Center for
Technology in Government

Taking steps to improve digital government

07

ANNUAL
REPORT

MISSION

The **Center for Technology in Government** works with government to develop well-informed information **strategies** that foster **innovation** and enhance the quality and coordination of public services. We carry out this mission through applied **research** and **partnership** projects that address the policy, management, and technology dimensions of information use in the public sector.

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Taking steps to improve digital government

In this year's *Annual Report*, you will find news of a broad scope of CTG projects to improve government, ranging from deploying mobile technology to protect children at risk, to preserving eastern hardwood forests, to guarding our telecommunications infrastructure, to advising governments on IT development as near as Albany County, NY and as far away as China and Turkey.

There are four in-depth articles on subjects of particular importance for the current and future development of government information resources. Each article provides a review of our overall results, in addition to more in depth links to related project reports.

- The **mobile technology** article explores how New York State deployed laptops and other mobile devices for child protective service workers. The lessons from our assessment studies point to better ways of integrating new technologies in complex human services environments.
- A related article reviews the issues in **performance measurement** that emerged from our work on public return on investment analysis and performance management projects. We discuss both the promise of performance measurement to improve government and the limitations of current methods and models.
- In another area of concern for performance, the article on **regional coordination** explores how improvements in emergency response can result from better information sharing and coordination structures across state boundaries.
- How to improve **information sharing capability**, as well as capability for other demanding government actions, is the focus of the fourth article. It reports on the new frameworks for understanding and enhancing specific capabilities developed in recent CTG projects.

CTG also had the chance this past year to conduct a self-study of all our work since its founding in 1993. That review started in the fall of 2007. The self-study report was completed in January 2008 and is available on the CTG Web site. Preparing the report was a valuable opportunity to review and reflect upon CTG's outstanding record of accomplishment and to set the stage for continued success.

We thank the many government professionals, corporate partners, and academic researchers who have contributed to our 2007 accomplishments. As we work with government on all levels in the U.S. and expand our efforts internationally, we will continue to share results in ways we hope will benefit those who face the daily challenges, risks, and unknowns of investments in information driven innovation.

Finding the right balance between what the individual wants, the realities of the work, the device capabilities, and the overall connectivity options can help guide public managers in making the best technology choice.

Mobile Technology in the Public Sector: It's more than just the laptop

One of the most difficult problems facing government managers who want to implement new technology is anticipating how it will affect work. Of course, the primary goal is to improve performance. However, it is nearly impossible to take into account all the human, organizational, and external influences that may impact how well that goal is achieved. Until the technology is put to work, planning is often little more than speculation. This is particularly true with mobile technology, which may have substantial potential, when combined with wireless networks, to expand the time, locations, and effectiveness of many types of government work. Fully exploiting this potential, however, presents a complex problem for government managers.

Recent work at CTG provides some valuable information to help government decision makers deal with these issues. This opportunity came in a project to assess how laptop use affected child protective service work (CPS) in New York State. In this project (Assessing Mobile Technologies in Child Protective Services), the NYS Office of Children and Family Services (OCFS) engaged CTG to conduct an independent assessment of the use of mobile technologies in CPS casework. OCFS took a systematic, staged approach to deployment and testing these mobile technologies that yielded a large amount of useful information about the policy, management, and organizational influences on integrating technology into a mobile, human service workforce.

HOW DO INDIVIDUALS AND THE ENVIRONMENT AFFECT MOBILITY?

When technology is put into the hands of front line government professionals, it becomes quickly apparent how and where the technology fits into their specific work. That fit will depend on the individual and his or her work preferences, the nature of the work itself, on the capabilities of the technology, and on factors in the environment; all of these elements can have an impact on whether mobile technologies are readily adopted and used effectively. Every factor is important in its own right and in combination with others. For example, working in a car between appointments in the summer may be feasible for a CPS worker in rural upstate New York, but not in the winter.

Individual Factors

Individual differences among workers can play an important role in how mobile technologies are ultimately used. One size does not fit all. Each person brings his or her own history, experience, and personal circumstances to any work position, along with already formulated general attitudes and preferences. Since mobile technologies are used to increase mobility while completing work functions, these personal circumstances and attitudes will play an important role in their adoption.

Factors such as where a person lives in relation to work and modes of available transportation can affect his or her ability to use mobile technologies. Some people have long commutes via public transportation and will take advantage of this time to do work. Others may not feel safe or comfortable working with an expensive piece of technology on public transportation or in other crowded areas. In rural areas where connectivity is unreliable, “connecting” from home may not be an option.

In addition, the skill sets that people amass throughout their careers impact which technologies they are most comfortable using. Some people may be very comfortable using a laptop, while others may prefer to dictate their notes via voice recognition software on a laptop or using a cell phone to call a telephonic dictation service. Taking into consideration individualities when selecting a technology can also help with buy-in and acceptance. People may be more willing to try something if they know that management spent time understanding their needs.

Nature of the Work

The nature of the work plays a tremendous role in choosing a mobile technology. Depending on the focus of the work and the type of work (non-routine and less structured or highly automated and structured) some technologies may not fit. For example, transportation professionals who monitor critical infrastructure such as roads and bridges may need different technologies than a foster care caseworker who interviews families for potential child placement. Field work within each profession or area of government is situated within its own mission, functions, policies, and practices, so not every technology will work the same way within every context.

For example, CPS caseworkers spend a considerable amount of time interviewing families and observing home-life situations. Using some types of technology in this intimate environment therefore may not be productive. One of the caseworker’s goals is to establish a rapport with the family, which is primarily done by making eye contact, actively listening, observing the surroundings, and showing physical signs of attentiveness. Subsequently, in this situation, using a wireless laptop within someone’s home may not be practical, but rather using it immediately after the visit to quickly recall conversations and surroundings can improve the timeliness and accuracy of documentation.

On the contrary, public utility workers who monitor and service electrical, gas, water, and wastewater systems must also take detailed readings and document findings, but in this context the goals are different, because they are not also charged with establishing relationships. Therefore, using a handheld device to document numerical or technical infrastructure conditions can be used in real time.

Capability of Technology

Different mobile technologies offer a range of capabilities when out in the field. Some technologies, when considered independently, cannot perform a host of functions. Cross referencing critical work tasks with each technology’s capabilities will show how much can be accomplished from the field. For example, a cell phone can be used to make phone calls and to dictate notes to a telephonic dictation system,

Mobile government, or m-government, is a term broadly defined as "government's efforts to provide information and services to public employees, citizens, businesses, and nonprofit organizations through wireless communication networks and mobile devices." However, the terms *mobile* and *wireless* are often used interchangeably, as *mobile* implies technologies that are portable and *wireless* implies that a device can be connected wirelessly to local or wide area networks.

but in most cases cannot be used for documentation or retrieving information. Digital pens can be used in the field, but must also be accompanied with a PC or laptop to digitize the information. In CPS work, CTG found that wirelessly connected laptops provide more capabilities for both receiving and entering information than any other device tested.

To create opportunities to work in multiple locations one should determine if the chosen technology offers the quickest and easiest way. Is the technology adding steps to work processes or is it making work more streamlined? For example, documentation is a common function performed in the field. In its simplest form, the steps of documentation are to move data gathered while doing work in the field into a digital format so that it can be stored electronically. Boiling down the number of steps in this process can maximize time, so it is important to carefully study the steps involved in taking information from an analog to digital state with different mobile technologies.

Devices and Connectivity

Device and accessory characteristics play an important role in how or even if the technology gets used. If a device is heavy and short on battery time, workers may decide to leave it behind at the office to avoid physical discomfort. Devices that are light, yet durable, that fit into work bags and have a long battery life are more likely to be used.

Connectivity is one of the most pivotal components of mobility. As mobile and wireless are terms that are interchanged often, connectivity is the foundation to constant access. Workers in rural areas or urban neighborhoods with tall buildings may find various limitations in connectivity that limit the benefits of a mobile device. As such, if establishing and maintaining a connection with a device is difficult, it can easily lead to a level of frustration where the workers don't want to deal with it.

Finding the right balance between what the individual wants, the realities of the work, the device capabilities, and the overall connectivity options can help guide public managers in making the best technology choice.

DOES THE ORGANIZATION SUPPORT MOBILITY?

When government agencies decide to support their staff by offering mobile technologies, it is sometimes seen as strictly a technology project. In reality, mobile adoption is an organizationwide change that needs programmatic and policy attention. Introducing technology means that the work conditions are changed and the environment is modified, therefore existing policies, practices, and regulations may need to be updated or even created. Government managers need to decide exactly how mobile they really want their workforce to be and take the appropriate measures to ensure that level of mobility.

Revisiting current policies to make certain that they are still valid and appropriate for the new environment is critical. The types of policies and practices that seem to be affected by increased mobility include working from home, work time scheduling, compensation for work outside normal hours, and ensuring privacy and security of government data. But policies aren't the only area needing attention. Established technical infrastructure must be reviewed to identify if and how it can support a more mobile workforce. Maintaining devices and infrastructure that remains on site is different from maintaining ones that are in constant movement.

Policies

One of the goals of introducing mobile technologies is to enable workers to complete work functions outside of the traditional office. In many cases, this includes doing work at home, either within or after regular work hours. However, many government organizations do not have policies that address working from home or they have policies prohibiting it. In either case, policies or lack thereof could hinder the intended productivity gains or mobility of workers. If the goal is to make the professional as mobile as possible, then developing policies that support this goal is essential.

For example, if CPS caseworkers have wirelessly connected laptops, they can receive case information anywhere. This means they would not have to commute to the office first thing in the morning before making home visits; they could check all files from home then go straight to their visits. In another example, state lottery representatives also spend a large portion of their time in the field inspecting lottery machines in local businesses on a regular basis. All information about the machine, location, and environment must be collected. Allowing these representatives to finish entering data from home would increase efficiency in visiting all the locations they must inspect each day.

The policies for overtime and compensatory time can present concerns if there is no provision for compensation for working with the mobile technology after regular work hours. If the technology is a change for the organization, it may require them to look at the processes that govern overtime

and compensatory time. In some cases, management practices are such that overtime is only for extra time spent in the office. Compensating for work not completed in the office may have to be tied to production of deliverables or written descriptions of work completed.

System Design

Integrating mobile technologies into existing systems will require varying amounts of organizational resources and effort. For example, some technologies require a change in overall network design, such as the introduction of wirelessly connected laptops, while other technologies do not require any back-office reconfigurations. Technologies such as cell phones and PDAs may not require changes, however, some handheld devices and almost all wirelessly connected laptops and tablets that connect directly to a central information system will generally cause a need for configuration, policy, or general practice changes. In many cases, all direct access into a central information system is governed by specific security rules and regulations, some set forth by the agency and others by governing bodies. Subsequently, moving through the connection process may result in routing users through a series of time consuming log-ons, sometimes negating any efficiencies realized by the mobility.

Allowing government workers to do work from multiple locations is not just a technology issue, or even a mobility one—it's an organizational change and a leap in the direction of conducting government work differently. This type of large scale change requires multiple perspectives to help identify the range of factors that can promote or hinder the way work will be done.

IS INCREASED MOBILITY THE GOAL?

In many cases, when an organization agrees to buy mobile technologies the reasons are centered around increasing workforce mobility or increasing the ability to do work in the field. But if you dig deeper, descriptions of mobility are followed up with statements like "change in productivity," "using time more efficiently," "increased opportunities to work," and "increased satisfaction and morale." All of these are important and justified goals but are usually not communicated as much as increased mobility—at least in the beginning. Asking questions such as "what change are we expecting?" will help start to uncover assumptions about how others think mobility will impact the work.

Productivity

Increasing employee productivity is often the number one reason for adopting mobile strategies. Mobile technologies allow employees to communicate in new ways and access and enter information from critical applications without returning to the office. Productivity is often described as being more timely, doing more, or catching up on work. While productivity gains can be realized with mobile technologies, its important to specifically state what changes are expected. In the case of the CPS caseworker, changes in productivity were specifically stated as more timely documentation of progress notes or a decrease of backlog in documentation, which results in more case closings. Identifying how productivity might change with the technology can certainly help in setting expectations before it's deployed.

Satisfaction

Increased satisfaction and higher employee morale is always a good thing. If people feel valued because the organization has chosen to invest in technologies for them, their overall performance may increase. More specifically, mobile technologies may give some employees increased autonomy, which can result in their feeling more trusted and valued within the organization. This validation can be just as powerful as productivity gains. In many organizations that are constrained by tight resources and budget deficits, employees may not always get the resources needed to do their jobs. Efforts that increase morale could bolster job satisfaction and potentially affect performance. Stating in a public way that investments in mobile technologies are an investment in the people may potentially be one of the best ways to get and keep everyone on board.

CONCLUSION

The notions about how mobile technologies will be used are not always what actually happens. This is normal and many times, expected. Technology sneaks into workplaces and impacts the environment in ways that most do not think about until it's at the front door. In the case of NYS OCFS, one of the original assumptions was that the mobile device would be used mostly in court and at or in-between appointments. However, in all three deployments, CTG found that caseworkers most frequently used the mobile technologies at home. This was a little surprising in the first effort, but was then confirmed as it emerged as a major finding in the subsequent efforts. These sort of findings that differ from original assumptions make it necessary for government managers to take proactive steps to address the human and organizational issues that may affect mobility.

Meghan Cook, *Program Manager, Center for Technology in Government*

"The cost of not being prepared to share information, to coordinate our responses, and to work together is well understood. If we are unprepared, the next event will cause incalculable human misery…"

World Health Organization, Nov 2007

Regional Coordination: Exploring new response capability

A crisis rarely occurs in one jurisdiction or community; they tend to cross multiple geographic and organizational boundaries. The effects of the World Trade Center attacks, for example, extended far beyond New York City and the effects of Hurricane Katrina were felt far beyond the city of New Orleans. Events such as these continue to generate new insights into the coordination across boundaries necessary to ensure effective response to incidents—both natural and man-made.

WHAT IS "INFRASTRUCTURE"?
The basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions including schools, post offices, and prisons.

American Heritage Dictionary

The 9/11 Commission highlighted the need for a new kind of cross-boundary coordination in emergency response efforts, stating that "the attacks on 9/11 demonstrated that even the most robust emergency response capabilities can be overwhelmed if an attack is large enough. Teamwork, collaboration, and cooperation at an incident site are critical to a successful response." But as these events have taught us, coordination capability must be built long before a crisis. Investment in coordination prior to an incident is necessary to develop real understanding about roles and responsibilities, to build the institutional and individual relationships necessary to carry out those responsibilities, and to outline the requirements of an effective response. The range of possible incidents is unlimited, the resources to respond are not; building coordination capability is a necessary component of response preparedness.

The nation's critical infrastructure is receiving an increasing amount of attention in terms of creating new and more coordinated response capability. Key stakeholders are coming together in a variety of sub-domains of the critical infrastructure such as power, communications, transportation, and water to ensure continuity of operations. One strategy being implemented in some domains and explored in others is regional coordination. Regional coordination links together stakeholders in close proximity to one another to pursue joint or similar goals and responsibilities.

Regional coordination efforts are being organized to provide a forum for teamwork, collaboration, and cooperation to occur through physical and virtual co-location. The challenge to coordinating incident response efforts within regions is that coordinated response requires leveraging currently held resources in innovative and potentially more efficient ways, as well as establishing new business processes, communication flows, and a system of governance that satisfies the needs of all stakeholders. In addition, trust, collaboration, and timely cross-boundary information sharing all play a pivotal role in this new model.

TABLE 1: CRISIS-RELATED INFORMATION NEEDS

Information for Preparedness	Information for Immediate Response	Information for Recovery and Restoration of Services	Information for the Public
• Physical, social, and economic attributes of the community • Likely threats and vulnerabilities • Resources and capabilities for response • Action and coordination plans for foreseeable events • Business continuity plans	• Immediate and ongoing assessment of damage and danger • Knowledge about continuing or ancillary threats • Availability and capability of response assets • Deployment and coordination of responders	• Nature and extent of damage to infrastructure and services • Identification and assessment of needs and problems • Availability and capabilities of recovery and restoration assets in the wider community • Deployment and coordination of assets and status of recovery	• Immediate and emerging threats to civilians and guidance for personal protection • Ongoing advisement of continuing threats and what to do • Ongoing advisement of recovery and restoration activities • Continuing awareness and education

"The time of a crisis is not the occasion to start sharing business cards!"

– Participant, Protect New York Conference

REGIONAL COORDINATION AND THE TELECOMMUNICATIONS INFRASTRUCTURE

The telecommunications infrastructure represents a unique set of challenges to coordination efforts because while privately owned, it is regulated by government. Government agencies and private sector organizations are jointly responsible for the communications infrastructure. Ultimately, continuity of operations, both governmental and private sector, is at the heart of any critical infrastructure incident response effort. Regional coordination strategies have the potential to improve these response efforts if they enhance the capability that exists without creating unnecessary duplication of effort. At the core of any strategy is securing coordinated access to real-time data to support informed decision making across four stakeholder groups: government, telecommunications providers, the private sector, and citizens.

Drawing on the reviews of the 9/11 and Hurricane Katrina responses, which cited the need for stronger national as well as regional preparedness, the organizations responsible for the telecommunications infrastructure are exploring ways to develop regional coordination capability. In particular, they are seeking ways to respond to the broad recommendation that coordination efforts must "be tailored to meet the needs of specific regions." The recommendations, together with success in efforts at the national level and encouragement from the telecommunications community, have raised interest among states and localities as well as providers about the creation of regional coordination of telecommunications incident response as a complement to existing state and local level incident response capabilities. These coordination efforts have focused in four key areas: information needs, information sharing, relationship building, and the public value of coordinated response efforts.

INFORMATION: KEY TO A COORDINATED RESPONSE

To respond to an incident, regardless of its severity, managers of the critical infrastructure need information about that incident—both their own and that of others—in order to react. Successful incident response cannot occur without reliable access to accurate information. CTG's report, *Information, Technology, and Coordination: Lessons from the World Trade Center Response*, identified four critical categories of crisis-related information needs: for preparedness, immediate response, recovery and restoration of services, and for the public (see Table 1 on page 7). These information needs span the duration of the crisis and extend from preparation to assessment.

Information was critical to the 9/11 recovery effort, where "it's existence, availability, quality and distribution clearly affected, sometimes dramatically, the effectiveness and timeliness of the response and recovery efforts." The most recent draft of the new National Response Framework, which the U.S. Department of Homeland Security (DHS) published in January of 2008, speaks to the critical role of information in crisis response.

> *For an effective response, expertise and experience must be* ***leveraged to support decision-making and to summarize and prioritize information rapidly****. Information must be* ***gathered accurately*** *at the scene and* ***effectively communicated*** *to those who need it. To be successful,* ***clear lines of information flow and a common operating picture are essential****.*

To provide an effective response to an incident, disaster response teams need pertinent details about that incident. In the most basic terms, they need information. When a response team is built from multiple organizations or relying on information from multiple organizations, coordination across the boundaries of those organizations becomes key.

INFORMATION SHARING

Governments around the world are increasingly turning to information sharing as a lead strategy for developing response capacity for problems in a wide range of program and policy areas. Developing cross-boundary information sharing to support government response capacities requires change—in some cases, significant change—in policies, procedures, processes, and systems. These changes require new capability in technology certainly, but also in group decision making, learning, understanding, trust building, and conflict resolution, among others. Many organizations are just beginning to understand how difficult it is to create information sharing capability both in normal times and in times of crisis.

CROSS-BOUNDARY AND CROSS-SECTOR RELATIONSHIPS

Research and experience show that trust plays a significant role in the building of public-private partnerships where issues of confidentiality, proprietary information, and differing organizational cultures may arise and clash. Although both government and the private sector may have similar goals, they have different expectations about the type and amount of information that needs to be shared and how that information should be used once shared

Within the telecommunications infrastructure, telecommunications incident reporting requires adept management of both organizational and technological resources. While private sector telecommunications providers are required to report information about threats to the critical infrastructure, government regulators still heavily rely on trust and cooperation as a means to gather sensitive data. Trust (or mistrust) develops out of the joint experience of working together. By observing how different individuals or organizations deal with risk and vulnerability, we learn to expect certain behaviors. Managing the cross-boundary sharing of information about telecommunications security requires sensitivity to both government and private sector needs, while remaining true to the public value of ensuring a secure communication network.

THE PUBLIC VALUE OF REGIONAL COORDINATION

Altering a familiar and established crisis management response framework is a risky endeavor. The new response framework may duplicate the same problems in the current response or, worse yet, create new and unfamiliar problems. Ultimately, regional coordination should only be considered if it enhances the system that currently exists without institutionalizing redundancies. One way to assess the potential added value of new regional coordination capability is to use CTG's Public Value Framework to consider the value in two ways:

- By improving the ***value of the government itself*** from the perspective of the citizens, and
- By delivering ***specific benefits directly to persons, groups, or the public at large***.

To enhance the public value of investments in regional coordination these efforts should produce response capability that increases both the likelihood for continuity of operations of government in times of crisis and the quality of service in normal times.

In a recently completed CTG project focused on regional coordination for telecommunications incident reporting, key stakeholders from the telecommunications infrastructure in New York State brainstormed a list of recommendations for moving forward with regional coordination in that sector. Based on those specific recommendations and conclusions, CTG offers the following general recommendations for regional coordination:

1. ***Jointly establish guiding principles.*** Bring together key actors from across the sectors to collaboratively establish guiding principles.
2. ***Learn from others.*** Conduct current practices in regional coordination efforts. Research should specify focus on regional coordination of telecommunications incident response, in addition to models for governance and information sharing agreements of existing regional response efforts.
3. ***Learn from yourself.*** Increase knowledge sharing about information resources, practices, and capabilities among key stakeholders and avoid duplicating response capabilities in either the public or private sectors.
4. ***Act on new shared knowledge.*** Develop information flow models through collaborative group model building sessions to create shared understanding of where information is needed and how it gets to those places from where it is captured. Use new models of information flow and the results of recommendations 1, 2, and 3 to create necessary policies, procedures, and systems.
5. ***Secure funding for continued exploration.*** Continue to assess progress and make assessments of impact as a strategy for securing funding for ongoing capability development efforts.

Donna Canestraro*, Program Manager, Center for Technology in Government*

Actions and programs that make government more transparent, more just, or a better steward have added public value, a non-financial but nonetheless important aspect of performance.

The Performance Measurement Puzzle

There is a simple and persuasive proposition that is quite common in government policy and practice: better measurements of performance will lead to overall improvements in government. That proposition is fundamental to any notion of governing as rational decision making, from at least as far back as the Program Planning and Budgeting Systems (PPBS) and government accountability movements in the 1960's, up to the emergence of ComStat-style programs currently operating in many agencies. Performance measurement is central as well to the President's Management Agenda for improving U.S. federal agency operations, and many similar initiatives that can be found in state agencies. In spite of this long history of concern with performance measurement, however, it remains a puzzling problem for governments at all levels.

Recent work here at CTG addressed some aspects of that puzzle and provided us with some reflections on government performance measurement. Those reflections involve three questions that are closely related, but speak to different parts of the overall puzzle:

1. What to measure. To be useful, measurement must probe beneath the general performance goals of government to employ specific indicators and data elements. However, identifying and agreeing on these can present daunting challenges.
2. How to conduct valid measurement and analysis of the results. Measurement issues are central to the feasibility of performance assessment as well as its credibility.
3. How to link the measurements to both operations and the longer term outcomes of government programs. Measuring outcomes alone is necessary, but not sufficient.

CTG explored these questions in projects at different levels of government and with varying goals and scopes of operation. They included work with one local government in New York State which sought to define and measure performance in a particular area of government: policing. That case clearly demonstrated why performance measurement is never neutral, with its potential to affect many aspects of government operations and stakeholder interests.

Another project addressed the many questions involved in identifying and collecting the valid data needed for comprehensive performance measurement at the national level, across government agencies. In this project, the Turkish Ministry of Finance joined CTG in a workshop to help develop their governmentwide performance management program. The workshop focused on frameworks for linking budget-making to cost and operational data from government agencies and to evidence of the results they are intended to achieve.

A third recent project took on the question of how to expand the scope of performance measurement. That effort focused on ways to include the public value of government IT investments; the social, economic, and political returns. Lessons from each of these projects help to fill in pieces of the performance measurement puzzle.

WHAT TO MEASURE?

The scope of performance measurement can be problematic for several reasons. For any particular government program or activity there are sure to be multiple goals, stakeholders, and possible indicators of effectiveness. Some level of consensus about goals and priorities is necessary to mobilize the support and resources needed for a measurement effort. In the local policing project, the main issues were not availability, but usefulness of data. As the project report noted:

> The critical question … is not just can the department develop a set of categories, indicators, and measures that they believe will be useful in assessing their performance, but can Town management and the PD come to some consensus about these elements and agree to use them as the foundation of future examinations of department priorities, practices, and outcomes.

This question was ultimately resolved by identifying eleven broad performance categories aligned with the performance goals [see box above]. Indicators and measurements for each were then identified through broad participation of government managers and staff. The result was a performance measurement framework with broad support and a realistic set of measurements that could be collected and used without major disruption to existing operations.

This list illustrates a rather expansive response to the question of what to measure, in particular, how the performance of a police department or any other government unit can be perceived from different perspectives. The list includes measures relevant from the point of view of internal department operations, like officer safety and morale, along with others relevant from the point of view of the community at large, like public safety and responsiveness. When the scope of performance measurement is opened to this latter, public perspective, many more potential indicators and measurement problems are revealed as well.

Exploring some of these public value measurement problems was the focus of a different CTG project that developed a framework for assessing public returns on government IT investment. The performance perspective employed in that project identified performance goals in terms of a public value proposition, i.e., the value to the public returned from government operations or investments.

Police Department Performance Categories

- Responsive to community needs
- Public safety
- Officer safety
- Officer morale
- Officer integrity
- Effective internal controls
- Community recognition and support
- Incidences of crime
- Recognition by peers
- Efficient administrative procedures and operations
- Efficient and effective personnel management

That value proposition must be broadly conceived to do justice to the scope of government and how it affects individuals, groups, and both public and private organizations. The research in that project revealed an expanded way to describe public value in terms of six kinds of impacts governments can have on the interests of public stakeholders:

- **Financial**—impacts on income, asset values, liabilities, entitlements, and other kinds of wealth or risks to any of them.
- **Political**—impacts on the ability to influence government actions or policy, or to participate in public affairs as a citizen or official.
- **Social**—impacts on family or community relationships, opportunity, status, or identity.
- **Strategic**—impacts on economic or political advantage or opportunities for future gain.
- **Ideological**—impacts on beliefs, moral or ethical values, or positions.
- **Stewardship**—impacts on the public's view of government officials as faithful stewards in terms of public trust, integrity, and legitimacy.

Expanding the scope of government performance in this way brings into focus two distinct but equally important types of public value. One is performance in terms of the delivery of *benefits directly to citizens*. The other is performance that enhances the *value of government itself as a public asset*. Actions and programs that make government more transparent, more just, or a better steward have added public value, a non-financial but nonetheless important aspect of performance. This framework describes how to include both in public value assessments.

Such an expanded scope of performance measurement has both positive and negative implications. More things to measure means more cost and complexity in the measurement process. Increasing the scope of goals and measures can also greatly increase public expectations for government performance, with greater risk of disappointment and failure. Those concerns are discussed in more detail below. On the positive side, however, the greater the value potential of a government program or investment, the stronger the argument can be for mobilizing public support and resources. Neglecting an expanded view of public value propositions in performance measurement can result in lost opportunities to increase support and enthusiasm for government programs.

HOW TO MEASURE?

The method issues in performance measurement for government are as diverse and complex as the functions of government itself. Even when there is clear consensus on and specification of goals and indicators, the problems of data validity, access, quality, and interpretation remain daunting. One performance category for the police department in the example above was "responsiveness to community needs." While a laudable goal, the department could not rely on standard ways to identify, prioritize, or assign numbers to community needs or even to how "responsive" individual police actions might be. Similar problems inhabit most government performance goals and criteria. While hardly solving a wide range of these problems, the CTG project provided some valuable insights about measurement issues.

One important insight is that improving performance measurement is a systemic process. In both the local police department and the Turkish Government projects, the measurement initiatives touched all parts of the governments. Changing data collection and reporting processes had human resource and business process impacts. Most existing data collection and reporting requirements remained in place, resulting in increased work loads or shifts in work processes. Existing information systems were not fully adequate to the new tasks. Establishing new information flows within and across organizational units can encounter many technical, managerial, and political barriers. Overcoming these barriers and constraints will require effective collaboration, strong managerial support, and close attention to what is feasible, as opposed to ideal, in terms of new data and analyses.

A second insight is that the work of performance measurement improvement should be seen as ongoing, rather than a one-time project with a fixed end date. Because of the complexity and cost of performance measurement initiatives, it is usually best to build them in phases. That will provide opportunities to adjust and adapt the design to what is learned along the way. The progress of CompStat and CityStat programs in several cities has been uneven and subject to development along the way, in spite of significant successes. The reinventing of the U.S. federal government, begun in the early 1990's, and several follow-on initiatives have gone through modifications and will almost certainly continue to evolve. The Turkish Government's performance management program is planned for phased deployment, with provisions for learning and adjustment over a multi-year period. As the capabilities and demands on government change, so must the mechanisms for performance measurement.

It is also important to recognize that performance measurement has consequences. The results can be used

to reward, to punish, to change work practices, affect careers, and shift political power relationships. How measurement is designed and conducted is consequently of much more than just technical interest. Therefore the validity and integrity of performance measurements and their underlying data resources are always at risk. Mitigation of those risks is then an essential part of a good performance measurement design.

LINKING PERFORMANCE MEASUREMENT TO OPERATIONS AND OUTCOMES

The linkage problems of interest here are bidirectional. That is, they involve the way performance measurement methods link in one direction to the operations and business processes within the government program, and in the other to the outcomes that represent performance. Measuring the outcomes alone is necessary but not sufficient. Without the linkages into the operations and business processes, there is no way to know where the results came from or how to intervene to improve them. Cost-effectiveness measures, for example, require knowing what resources went into creating a particular outcome as well as the value of the outcome itself. Thus one set of linkages extends into the operations and information resources of the government programs, the other into the environment where the results can be detected and measured. Each presents a different set of challenges to performance measurement.

The challenges related to the internal operations of government are typically a mix of resource constraints, inadequate data, and conflicts of interest. Expanded performance capability in a government agency requires new or re-allocated resources, often of a significant magnitude. The Turkish Government's performance based management initiative, for example, called for new data collection and reporting procedures to eventually be implemented across all national government agencies. There were similar efforts included in the studies CTG conducted for the public value assessment project: governmentwide ERP implementations in Israel and the Commonwealth of Pennsylvania, and one in the Ministry of Finance in Austria. All were multi-million dollar, multi-year initiatives that included major performance measurement components. Even though on a much smaller scale, the performance measures that emerged in the police department project described above included some substantial new data collection and reporting procedures.

The need for these investments points out the importance of expanded data resources to track the processes that influence, generate, and document performance. The extensive cost accounting, process analysis, and activity reporting capabilities needed for performance measurement are seldom fully developed in governments. Financial management systems and management information systems may require major overhauls to produce the needed data.

That same challenge applies to the assessment of outcomes. Consider the performance assessment issues faced in a program to improve the nutritional health of a city's homeless population. It may be relatively straightforward to count the number of meals served, the costs incurred, and the number of clients the program engages. But none of those measures directly reflect the nutritional health of the participants. That would require knowing much more about the health status and nutritional habits of the homeless population than is feasible to collect. Crude, indirect measures may be all that's available. This necessity to often rely on problematic inferences to gauge performance is unfortunately common in most human service programs and represents a threat to the credibility and validity of many outcome measures.

A more serious threat to the validity of performance measurement can result from vulnerability of the data to manipulation, particularly when the measurement is linked to budgets or personnel evaluation. The risk of manipulation exists anytime a government worker reports, collects, or otherwise handles data in which they have a personal interest. Therefore, performance management systems typically go to considerable lengths to eliminate or control that kind of data tampering. Colleges that use student questionnaires to evaluate teaching, for example, do not allow the professor involved to administer or handle the results. In many cases, however, performance measurement systems rely on reporting from the workers whose performance is being evaluated. Those situations call for monitoring or auditing systems to preserve the integrity of the information resources.

These problems and challenges make clear that performance measurement in government will never be an exact science. There will almost certainly be contention both inside and outside government about any performance assessment, with many valid questions about the value of its results. However there is also great promise in the efforts to improve performance measurement capabilities. They can shed valuable new light on areas where real improvements are possible and where more efficient use can be made of public resources. Though less than perfect, these kinds of measurement initiatives can be very valuable learning experiences as a foundation for government improvements.

***Anthony M. Cresswell**, Interim Director, Center for Technology in Government*

For citizens to benefit from government investments in innovation, government agencies and their partners must be able to think innovatively as well as to act effectively. The most important innovation may be greater attention to the complexity of a particular IT initiative and of the context within which that initiative will be carried out.

A Capability-based View of Government IT Innovation

The obvious difficulty and high failure rate of information technology (IT) innovations in government and elsewhere have been central concerns in much of CTG's work over the past 15 years. Our first-hand experiences, coupled with reviews of the current research, highlight the importance of organizational capability as a critical success factor in IT innovation. It is clear that successful IT innovations, and the transformation they seek to support, depend at least as much on how well the organizations and individuals perform as on the chips, networks, and software. This finding led us, in turn, to further explore the concept of organizational capability and to work with government agencies to develop tools to enhance capability for IT innovation.

ORGANIZATIONAL CAPABILITY FOR IT INNOVATION

CTG recognized the need for a more useful way to think about organizational capability for IT innovations. The key problem in most existing approaches is that they are too static and based on oversimplified models. As a result, they do not reflect the high complexity and intricate dynamics of capability as it played out in the projects that were part of our research.

Some of the most prevalent approaches, for example, treat capability as a kind of maturity. That is, an organization's ability to achieve some goal, such as a new software application, is a matter of its place on a maturity scale; each successive level represents higher capability, building on the preceding one. Assessing this maturity is commonly based on ratings of many specific performance and resource factors. This kind of maturity model identifies many of the important factors in software development capability, for example, but largely ignores the interactive aspect of complexity. What's more, the maturity model suggests a kind of generalized capability across known tasks and processes, whereas innovation projects present organizations with new and often unanticipated task requirements. Other prevalent ways of describing capability are based on existing work routines or combinations of resources available in the organization, yet none seemed adequate.

Part of the problem is the variety in both the every-day usage of "capability" and in formal theories. Much of the language is familiar to today's managers: performance, accomplishment, having the legal right to perform, competent, and having or showing general efficiency. One dictionary definition includes competency in action and in a legal sense, as in competent to enter into a contract. This variety in concepts, combined with lack of attention to the importance of interactions, leads to overly simplistic and inconsistent ways of assessing and building capability. Failure to address the multiple dimensions of capability can then create challenges for those who seek to be innovative and for those who rely on innovation as core to their government improvement agendas.

Our work has been aimed at helping government leaders develop a broader understanding of capability as multi-dimensional. This broader understanding can extend discussions about innovation beyond the technical aspects to address policy and organizational capability and the ways they influence each other. Technical advances make many innovations possible, but technology is not enough. Research and experience tells us that innovation planning and management regularly fails to critically assess the capability to perform the actions necessary for success. As a consequence, new projects and innovative programs are unable to deliver on the promises of government transformation.

> Roughly, by a complex system I mean one made up of a large number of parts that interact in a nonsimple way. In such systems the whole is more than the sum of its parts, not in an ultimate, meta-physical sense but in the important pragmatic sense that, given the properties of the parts and the laws of their inter-action, it is not a trivial matter to infer the properties of the whole.
>
> Herbert A. Simon
> *The Sciences of the Artificial*, 2nd Ed.

LINKING CAPABILITY TO CONTEXT

The multidimensional view of capability helps innovators take into account the importance of context. Our experience in projects and research highlights the necessity of understanding capability in the complex context of innovative IT projects. Drawing on these experiences and new understanding we can identify four key characteristics of capability:

- **Multidimensional**—it is made up of several dimensions, all of which contribute to overall capability.
- **Complementary**—high or low overall levels of capability can result from different combinations of factors, high levels in some dimensions can often compensate for lower levels in others.
- **Dynamic**—it can increase or diminish due to changes within an initiative or in its external environment.
- **Specific to its setting**—some elements of capability apply to all settings, but capability for any particular project must be assessed relative to its own specific objectives and environment.

Several projects at CTG have focused on linking this view of capability to specific context characteristics. These projects have focused on intergovernmental information sharing, digital preservation partnerships, and electronic records access programs. Experience in each of these projects showed how specific capabilities necessary in that context contributed to success. We used that experience to then create toolkits designed to assess and help enhance capability.

The broad view of capability dimensions used in these projects includes grouping the dimensions into two closely related but distinct groups:

1. capability to create effective collaboration across organizational and governmental boundaries; and
2. capability to develop new systems and procedures.

The first, collaboration capability, includes dimensions that reflect the ability to work together and make plans and decisions in new ways. This type of capability is often lacking. Dimensions in the second group reflect the ability to build systems and inter-organizational processes. This is historically where most attention is directed. However, in more recent research, as illustrated in the case of Oregon's response to the West Nile Virus outbreak, practitioners increasingly recognize the need to build capability in both areas.

CREATING TWO KINDS OF CAPABILITY FOR INTEROPERABILITY

In 2004, Oregon was one of the last states in the United States to experience human cases of the West Nile Virus outbreak that began in the late 1990s. Interoperability was a central part of the response coordination effort and required new levels of cooperation between state and with federal agencies. One county-level communicable disease expert involved in response efforts found that for agencies to achieve interoperability on a more systemic and institutional level, they must understand each other's missions and needs. To achieve this level of understanding, she said, agencies go through several stages of collaboration. The first stage is *shake hands*: meet and get to know the people from agencies you will be working with. The second stage is to coordinate planning and training with agencies through exercises and routine responses. Only after going through these first two stages can agencies reach the stage of true interoperability. Building this collaboration capability takes time and resources, and only through legislative and executive support can individual agencies begin to work through the first two stages and be prepared for interoperability when and where it's needed.

Results from this and related projects reveal a more robust understanding of the characteristics and components of capability in the context of government IT innovation. This new understanding provides a foundation for a transition from a technology-based view of government transformation to a capability-based view.

A CAPABILITY-BASED VIEW OF IT INNOVATION

Using this new understanding, we set out to model capability for IT innovations of various kinds in a different way. Our approach was to focus on a particular type of IT innovation that was both an important goal for government agencies and one that might yield new insights. We began with information sharing and integration in the criminal justice domain. With support from the U.S. Department of Justice, we recruited a group of over 20 criminal justice professionals and researchers from across the U.S. who were engaged in information sharing initiatives. They worked with CTG to help build a new capability model and assessment method from the ground up. This group worked with CTG research staff over a two-year period to develop and test a new capability framework and assessment tool. That tool was well received by the criminal justice community and is now being used in information sharing initiatives in government agencies.

The tool, and the framework it is built upon, treat capability for creating new information sharing systems as both multi-dimensional and multi-organizational; complex systems with interacting parts. The way we describe the overall health of a person, for example, might be based on a profile of many measures, such as blood pressure, cholesterol levels, fitness, etc., not a single measure or the health of a single organ. Similarly, information sharing involves multiple agencies or parts of agencies. Therefore, a capability framework must include individual organizational units along with how they interact to create a capable collective.

This premise requires a multi-level rating or assessment scheme. In CTG's approach, the participants in an individual organization create the capability profile by rating their unit on 16 dimensions. The rating on each dimension is the aggregate of their ratings on several sub-dimensions that reflect a more detailed understanding of each dimension (180 sub-dimensions overall). The 16 main dimensions and their sub-dimensions were developed by the project team, based on their knowledge and experience, and modified by field testing. Table 1 shows how this dimensional framework links to previous research on capability and innovation, in particular to four main organizational challenges to successful innovation. Using the same approach of a combined expert panel and literature review, a similar set of dimensions and assessment methods has been developed to support the government archive and library communities in the development of partnership programs for the preservation of state government information in digital form.

TABLE 1. CAPABILITY DIMENSIONS AND INNOVATION CHALLENGES

Dimensions	Challenges			
	Mobilizing Resources	Uncertainty & Knowledge Acquisition	Aligning Rountines & Practices	Operational Control & Coordination
Business Model & Architecture Readiness		X	X	
Collaboration Readiness			X	X
Data Assets & Requirements		X	X	
Provisions for Governance	X			X
Information Policies		X	X	X
Leaders & Champions	X			X
Organizational Compatibility		X	X	
Performance Evaluation		X	X	X
Project Management	X			X
Resource Management	X			X
Secure Environment		X	X	X
Stakeholder Engagement	X	X		
Strategic Planning	X			X
Technology Acceptance			X	X
Technology Compatibility			X	X
Technology Knowledge		X	X	X

CONCLUSION

Mobilizing resources, uncertainty and knowledge acquisition, aligning routines and practices, and operational control and coordination are four well known challenges to innovation. How these challenges play out in particular IT innovations in the governmental arena depends on the capabilities of the team driving that innovation, as well as capability within the broader policy and organizational environment of the initiative. The capability-based view offered here allows for a more specific consideration of the complexity of an IT innovation in context; an examination of the 16 dimensions of capability by each participating agency and then collectively across those same agencies provides for a more nuanced and detailed understanding of what is actually possible.

For citizens to benefit from government investments in innovation, government agencies and their partners must be able to think innovatively as well as to act effectively. The most important innovation may be greater attention to the complexity of a particular IT initiative and of the context within which that initiative will be carried out. The capability-based view of IT innovation developed here at CTG provides a framework for guiding more systematic assessments of capability and for laying out plans for both building missing capability and leveraging existing capabilities toward successful initiatives.

Theresa Pardo, *Deputy Director, Center for Technology in Government*

PROJECTS

INTERNATIONAL

Building a Sustainable International Digital Government Research Community

Today, most digital government research addresses challenges within the context of a single country; few investigations have compared results across national boundaries or tackled problems that are transnational in scope. This National Science Foundation (NSF)-funded project begins to fill that gap by providing a set of opportunities for doctoral students and established scholars to expand their research interests and methods to international dimensions. These opportunities include a reconnaissance study describing the current status of international digital government research, an annual research institute for doctoral students, and a framework for supporting several international working groups.

1) The *Reconnaissance Study* was completed in 2007 and provides a broad overview of the current state of international digital government research, identifying its main contours and current directions. The report establishes a baseline against which to measure the future development of internationally-oriented digital government research.
2) The first Annual International Digital Government Research Institute, the iGov Research Institute, was held in July 2007 in New York City with sixteen students from eleven different countries [see sidebox for more details].

Members of the North American Digital Working group gathered in front of the main entrance of the Villas Arqueologicas Hotel in Cholula, Mexico.

Representatives from Turkey and staff from CTG gather for a group picture in front of the White House.

3) The three international working groups selected by peer review in 2006 began their work and met in various locations around the globe during 2007. The groups chosen are addressing transnational and comparative issues of governmental processes, organization, decision making, and citizen participation. These first meetings focused on group formation, formulation of work plans and research agendas, and identification of potential collaborative products. The groups will continue to meet through 2009.

Turkish Ministry of Finance Performance Management in the Public Sector

Governments around the world are looking to performance management to help them achieve their strategic goals. This project was designed to build the capability of the Turkish Ministry of Finance to improve their performance planning and assessment model prior to implementation in the Turkish government. To do this, the Turkish Ministry of Finance sought CTG's expertise to help them learn about existing U.S. government strategies and models for assessing the performance of government agency programs.

CTG coordinated two sets of activities over a two-week period in fall of 2007 with the first week in Albany, NY and the second in Washington D.C. The activities included two workshops with the CTG team and a variety of guest speakers, as well as site visits and meetings with experts in government financial management, budgeting, and performance management from several New York State agencies, two federal agencies, and the IBM Center for the Business of Government. Throughout the visit, CTG worked closely with the Turkish officials to develop strategies and action plans in support of their performance-based budgeting strategy.

The Turkish delegation included eleven individuals representing the Turkish Ministry of Finance, the Turkish Institute for Industrial Management (TUSSIDE), and Stratek Strategic Technologies R&D.

2007 iGOV RESEARCH INSTITUTE

iGov 2007 was held in New York City with sixteen students from Canada, China, Denmark, Germany, India, Italy, The Netherlands, South Korea, Togo, and the United States. The students are from multiple academic disciplines and are studying at 14 different universities in the U.S., Europe, and India.

The program was organized around the theme of "the city" as a coherent unit of government that operates within a larger world. Through both academic activities and field visits, the program addressed such topics as:

- pressing digital government (DG) problems and research questions and ways to study them,
- comparisons of the philosophies, questions, and methods among the disciplines that make up DG research,
- how to apply multi-method and multi-disciplinary approaches to DG research,
- how to design and participate in an international investigation, and
- how to manage an international project.

Internationally known researchers from a variety of academic institutions shared their expertise and experiences and led discussion groups on such topics as cross-cultural research, urban regeneration and simulation, interorganizational information sharing and integration, and digital government research frameworks. Senior government officials from the City of New York served as guest faculty and hosted site visits to the City Health Department, 311 citizen call center, and the Port Authority—agencies that use information and communication technology, along with innovative public management approaches, to provide services to citizens and to manage the ongoing business, regulatory, and policy processes of city government. Site visits and discussions with these government leaders provided the essential link to government needs that characterizes digital government research.

iGov Institute faculty member, Alan Borning, Professor of Computer Science at the University of Washington, mentoring a small working group of students.

"Attending the 2007 Institute was one of the most valuable experiences of my graduate student education. The summer provided a multifaceted academic occasion which granted me an opportunity to view international digital government research and practice through a multi-disciplinary, multi-cultural lens."

— Kayenda Johnson, 2007 Institute Student, Virginia Tech

Creating an Action Plan for Preserving the Record of the International Criminal Tribunal of the Former Yugoslavia, United Nations

The International Criminal Tribunal of the Former Yugoslavia (ICTY) is committed to providing a permanent record of the work of the Tribunal for use by victims, future international courts, scholars, and the public. To assist ICTY in developing a roadmap for this effort, CTG held a four-day workshop with senior management and records management staff of the Tribunal. The resulting collaborative roadmap is being used to guide decision making as the Tribunal moves toward closure in 2010.

The workshop included a series of large and small group planning sessions designed by CTG in collaboration with the archivist of the tribunal as well as other senior staff. The workshop sessions focused on two areas 1) outlining the policy, management, and technology capabilities required for success in preserving the record of the Tribunal, and 2) identifying the actions necessary to leverage existing preservation capability and to lay out a plan for the creation of new capability. In addition to generating a set of recommendations for internal capability development, the senior management team drafted a strategic vision to use in reaching out to key stakeholders in the interest of forming the strategic preservation partnerships identified as critical to success during the workshop.

Records management staff from the International Criminal Tribunal of the Former Yugoslavia (ICTY) break out into small groups during the workshop to identify their goals for the records of the tribunal.

The Archives and Records Management Section of the United Nations worked together with the Department of Peacekeeping Operations of the United Nations and CTG to design and deliver a four-day workshop held at the United Nations Logistics Base in Brindisi, Italy.

Building Mission-level Records Management Capability—United Nations Department of Peacekeeping Operations

One of the many tasks of the Department of Peacekeeping Operations' (DPKO) mission is assisting in the implementation of comprehensive peace agreements and leading states or territories through the transition to a stable democratic government. Records management capability in this context is critically important both to support day-to-day operations of the missions as well as to ensure the creation of an accurate historical record of events. However, the specific conditions under which records management procedures are carried out varies greatly across missions as do the capabilities available to meet these responsibilities.

To begin to address this challenge, the Archives and Records Management Section of the UN worked together with DPKO and CTG to design and deliver a workshop focused on building a new community of practitioners with expert knowledge in records management within the context of peacekeeping missions. The four-day workshop, held at the United Nations Logistics Base in Brindisi, Italy, brought together for the first time records managers deployed to the UN's peacekeeping operations. The workshop included a set of lectures and exercises focused on best practices in recordkeeping, standards, and principles for managing records in peacekeeping operations of the United Nations. In addition, activities were designed to foster a new community among records managers from the various missions.

As their first activity as a new community of practice, participants created a shared vision of an effective records management operation in a peacekeeping mission and spent time discussing how efforts to achieve this vision would be influenced by the variety of conditions found in the missions. They brainstormed an agenda for an annual meeting, as well as strategies for obtaining UN support for such an event.

NATIONAL

Modeling Interorganizational Information Integration

Integrating and sharing information across the boundaries of government organizations and with other partners involves complex social and technological interactions. These dynamic processes and their implications for better government are at the heart of CTG's research agenda. This NSF-funded project is in its fifth year and continues to contribute globally to both practitioner decision making and research dialogue on this issue.

The project began with a study of information integration initiatives in the policy areas of criminal justice and public health. Based on findings from two New York State case studies and projects in six other states, CTG researchers completed the development of a theoretical model of social and technical interactions in cross-boundary information sharing initiatives and crafted a first-ever definition of cross-boundary information sharing.

The model is currently being tested through a national survey of over 700 government professionals from criminal justice and public health agencies at the local and state levels from across the 50 states. These individuals were identified either by their involvement in past or current cross-boundary information sharing related projects in these areas or by their positions in government agencies responsible for providing criminal justice or public health services.

NEW YORK STATE

Assessing Mobile Technologies in Child Protective Services

In early 2006, the NYS Legislature and the NYS Office of Children and Family Services (OCFS) initiated a pilot program to explore how portable information technology could be used in child protective services (CPS) casework. In parallel to this exploration of use, CTG was asked to conduct a series of assessments aimed at learning more about the conditions and efforts needed to deploy mobile technologies statewide, as well as to investigate the impacts on CPS work and work processes. The results are presented in findings about caseworker productivity, mobility, and satisfaction.

The first assessment, the *NYS Portable Information Technology Pilot*, focused on small-scale pilots carried out during the summer and fall of 2006 in three local social services districts. The second assessment, concluded in December 2007, was based on the findings from the first, and involved assessing the impact of the deployment of laptops with wireless connectivity to over 135 caseworkers in Manhattan and Staten Island for the *Extended Pilot in New York City's Administration for Children Services*.

The third assessment, the *Portable Technology Demonstration Project in 23 NYS Local Social Service Districts*, began in late 2007 with a focus on over 400 laptops and tablets deployed to 23 Local Social Service Districts in NYS. This assessment concluded in March 2008.

Each assessment produced a report to the Governor, the New York State Legislature, OCFS and the Local Districts. Overall these assessments are providing insights in the following areas:

- technologies that provide the most functionality for CPS work while in the field,
- common locations where CPS caseworkers do work,
- effects on productivity through changes in timeliness and backlog,
- change in mobility and satisfaction with more flexibility and opportunities to work,
- common obstacles to field-based work such as connectivity, physical environment, and nature of work,
- policies and management practices needed for maximizing mobile technology use, and
- implications and recommendations for statewide IT deployment.

Exploring Regional Telecommunications Incident Response Coordination

In an increasingly interconnected world, neither the public nor the private sector can claim sole stewardship of the critical infrastructure; they are now interdependent. These interdependencies require new kinds of coordination in a variety of areas, particularly in response to incidents that threaten the stability of the infrastructure. Events such as the World Trade Center attacks and Hurricane Katrina have generated new discussions among stakeholders about the coordination necessary to ensure continuity of operations across the critical infrastructure.

In 2006, the New York State Department of Public Service (DPS), as a key actor in the national and regional telecommunications community, began to engage in discussions with other key actors about regional coordination of telecommunications incident response. Encouraged by interest from stakeholders, DPS partnered with CTG to organize a preliminary discussion among members of the regional telecommunications community.

CTG brought together individuals from telecommunications providers, state emergency management agencies, federal communications agencies, state regulatory authorities, state departments of homeland security, state cybersecurity, and the financial sector in March 2007 for a day-long workshop. The workshop participants engaged in discussions about

the value proposition of coordinated response capability, explored varying perspectives on the current state of affairs, brainstormed strategies for increasing regional response capability, and concluded the session by producing a set of five recommendations for next steps in exploring regional coordination efforts. The workshop report, prepared by CTG, was designed to trigger new and more broad-based discussions about the stability of the critical infrastructure, in particular, about focusing discussions on regional response coordination.

The New York State Department of Public Service (DPS) partnered with CTG to organize a workshop with key stakeholders from the regional telecommunications community, pictured here prioritizing recommendations that were ultimately refined for the final report.

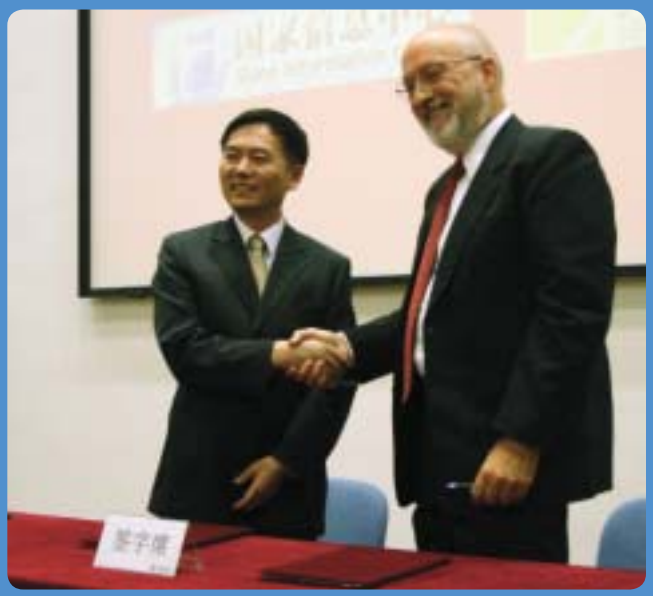
A GROWING INTERNATIONAL PORTFOLIO

Governments around the world are increasingly looking to information and communications technology as levers for innovation as well as social and economic development. In response, CTG began to work in an international context in the mid-1990s and over the past ten years has earned a reputation as a global leader in the field. We regularly receive inquiries from international organizations, foreign governments, and international scholars and practitioners seeking a relationship. This year alone, we signed collaboration agreements with organizations in China, Taiwan, and Mexico. In addition, we've worked with government and academic colleagues in Portugal, the UK, Netherlands, Italy, Austria, Lebanon, Germany, Canada, Brazil, and Turkey. This work has included such international organizations as the United Nations Department of Peace Keeping Operations, the International Criminal Tribunal of the Former Yugoslavia, and the European Commission.

In the fall, we signed an agreement with the Chinese National School of Administration to collaborate on research and to offer executive development programs for Chinese government officials. Research topics that are expected to generate comparative work revolve around the concepts, strategies, and implications of information sharing across agencies and levels of government. Two areas where collaboration is likely are public health and product safety.

The United Nations (UN) continues to be an important partner for CTG, with current projects involving a number of different UN programs. Recent projects have been carried out in partnership with the UN University Institute for Software Technology in Macao (UNU-IIST), the Department of Economic and Social Affairs (UNDESA), the Department of Peace Keeping Operations (UNDPKO), and the Archives and Records Management Services (UNARMS).

CTG is also working in partnership with UNDESA and Microsoft Corporation to revise the United Nations METER tool. The objective of METER is to assist policy makers in selecting where to direct investment efforts designed to facilitate e-government development. CTG is working closely with UNDESA to revise the framework and content of the tool to more generally reflect new understanding about capabilities and digital government. We will focus on integrating our expertise in information sharing and interoperability into METER, particularly in terms of capability assessment, public value assessment, and technology investment decision making.



CTG interim director, Anthony M. Cresswell, shaking hands with Bu Deying, director of Informatization Research Institute, China State Information Center, after signing a partnership agreement.

DISSEMINATING KNOWLEDGE

A core aspect of CTG's mission is to take an active role in the community of researchers and managers engaged in building and sharing knowledge about information technology (IT) innovation in government. We accomplish this, in part, through our participation in local, national, and international academic and professional conferences. In addition, staff are involved in workshops, panels, and advisory boards at all levels of government and internationally to explore and advise on key issues such as intergovernmental relations, electronic records management, project management, and technology and public policy.

The following is a list of the venues where staff participated as speakers or presented research papers and project findings in 2007, along with the advisory and editorial boards and study panels on which CTG representatives served.

CONFERENCES

International

20th Bled e-Conference
Bled, Slovenia

DEXA eGovernment Conference
Regensburg, Germany

eChallenges 2007
The Hague, The Netherlands

40th Hawaii International Conference on System Sciences (HICSS)
Big Island, Hawaii

International Conference on Electronic Governance (ICEGOV2007)
Macau, China

8th International Digital Government Research Conference (dg.o 2007)
Digital Government Society of North America
Philadelphia, PA

The Shifting Sands of Public Service Delivery: People, Partnerships and Performance
Institute of Public Administration of Canada
Nova Scotia, Canada

National

2007 APSA Annual Meeting
American Political Science Association
Chicago, Illinois

Virtual Town Hall Technical Conference
www.virtualtownhall.org

Regional

Government Technology Conference (GTC) East 2007
Albany, New York

New York State

Telecommunications Reliability in the Information Capital of the World Conference
New York Telecommunications Reliability Advisory Council
Columbia Institute for Tele-Information at Columbia Business School
New York, New York

Information Technology & the Technology Transfer Process: A Holistic Perspective
Novartis
New York, New York

New York State Local Government IT Directors Association Fall Conference
Corning, New York

RESEARCH SEMINARS, WORKSHOPS, AND PANELS

Authentic Legal Information in the Digital Age: A National Summit
American Association of Law Libraries
Schaumburg, IL

China E-Government Forum
National School of Administration
Beijing, China

E-government in a Global Context
The NYS Forum
Albany, New York

Best Practices for Developing IT Skills Seminar
The NYS Forum
Albany, New York

Information Strategy and Management Seminars
New York State Public Management Intern Program
Albany, New York

Digital Preservation: Records Management in the Electronic Age
Pennsylvania State Association of Township Secretaries and the Shippensburg University Institute of Public Service
Shippensburg, Pennsylvania

Electronic Records Management Workshop
South Dakota State Archives and State Library
Pierre, South Dakota

7th Global Forum on Reinventing Government: Building Trust in Government Capacity Development Workshop on Managing Knowledge
United Nations Online Network in Public Administration and Finance
Vienna, Austria

Business Continuity Planning for Research Organizations Annual Research Colloquium
University at Albany, State University of New York
Albany, New York

STUDY PANELS, ADVISORY COMMITTEES, AND WORKING GROUPS

Working Group on Electronic Rulemaking
American Bar Association

Board Member, Officer, and Sponsorship Committee
Digital Government Society of North America

EUReGOV Expert Working Group
European Commission Information Society & Media Directorate

Nominations and Election Committee
European eGovernment Society

Advisory Committee
Government Technology Conference (GTC East)

Study panel on IT Management at the USDA Forest Service
National Academy of Public Administration

Advisory Committee on Electronic Records Archive
National Archives and Records Administration

Business and Operations Advisory Committee
National Science Foundation

Proposal Review Panel on Information Security
National Science Foundation

Strategic Alliance Action Team
New York State CIO Council

Academic Advisory Group
New York State Commission on Local Government Efficiency and Competitiveness

Project Management Steering Committee
The NYS Forum

Local Government Committee
New York State Office of Cyber Security and Critical Infrastructure Coordination

New York State Telecommunications Reliability Advisory Council
New York State Public Service Commission

Academic Advisory Committee Financial Markets Regulation Program
University at Albany, State University of New York

Academic Advisory Committee
University at Albany, State University of New York

University Governance Council
University at Albany, State University of New York

University Selective Investment Committee
University at Albany, State University of New York

CONFERENCE LEADERSHIP

Co-Chair
HICSS Egovernment Symposium
40th Hawaii International Conference on System Sciences (HICSS)
Big Island, Hawaii

Mini-Track Co-Chairs
- Egovernment Emerging Topics
- E-Government Organization and Management
- E-Policy, Law, and Governance

40th Hawaii International Conference on System Sciences (HICSS)
Big Island, Hawaii

General Co-Chair
International Conference on Electronic Governance (ICEGOV2007)
Macau, China

Program Committee Co-Chair
International Conference on Electronic Governance (ICEGOV2007)
Macau, China

Conference Co-Chair
The 8th International Conference on Digital Government Research (dg.o)
Digital Government Society of North America
Philadelphia, Pennsylvania

Chair, Poster and Demo Sessions
The 8th International Conference on Digital Government Research (dg.o)
Digital Government Society of North America
Philadelphia, Pennsylvania

EDITORIAL BOARDS

Government Information Quarterly (GIQ)

International Journal of Electronic Governance (IJEG)

Information and Communication Technologies for Human Development

Journal of Information Technology and Politics

Transforming Government: People, Policies, and Practices

RESEARCH DISCUSSIONS AT CTG

Copyright for Scholarly Authors: What Are Our Rights and Should We Keep Them?
Lorre Smith, librarian for Digital Library Initiatives, University at Albany

Development of e-Government in China
Yu Shiyang, division chief of the Informatization Institute, State Information Center in Beijing, China

Fundamental Research of e-Government Management Theory and Approaches
Zhang Pengzhu, Antai College of Economics & Management, Shanghai Jiao Tong University in China

Lessons of Disaster: How Can We Learn from Disaster Experience?
Tom Birkland, associate professor of Public Administration and Policy and director of the Center for Policy Research, University at Albany, SUNY

Presentation on the Center for the Transfer of Open Technologies and Best Practices (CETRATEC)
Carlos Mondragon, chief of staff to the Governor of Michoacán, Mexico and Martin Levenson, IT advisor to the Governor of Michoacán, Mexico

Yu Shiyang, division chief of the Informatization Institute, State Information Center in Beijing, China presenting on *Development of e-Government in China* as part of CTG's Research Discussion Breakfast series.

Sharon Dawes (far right) and Theresa Pardo (second from right) with Dr. Olu Agunloye (front row, sixth from right), who gave the practitioner keynote at ICEGOV 2007 presenting the strategies behind e-governance in Nigeria, along with the rest of the Nigerian delegation.

ICEGOV 2007

CTG was co-organizer of the 1st International Conference on Theory and Practice of Electronic Governance (ICEGOV 2007) in Macao SAR, China. This partnership with the United Nations University International Institute for Software Technology (UNU-IIST) and the UN Asian and Pacific Training Centre for Information and Communication Technology (APCICT) attracted practitioners, developers, and researchers from government, academia, industry, and non-governmental communities worldwide. Participants came together to share the latest findings in the theory and practice of Electronic Governance and to discuss their specific experiences and concerns.

Sharon Dawes, CTG senior fellow, served as general co-chair and gave one of three invited talks on *Advancing E-governance: Connecting Learning and Action*. Theresa Pardo, CTG deputy director, served as program co-chair and was co-coordinator of a tutorial and workshop on organization and management with Yuanfu Jiang from the National School of Administration, P.R. China.

ELECTRONIC RECORDS MANAGEMENT WORKSHOPS

Brian Burke, senior program associate at CTG, conducted two workshops in 2007 to help state and local governments with strategies for improving the management and preservation of government information in digital form. The first was sponsored by the Pennsylvania State Association of Township Secretaries and the Shippensburg University Institute of Public Service. CTG developed the workshop for the Institute for Municipal Secretaries, Clerks and Administrators and Master Municipal Clerk Academy, with nearly 30 government managers from approximately 30 different local governments in Pennsylvania participating. The second was held in Pierre, South Dakota and included staff from approximately 20 South Dakota state government agencies and was sponsored by both the State Archives and State Library under a National Historical Publications and Records Commission grant.

RESOURCES FROM CTG

Assessing Mobile Technologies in Child Protective Services: An Extended Pilot in New York City's Administration for Children's Services

Mobile technologies have the potential to increase the efficiency and effectiveness of Child Protective Service (CPS) investigations. This report was done under contract with the NYS Office of Children and Family Services (OCFS), in conjunction with the NYS Administration for Children Services (ACS). The report is an assessment of a large scale deployment of wireless laptops to CPS workers in New York City's ACS involving approximately 135 child protective services workers and supervisors in the Staten Island and Williams Street (Manhattan) offices. The assessment by CTG shows the complexity of deploying technology into a well established profession. The study focused on mobility, productivity, and satisfaction, and includes a set of recommendations and future considerations.

Exploring Regional Telecommunications Incident Response Coordination

In an increasingly interconnected world, the public and private sector need to work together to provide a stable telecommunications infrastructure. In 2006, the New York State Department of Public Service (DPS) partnered with CTG to organize a workshop with key stakeholders about the new kinds of coordination necessary to respond to incidents that threaten the stability of this infrastructure. This report summarizes the workshop discussions and includes a set of recommendations for next steps in exploring regional response coordination. In particular, discussions about the public value of regional response coordination and the perceived benefits of and challenges to coordination are presented. Suggestions for how this report might be used to assist in moving the discussion forward within and across each of the various sectors are also provided.

International Digital Government Research: A Reconnaissance Study

Today, digital government research is going on all over the world; generally these studies are focused within the geographic and political context of a single country. Given the growing influence of global economic, social, technical, and political forces, digital government researchers are expanding their study to international dimensions. International digital government research explicitly focuses on understanding topics that cross the jurisdictions, cultures, and customs of different countries. This reconnaissance study takes a broad look at the current state of international digital government research to identify its main contours and current directions. It provides a baseline against which to measure the future development of internationally-oriented digital government research.

Knowledge Sharing Innovations in the Natural Resources Community: A toolkit for community-based project teams

There are benefits and challenges in using information technology for communication and knowledge sharing in the natural resources community. Eight project teams were funded by the United States Department of Agriculture (USDA) Forest Service, Northeastern Area States, and Northern Initiatives to explore how technology-based strategies such as Web sites and Webinars can be used as tools for sharing knowledge on topics of concern to their communities and to build communities of practice. The report documents the experiences of these eight project teams as collected by CTG through a series of interviews and a workshop. While the report is specifically directed toward natural resources practitioners in government, academic, and not-for-profit settings, it also provides valuable lessons for any organization involved in community-based collaborative knowledge sharing activities with geographically dispersed teams and constituents. Advice for use by funding organizations was also captured from the project teams and is shared in the report.

Using XML for Web Site Management: An Executive Briefing on streamlining workflow, reducing costs, and enhancing organizational value

XML is becoming a critical technology for all types of information services, in particular for Web site management. A typical government agency Web site contains thousands of pages and links, online transactions, and critical reports. It needs to be accurate, up-to-date, and available 24/7 to a wide audience from many locations using different devices. Unfortunately, the technologies and processes generally used to establish Web sites do not enable efficient management and growth. This *Executive Briefing* presents the features of XML—open standard, reusability, technologically neutral—that make it an ideal strategy for managing the day-to-day operations of Web sites as well as to make it possible for cost-effective growth.

Using XML for Web Site Management: Lessons Learned Report

Despite the clear advantages of XML, government agencies confront many obstacles to the adoption and implementation of XML-based Web site management. This report details lessons learned as well as key benefits of and barriers to the use of XML for Web site management. The report is based on the experiences of staff from five New York State agencies who participated in workshops, training, and prototype development activities as part of CTG's XML Testbed. The report is not a technical how-to on the intricacies of XML; it is a presentation of the lessons learned by the participants as they explored the use of XML for Web site management. The cases include illustrations of lessons learned in workflow and content management, as well as increased flexibility related to creating and changing a public image on a Web site. Webmasters, public information officers, program managers, and anyone involved in getting information to a Web site will find value in this report.

NASCIO
Representing Chief Information Officers of the States

Staff at CTG contributed to a three part series of reports on state government electronic records management and digital preservation published by the National Association of State Chief Information Officers (NASCIO). NASCIO, which represents the chief information officers (CIOs) of all U.S. states, released the three-part series starting in the Spring of 2007 with the final report coming out in October. The reports present current issues, challenges, and recommendations for action by state CIOs related to electronic records management and the preservation of digital content.

The series of three reports can be viewed and downloaded from NASCIO's Web site at www.nascio.org/committees/ea/pubArchive.cfm

Electronic Records Management and Digital Preservation: Protecting the Knowledge Assets of the State Government Enterprise PART I: Background, Principles and Action for State CIOs (May 2007)

Electronic Records Management and Digital Preservation: Protecting the Knowledge Assets of the State Government Enterprise PART II: Economic, Legal, and Organizational Issues (July 2007)

Electronic Records Management and Digital Preservation: Protecting the Knowledge Assets of the State Government Enterprise PART III: Management Leads and Technology Follows—But Collaboration is King (October 2007)

SCHOLARLY PAPERS

BOOK

Digital Government: E-Government Research, Case Studies, and Implementation
H. Chen, L. Brandt, V. Gregg, R. Traunmueller, S.S. Dawes, E. Hovy, A. Macintosh, and C. Larson, eds. (Springer)

BOOK CHAPTERS

Introduction to Digital Government Research in Public Policy and Management
S.S. Dawes (In Chen, H., et al. eds., *Digital Government: E-Government Research, Case Studies, and Implementation*. Springer)

New Models of Collaboration for Delivering Government Services: A Dynamic Model Drawn from Multi-National Research
S.S. Dawes and O. Eglene (In Bhattacharya, Moonmoon, ed., *E-Collaboration: An Introduction*, Hyderabad, India: Icfai University Press)

The New York State Website: Accommodating Diversity through a Distributed Management Structure
J.R. Gil-Garcia and S.S. Dawes (In Rocheleau, Bruce, ed. *Case Studies on Digital Government*. Idea Group)

Putting the Results in Broader Perspective
S.S. Dawes (In Wimmer, M and Codanogne, C., eds. *Roadmapping eGovernment Research: Visions and Measures towards Innovative Governments in 2020*. eGovRTD2020, European Commission Project IST-2004-027139)

Sustainable Cross-Boundary Information Sharing
T.A. Pardo, J.R. Gil-García and B. Burke (In Hsinchun Chen, Lawrence Brandt, Sharon Dawes, Valerie Gregg, Eduard Hovy, Ann Macintosh, Roland Traunmüller, and Catherine A. Larson, eds., *Digital Government: Advanced Research and Case Studies*. Springer)

JOURNAL ARTICLES

Authority and Leadership Patterns in Public Sector Knowledge Networks
O.Eglene, S.S. Dawes, and C.A. Schneider (*The American Review of Public Administration* 37(1) March 2007, 91-113)

Geographic Information Technologies, Structuration Theory, and the World Trade Center Attack
T. Harrison, J.R. Gil-García, T.A. Pardo, and F. Thompson (*Journal of the American Society for Information Science and Technology* 58(14), 2240-2254)

Interorganizational Information Integration: A key enabler for digital government
T.A. Pardo, and G.K. Tayi (*Government Information Quarterly*, Volume 24, Issue 4, Pages 691-715)

Invigorating Web site Management through XML: An e-government case from New York State
J.R. Gil-Garcia, J. Costello, T.A. Pardo, and D. Werthmuller (*International Journal of Electronic Governance* (1)1, 52-78)

CONFERENCE PAPERS

Assessing Capability for Justice Information Sharing
A.M. Cresswell, T.A. Pardo, and S. Hassan (*Proceedings of the 8th Annual International Conference on Digital Government Research: Bridging Disciplines & Domains*, pp. 122-130: Digital Government Society)

Building a Research-Practice Partnership: Lessons from a government IT workforce study
S.S. Dawes and N. Helbig (*Proceedings of the 40th Annual Hawaii International Conference on System Sciences—HICSS'07*, p. 104c, Los Alamitos, CA: IEEE Computer Society Press)
(best paper nominee for e-government track)

Cross-national Information Policy Conflict Regarding Access to Information: Building a conceptual framework
L. Zheng (*Proceedings of the 8th Annual International Conference on Digital Government Research: Bridging Disciplines & Domains*, pp. 202-211: Digital Government Society)

Emergence of the Governance Structure for Information Integration Across Governmental Agencies: A system dynamics approach
L.F. Luna-Reyes, D.F. Andersen, G.P. Richardson, T.A. Pardo, and A.M. Cresswell (*Proceedings of the 8th Annual International Conference on Digital Government Research: Bridging Disciplines & Domains*, pp. 47-56: Digital Government Society)

Government Leadership in Multi-Sector IT-Enabled Networks: Lessons from the response to the West Nile Virus outbreak
J.R. Gil-Garcia, T.A. Pardo, and G.B. Burke (Paper presented at *"Leading the Future of the Public Sector"—The Third Transatlantic Dialogue*, organized by the American Society for Public Administration and the European Group of Public Administration, Newark, Delaware, USA)

Informal Leadership and Networks: Lessons from the response to the West Nile Virus outbreak in North America
T.A. Pardo, J.R. Gil-Garcia, and G.B. Burke (Presented at the *eChallenges e-2007 Conference*, The Hague, The Netherlands. In Paul Cunningham and Miriam Cunningham, Eds. *Expanding the Knowledge Economy: Issues, Applications, Case Studies*. IOS Press, Amsterdam)

IT-Enabled Collaboration in Intergovernmental Settings: Lessons from the response to the West Nile Virus outbreak
T. Pardo, J.R. Gil-Garcia, and G.B. Burke (Paper presented at the *68th ASPA National Conference*, organized by the American Society for Public Administration, Washington, DC)

Leadership and Cross-Boundary Information Sharing: Insights from the U.S. West Nile Virus outbreak
T.A. Pardo, J.R. Gil-Garcia, and G.B. Burke. (Paper presented at the *7th United Nations Global Forum on Reinventing Government*, Vienna, Austria)

Scenario building for E-Government in 2020: Consolidating the results from regional workshops
M. Janssen, P. van der Duin, R.W. Wagenaar, M. Bicking, M. Wimmer, S.S. Dawes, and R. Petrauskas (*Proceedings of the 40th Annual Hawaii International Conference on System Sciences—HICSS'07*, p. 109b, Los Alamitos, CA: IEEE Computer Society Press)

Structuration Theory and the Use of XML for Web Site Content Management in Government: Comprehensive prototyping as an induced change episode
J.R. Gil-García and A. Baker (Paper presented at the *Sixth International Conference on Electronic Government*, organized by DEXA 2007, Regensburg, Germany)

Understanding Context through a Comprehensive Prototyping Experience: A testbed research strategy for emerging technologies
J.R., Gil-Garcia, T.A. Pardo, and A. Baker (*Proceedings of the 40th Annual Hawaii International Conference on System Sciences—HICSS'07*, p. 104b, Los Alamitos, CA: IEEE Computer Society Press)

CONFERENCE POSTERS

Advancing Return on Investment Analysis for Government Information Technology
A.M. Cresswell, T.A. Pardo, G.B. Burke, and L.V.Dadayan (Poster presented at the 8th International Digital Government Research Conference—dg.o 2007, Philadelphia, PA)

Building Government IT Workforce Capacity: A competency framework
N. Helbig and S.S. Dawes (Poster presented at the 8th International Digital Government Research Conference—dg.o 2007, Philadelphia, PA)

Understanding Inter-Organizational Information Integration in Government: An interdisciplinary study of politics, technology, and bureaucratic decision-making
J.R. Gil-Garcia, T.A. Pardo, G.B. Burke (Poster presented at the 2007 APSA Annual Meeting, organized by the American Political Science Association, Chicago, IL)

Working Group on Comparative and Transnational Digital Government in North America
J.R. Gil-Garcia, N. Helbig, T.A. Pardo, L.F. Luna Reyes, and C. Navarrete (Poster presented at the 8th International Digital Government Research Conference—dg.o 2007, Philadelphia, PA)

INTERNATIONAL RESEARCH PROGRAM IN CROSS-BOUNDARY INFORMATION SHARING

The International Research Program in Cross-boundary Information Sharing is a new initiative at the University at Albany focused on building knowledge about cross-boundary information sharing in an international context. This innovative program is leveraging current research efforts by connecting doctoral students from the Public Administration and Policy and Information Science programs at the University with the findings from a National Science Foundation funded research project at CTG. In their dissertation research, students will draw on research findings from CTG's Modeling Interorganizational Information Integration (MIII) study and seek to contribute to the development of new theory in cross-boundary information integration and sharing through testing these findings in an international context. The students and the CTG research team meet monthly to share knowledge about relevant topics such as comparative research design and developing culturally appropriate research methods.

Dissertation studies are underway in China, Jordan, and Taiwan, with additional studies being planned in Mexico and Saudi Arabia. In addition to meeting regularly for knowledge sharing and coordination with CTG, each student works with his or her own dissertation committee at the University at Albany and with academic and practitioner partners in the host country.

The first organizing meeting brought together the CTG MIII research team with doctoral students from the University at Albany's Rockefeller College of Public Administration and Policy and College of Computing and Information.

DISSERTATIONS IN PROGRESS

Lei Zheng
Public Administration and Policy, Rockefeller College of Public Affairs and Policy, University at Albany
Graduate Assistant, CTG

Lei's dissertation is focusing on cross-boundary information sharing in product quality and food safety in China. Through his dissertation research, he will build a leadership mechanism model of cross-boundary information sharing in product quality and food safety in China, and then conduct a comparative analysis between his model and the model developed in the MIII project at CTG to identify and explore similarities and differences.

Fawzi Mulki
Information Science, College of Computing and Information, University at Albany
Graduate Assistant, CTG

Fawzi's dissertation is focusing on the impact of authority, executive involvement, and leadership on cross-boundary information sharing in response to chaotic events. The events are two public health crises—the outbreak of the West Nile Virus in the U.S. and the case of water pollution in Jordan. Fawzi will gather primary data in Jordan through semi-structured interviews with top-level government executives who played a key role in the crisis there and use secondary data gathered from public health officials in the U.S. through CTG's MIII project.

CTG FOSTERING INTERNATIONAL STUDENT COLLABORATIONS

Over the years, CTG has brought together students from many disciplinary and cultural backgrounds. They come to CTG as graduate assistants, visiting students, and post doctoral fellows to actively participate in information management projects in government and to improve their research skills. While most move on after their studies, relationships built on mutual interests have grown into some very productive research collaborations.

One such relationship began in 2004, when Enrico Ferro from the Istituto Superiore Mario Boella in Italy joined CTG as a visiting student for six months. During that time, he discovered mutual research interests with two other doctoral students at CTG: Jose Ramon Gil-Garcia, who at the time was finishing his studies and working as a graduate assistant, and Natalie Helbig, who has worked at CTG for the past five years and is planning to finish her dissertation in December 2008. They found mutual interest in the digital divide, which they have cultivated into a productive and ongoing research collaboration. The trio explore issues of the digital divide and e-government using data from Enrico's Institute, which performs an annual information society survey.

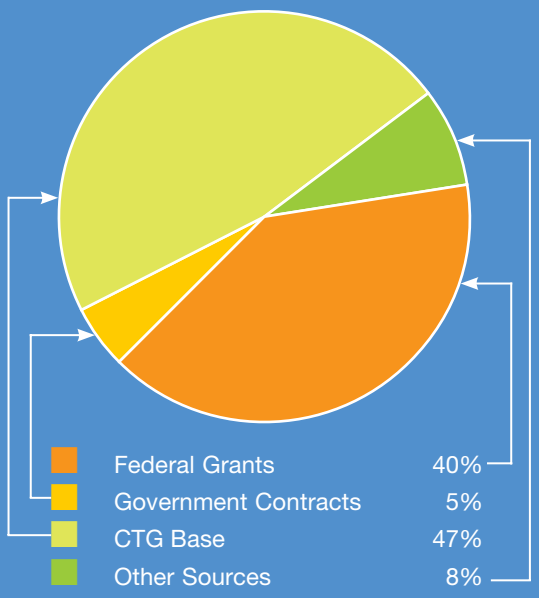
While Natalie remains at CTG as a program associate, Ramon, after finishing his PhD and spending a year as a post doctoral fellow at CTG, has moved back to Mexico where he is now assistant professor and director at the Data Center for Applied Research in Social Sciences at Centro de Investigacion y Docencia Economicas. Over the past three years, Enrico, Ramon, and Natalie have worked together through a variety of collaboration tools and successfully authored five papers together on the digital divide and e-government, including an entry in a research handbook and presentations at several conferences. Their first paper, *Understanding the Complexity of Electronic Government: Implications from the Digital Divide Literature* is forthcoming in *Government Information Quarterly (GIQ)*.

FINANCIAL PORTFOLIO

In 2007, our diverse funding portfolio included both multi-year and short-term collaborations at the local, national, and international levels. Funded projects covered a wide range of topics and areas of interest giving us the opportunity to explore important public problems and to share the practical results both locally and globally.

This funding allows us to not only conduct the work, but to also offer the resulting project reports and practitioner guides on our Web site without charge. In addition, they are available in several formats, allowing access to all those interested in learning more about our signature methodologies, new models of thinking, and innovations for improving services and operations of state, local, and federal government agencies.

CTG's 2007 financial portfolio consists of 40% federal grants, 5% government contracts, 47% University at Albany base, and 8% other resources.



PROJECT PARTNERS

BUILDING ON STRONG FOUNDATIONS AND THE GENEROSITY OF OUR PARTNERS

CTG projects depend on active and ongoing partnerships with government agencies, technology companies, and academic scholars. From in-kind donations of equipment, expertise, and time to grants for applied research, these partnerships account for more than half our total resources.

We are grateful to the following organizations who supported our work in 2007:

Government

Albany County Department for Children, Youth and Families Programs & Services Children and Family Services
Broome County Department of Social Services
Chemung County Department of Social Services
Clinton County Department of Social Services
Columbia County Department of Social Services
Fulton County Department of Social Services
Jefferson County Department of Social Services
Monroe County Department of Social Services
Nassau County Department of Social Services
New York City Administration for Children's Services
New York State Governor's Office of Employee Relations
New York State Department of Correctional Services
New York State Division of the Budget
New York State Office of the State Comptroller
New York State Office of the Chief Information Officer and CIO Council
New York State Office for Technology
New York State Office of Children and Family Services
Niagara County Department of Social Services
Onondaga County Department of Social Services
Orleans County Department of Social Services
Putnam County Department of Social Services & Mental Health
Republic of Turkey Ministry of Finance Strategic Development Presidency
Rockland County Department of Social Services
Schenectady County Department of Social Services, Children and Family Services
Seneca County Children and Family Services
St. Lawrence County Department of Social Services, Protective Services
Suffolk County Department of Social Services, Child Protective Services Bureau
Turkish Institute for Industrial Management (TUSSIDE)
Ulster County Department of Social Services, Children and Family Services
United States Department of the Treasury
United States National Science Foundation
United States Office of Management and Budget
Washington County Department of Social Services, Child Protective Services Unit
Wayne County Department of Social Services
Westchester County Department of Social Services, Family and Children's Services

Corporate

IBM Center for the Business of Government
Stratek Strategic Technologies R&D

Chief information officer at the New York State Department of Correctional Services (DOCS), Tom Herzog, came to CTG to speak with the representatives of the Turkish government about the implementation of performance measures at DOCS.

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Meghan Cook, Program Manager
James Costello, Web Application Developer
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Jing Zhang, Clark University
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Giri Tayi, Management Science and Information Systems, UAlbany

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Denise Dreany, Information Studies
Russell S. Hassan, Public Administration and Policy
Hyuckbin Kwon, Public Administration and Policy
Jeff Lorber, Public Administration and Policy
Akram Mohammed, Computer Science
Fawzi Mulki, Information Science
Fan Ping, Computer Science
Chen Song, Computer Science
Lei Zheng, Public Administration and Policy

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