Canadian participants indicated that 'consortium' implied a formal structure with top-down direction and significant legal ramifications. To the US participants, a consortium is a loosely linked association of autonomous organizations who share an area of interest. This discussion led to consensus around the idea of creating a 'facilitating' or 'coordinating' mechanism that would not entail the creation of a formal organization. Inclusion of organizations in Latin America, South Africa, Australia, and New Zealand was also recommended.

Possible Next Steps

The workshop concluded with a plenary discussion of possible next steps that would build on the foundation of ideas and relationships developed in two days of discussions. This included:

- A general consensus that CTG should summarize the workshop results (which we have tried to do in this report), get feedback from the participants, and propose some actions based on that reaction.

- Many of the participants wanted to try to collaborate with one or a few others on specific projects. Since the workshop, at least three such collaborations have begun to be explored: (1) an international comparative project to be associated with the 1998 Summit on Service to Citizens--a program of the Council for Excellence in Government, (3) an exploration of ways to coordinate European interests and (3) a proposed multi-disciplinary workshop to help define the National Science Foundation's Digital Government initiative.

- If communication and collaboration begin to grow among the participants, a second meeting next year would be desirable. This might be a stand-alone event or might be held in conjunction with another, larger conference.

- There was much agreement that some mechanism that connects research organizations and scholars to one another and helps them stay in touch with one another's work would be desirable. As a first step, CTG will maintain the workshop Web site and listserv for these purposes.

- Several people wanted to explore ways to foster exchange of students and researchers among our various programs.

- The journal editors in the group recommended submitting the results of this workshop to the various journals for publication in appropriate segments of their publications.

Appendix A

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Appendix B

Research Ideas

Service Delivery Group

- Information sharing among organizations who share an integrated "front office." What are relationships between the back offices? Who is responsible for front office if each back office is separate e.g. getting people to work together. *Victor Bekkers*

- What are conditions/ models for effective self-service: services, capabilities, infrastructure, technology, cost & benefits. *Sharon Dawes*

- What information services should government provide versus making raw data etc. available to the private sector to perform information services? *Larry Brandt*

- To what extent may government implement extended services through mandatory specification and use of open standards in data ? Can government force the private sector to adhere to their standards ? *Jeff Ritter*

- What may government do to maintain information accountability when outsourcing services? *Sharon Dawes*

- Maintaining information accountability: Privacy vs. government collection and use of citizen information. Trade off between service integration & need to integrate information about people. Is "big brother" a necessary condition for personalized or custom-tailored services? *Jeff Ritter*

- How do you identify and focus on the assets of administrations? How do you support people to do new jobs during and at the end of the change process? How do you reengineer in terms of mission and assets? *Anna Laura Cubello*

Strategic Models for Change Group

- Identifying and Realizing the benefits of IT in government

- Collaborative Management Styles (case-based research)

- Funding & Pricing Mechanisms - assessing the costs of IT use

Information Infrastructure & Society Group

- Evaluating the usefulness to clients/groups of government provided electronic information. for a particular task. For example, National Library of Medicine - working with library of medicine- reaching doctors to get access to the library- have no idea of who is currently using the information they offer (agenda is to get information out to the rural doctors, etc.) *Bill Dutton*

- Research to find out how networks develop- people networks facilitated by physical networks. Targets of interest might be health care, social security and social services. *Terry Maxwell*

- How can we build accountability and oversight into information infrastructure and also protect privacy and organizational autonomy. *Margaret Hedstrom*

Public Management Group

- End User Training / Help- Critical Success Factors- Best Practices - *Jim Danziger*

- Role of Public Libraries in relation to access to government information - *Patricia Fletcher*

- Evaluating the impact of IT- Developing Instruments- Find a better way - *Heinrich Reinermann*

- Public Management in the 21st Century- IT and Organizational forms - *Kim Viborg Andersen*

- Convergence and divergence in IRM Education--Education is more fragmented among disciplines but technology is becoming more unified - *Tom Galvin*

- IT for meeting support - Synchronous meetings at multiple sites- broaden participation - *John Rohrbaugh*

- More effective information sharing structures cross units; Impact of federal legislation on using technology to provide better services - *Patricia Fletcher*

- IT supported regional organizational networks - *Heinrich Reinermann*

- Electronic document access in the public sector - *Kim Viborg Andersen*

- Participative design of innovative IT projects - *John Rohrbaugh*

- Ongoing consideration of public/ private roles as they relate to IT in the public sector - *Tom Galvin*

- Building a global IRM research dissemination and infrastructure - *Heinrich Reinermann*

Technology Group

- Integrate government-based systems to do complex work, e.g., emergency management

- Summarize the IT-based reform efforts and evaluate them

- Study factors that drive the cadence of technology-based reform in government

- Pilot to integrate public access to all federal statistical information

- Pilot and project to do telecooperation within local government

- Prototype environment to deliver just-in-time technical training

- Develop best practices for universal access to information (e.g., to people with disabilities) and disseminate results

- Develop non-integrated systems approaches to process coordination -- interoperability -- loose coupling

- Develop pilot “virtual agency”

Appendix C

Barriers and Enablers to Conducting Government IT Research

Getting practitioners involved	
Barriers	**Enablers**
two cultures trying to work together - researchers might be arrogant; practitioners think researchers have their heads in the air	
time (resources) required for project- hard to get practitioner's institution to provide time for them to play a real role	make the practitioners real partners - give them real responsibility
	clarify the benefits to the partners individually/ professionally
may be difficult to convince funder of importance of the role of the practitioner	
technical skill sets in agencies not appropriate for advanced technology	participating organizations like it when they acquire the tech skills in the course of the project
much of this research is identification of good practice - practitioners are delighted to have their story told if its a success story may bias people to work on best practice research	
	non techno-centric paradigm is critical to working with practitioners; work with social scientists regarding adoption of new technology
	involve social scientist in shaping technology
	researchers view this as their public service
we don't have a clear idea about the role we want practitioners to play - defining the research need, carrying out the research, paying for it, using the results, ...	networking with practitioners to develop collaborative relationships
	identify and work with practitioners that can serve as a change agents
	having an interface between the practitioners and researchers - someone neutral in the middle to broker/ translate between the two
	create a common definition of the problem which leads to better awareness of the interdependency between researchers and practitioners - how both can win
	develop an awareness of the organizational form/ context - how to get participation in a project varies with organizational/cultural context

Getting the results used	
Barriers	**Enablers**
	product should not necessarily always be a report, but a demonstration or pilot project
	write a book like Mike Hammers
	use a known and popular paradigm to convey results
	short term and steady delivery - don't wait three years
	start at the right level of optimization: cost, service, democratic
	put it on the web, give the sources away, have the right vendor strategy
	clear path to deployment
	have the integrator involved in the project
	more effective intermediate agents - boundary spanners who take the results and follow through
	give up the one way knowledge transfer model - researchers can learn form practitioners
	learn their language, learn their priorities, learn their culture-- bridge the culture
	have practitioners market the results
what is a research result? some need further elaboration? who will elaborate it? practitioner may be in the role of elaborating the result "under design" the system	shape understanding; have people think differently about the topic

Getting Funding to Support Research	
Barriers	**Enablers**
inability of the funding sources to understand the costs & benefits of the proposed research	willingness of researchers to match funds
inability of researchers to develop the benefit/cost case	ability to play politics to the funding source - enhance funder's public image
sources of funding look to "silo-based" projects; difficult to get collaborative funders	funding as a result of building coalitions and creating institutional support - also increases likelihood that results will be used
projects that are problem specific attract the greatest funding	projects that are problem specific attract the greatest funding
inappropriate ways of thinking about what should get funded or not: • assumption of no institutional history • focus for funding on new tech rather than integrating tech into business processes and the social change that goes with it • short time horizons • good evaluation interferes with innovation • role for social science is in impact evaluation rather than in the design phase • rational management and rational market	comparative element in the study might attract funding
difficult to catch the buzz word of the month	applications that have broader application might attract funding
inappropriate vendor strategy - mission agencies are vendor centric	if you involve the "right" public agencies for your project, vendor support will follow
complicated application procedures and associated uncertainty of success	
influencing the research agenda of the funding agencies is not easy: • going to Washington, sitting in committee sessions, takes a lot of time • not an easy place for funders and fund seekers to come together without corrupting the funding process (Independent Sector forums are an exception)	
long lead times	some countries have a great deal of interest in benchmarking with other countries
	possibility of replicating results - increases usefulness to others and likelihood of funding
shrinking budgets - getting anything funded is difficult	
	if policy says something is happening, then its easier to get the funding to show that it actually exists
perceived success does not necessarily support further research	failed efforts promote rethinking or new research

Getting Institutional support	
Barriers	**Enablers**
stovepipe problem - issues cut across institutional boundaries	investment in tech research is low cost compared to typical procurement costs
difficult to get department support for cross discipline and applied research for graduate students and faculty	
hard to get tenure - academic reward structure is not sympathetic to this type of work	some academic reward structures are shifting to support applied research
university requires publication of results, sponsor may not want it published	
institutional priorities are unstable; interest comes and goes quickly with changes in political leadership/ whims	
when sponsors are willing to share, institutional mechanisms for sharing are not in place	
push for fast results caused by financial pressures; short term vision for long term problems	
peculiar kind of risk aversion - afraid of anything that might make them look bad -- a successful project will not get headlines but a failure will	benefits may be sufficient to outweigh risks
institution may feel that the computer industry (or somebody else) should support this research	public/private partnerships can be useful what is a success in one place might be a failure elsewhere
networked collaborative technologies can almost only be researched in the context of use	
social research may unveil conflicts within institutions	

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