Center for
Technology in Government

11

ANNUAL
REPORT

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MISSION

The mission of the Center for Technology in Government at the University at Albany is to foster public sector **innovation** that generates **public value** and supports good **governance**. We carry out this mission through applied research, knowledge sharing, and collaborative problem solving at the intersection of policy, management, and technology.

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Mark Schmidt

University at Albany

From the Director

Creating public value is a central tenet of CTG's work. In 2011, we continued to focus on partnering with governments to create public value through innovations in technology, policy, and management as well as the appropriate use of information and information technology. We worked with government leaders to envision a new future that uses technology and information to solve the complex problems facing governments each day, and with research colleagues from across the globe to understand how governments are using emerging technologies to create new relationships with citizens.

We have taken our work on public value and created a new resource, the *Public Value Assessment Tool*, which takes government agencies through an analysis of their open government portfolios to produce information that informs decision-making about which investments will likely produce the greatest value for stakeholders. This tool has been downloaded by government officials throughout the world. The US Department of Transportation, considered an open government exemplar, used the CTG tool to update their agency open government plan.

CTG is also looking at information use by cities, many of whom are in the forefront of using data derived from 311 service centers as a core driver to building capabilities for service integration. The findings from our interviews with staff from Philly311 (page 2) are being combined with a larger global research effort to find the commonalities and differences with respect to *smart cities* strategies among a set of cities in Canada, China, Mexico, and the United States. The project is generating foundational knowledge in this area and producing practical recommendations for smart city initiatives.

We have also been studying how best to collect data directly from different types of citizens that can be used to improve both state and national-level policy making. For example, CTG is working with the New York State Office of Children and Family Services to design a model for the first national, longitudinal data collection effort focused on understanding the transitions in youth from state foster care to independent living as adults. The challenge of this effort is that it reaches all the way to individual youth and requires tracking and collecting data over a period of five years (page 6).

From an international perspective, CTG continues to study the sharing of knowledge, information, technology, and practices across cultural and national boundaries and how it can be best used to address global problems. Our participation in the NSF DataONE global effort, a collaborative earth observational data sharing networks initiative, is giving us new insights into efforts in the research and science communities for ways to facilitate successful data sharing that transcends knowledge domains as well as organizational, geographical, and political boundaries, through cross-boundary collaborations among datasets owners (page 9).

With the recent world financial crisis continuing to reverberate both in the United States and beyond, CTG is taking a leadership role in understanding the particular issues related to information and technology and financial market regulation through its participation in UAlbany's Institute for Financial Market Regulation. The Institute is working to connect the scholarship of academic researchers with the knowledge and experience of professionals in financial market regulation to understand how the complex interaction of finance, law, public policy, and computer science shape financial market regulation.

Looking forward to 2012-2013, among the many new projects at CTG, we anticipate sharing the results from our collaboration with SAP to produce analytical tools for helping government decision makers better understand the ways opening government can shift the informational relationships among government, citizens, and other non-government stakeholders in new and innovative ways.

This important work could not be accomplished without the many organizations and individuals who participated in and supported our work in 2011. We look forward to 2012 as we continue to work both in the United States and globally to help governments design and implement innovative strategies to improve government and citizen involvement in the process of governing.

Sincerely,

Theresa A. Pardo

Theresa A. Pardo

3-1-1 for Smarter Governments

Building Capabilities for Service Integration

Taewoo Nam, Graduate Assistant
Theresa Pardo, Director

Cities across the U.S. are joining in a global movement to improve the quality of their decision making and planning through increased access to data and by integrating collaborative approaches to making that data more accessible to government officials as well as the public. In many larger cities, 311 service centers are becoming a core driver to building capabilities for service integration. Since the first 311 hotline launched in 1996 in the City of Baltimore, 311 service centers have rapidly spread across the country. 311 systems are providing quick and easy access to non-emergency municipal services and information through a single, consolidated channel that extends from the three-digit toll-free dial number (3-1-1) to any possible means that people can use to communicate with their municipal government: email, text messaging, social media, and more recently smart phone applications.

311-DRIVEN SERVICE INTEGRATION

Across the country, 311 services are serving as a key driver for integrating various customer services into a single channel and/or business unit. There are three ways to take into consideration the integration of services that otherwise are fragmented and not interconnected.

- **Horizontal integration.** The 311 center integrates non-emergency service requests and information across different government departments, agencies, and policy domains. Horizontal integration relies on the development of trust and creative collaboration among government agencies. A shared knowledge base and service level agreements are made through the horizontal integration.
- **Citizen-centered service delivery.** The 311 center brings and fits together government services so that citizens can access these services in a seamless fashion based on their wants and needs. Citizen-centered service integration is a comprehensive, concerted, and committed effort to integrate services not only across government departments but also across service channels. The Internet and new digital technologies also widen opportunities for citizen-centered service delivery.
- **Shared service.** The 311 center serves as a dedicated shared service provider within a city hall. Shared services can help to coordinate joint efforts among different departments and avoid duplication of efforts. In this way, shared services enabled by the 311 center can reduce costs, improve quality of services, and provide fewer distractions.

In terms of making governmental operations *smarter*—more efficient, effective, transparent, and accountable—what the public experiences by using 311 services may be just the tip of the iceberg. Above the surface a 311 service center obviously serves the public as a front-end contact center—an easier and more convenient access point. What the public does not see, however, is what the 311 service center is building inside city agencies along the way. The center is a front line of customer service agents, whether registering a complaint or looking for any municipal functions other than 911 emergencies. For the back-end function, the center develops capabilities for "shared service," with which multiple departments and agencies within the jurisdiction of a city can concentrate some of their existing customer service functions into a single business unit (the 311 center).

Preliminary findings from an ongoing CTG research project, Smart Cities and Service Integration, funded partly by the Social Sciences and Humanities Research Council of Canada, highlight how the 311 service center of one city, Philadelphia (Philly311), is changing the entire city government by integrating frontline services and providing shared service capabilities. For the project, CTG researchers interviewed the City's Mayor and Managing Director, and Philly311's Director, Operations Manager, and Knowledge Management Specialist. The findings serve as lessons and best practices for other cities.

THE CASE OF PHILLY311

At the end of 2008, Mayor Michael Nutter opened Philly311 as a concrete step toward the administration's goal of smarter, faster, and better government through customer service, government efficiency, and accountability. "You don't need to know anybody anymore to get services," said the Mayor. "Just call 311!" Philly311 has given Philadelphians unprecedented access to city hall.

The idea, giving the public a direct way to request or complain about services and to use data about those requests or complaints to hold government accountable, was not entirely new, to cities in general, nor to Philadelphia. Philadelphia had customer hotlines, but there was no single hotline or contact point nor was there a systematic and open program for holding the city accountable. The new 311 contact center absorbed the City Hall Switchboard, the Mayor's Action Center, the Department of Licenses and Inspections customer line, and part of the Department of Streets' customer line. It offers various ways to contact the city: phone call, in person (Philadelphia is one of a few cities with a walk-in center), email, and social media. For horizontal integration, Philly311 consolidates non-emergency service requests and information across different departments and agencies into a single point. It enables citizen-centered service delivery by integrating services across multiple channels and between the front and back ends of a system. It also serves as a shared service center for the city departments and agencies that deliver municipal services.

OVERCOMING EARLY CHALLENGES

Philadelphia is one of the last cities of its size to activate a 311 non-emergency number. To catch up with other cities

SERVICE LEVEL AGREEMENTS

Philly311 is integrated with other agencies in the city through written service level agreements (SLAs) that codify each service function with a specific time frame for completion. City agencies perform hundreds of tasks, but Philly311 only handles service requests for which an agency has agreed to be held accountable for performance on time. SLAs provide for service standards that set expectations for citizens, are measurable, and can be used to support accountability (e.g., response times).

For instance, a residential property that is not being maintained must be investigated by the Department of Licenses and Inspections within 45 days; a dead animal must be removed by the Department of Streets in three days; and an abandoned vehicle within 30 days. Similar to this, if a department has agreed in its SLA to deal with a citizen's request in X number of days, the customer should be informed of that service standard. The department is held accountable to complete the service in that amount of time or provide information back to Philly311 as to why the service could not be completed in the agreed-upon amount of time.

and make its government a national leader in customer service, the Nutter administration launched Philly311 under a very tight timeline (11 months from February to December in 2008), within which no other city of Philadelphia's size has launched a 311 center operation. The aggressive time frame itself was not a serious problem, but early challenges arose from financial constraints stemming from the budget crisis experienced by the whole city government during the national economic recession.

The budget cuts meant scaling back or postponing key elements, creating two severe challenges: under-staffing (six agents short of the operational goal of 57 agents and having to use internal transfers of inexperienced agents from other departments) and under-equipping (use of old Customer Relationship Management software). However, studying the past three years of developing Philly311 offers lessons for overcoming early challenges. "[Philly311] is serving as a model for other countries and cities that are thinking about starting 311," said Sheryl Johnson, Philly311 Operations Manager. This retrospective view on Philly311 shows how a city of any size can launch and operate a 311 system with an aggressive timeline and budgetary constraints.

Strong executive support. As champions of Philly311, the top leadership group (the Mayor, the Managing Director, and their team) had a shared vision for customer service, which was critical to making their vision a reality.

Dedicated project team. The internal project team's efforts to design and implement the launch plan was central to bringing Philly311 to the city on time. Taking the time to learn from other 311s, both public and private and building processes for identifying and minimizing operational errors from the beginning grew out of the team's commitment.

Strategic partnerships with external organizations. Private sector partners with professional experiences in customer call centers helped finalize a detailed strategy and implementation plan. They also contributed to relieving the burden on Philly311 caused by under-staffing by providing some of their agents with an innovative mentoring program to share their expertise with inexperienced agents of Philly311.

Partnerships within the city government. Volunteers from city departments populated the Philly311 knowledge base. Continuous feedback and communication between Philly311 and those departments have served to both create the knowledge base and keep it current through regular updates.

311 MAKES A CITY GOVERNMENT SMARTER

Philly311 is still in its infancy compared to many 311 service centers in other metropolises, but it is a case in point of the public value potential of reengineering and integrating government service efforts. Much of what is known publicly about 311 service centers is about how 311 functions at the citizen interaction level (e.g., at the front end); less is known about how the mechanisms at the back end make services happen. How Philly311, both the front and back end efforts has specifically contributed to making Philadelphia a "smarter" city was captured in a set of interviews with the City's top management and the 311 service center staff. Insights on both the front and back end efforts are presented below.

Front End Functions

The new face of the city hall. "311 is a front door," said Patrick Morgan, one of the launch project team members. "Before 311, Philadelphia had hundreds of front doors. Most were blocked, not open at all. [The City] created the best face of the front door for the City." Philly311 provides new connections to city hall. The Mayor viewed it as an interaction tool, "[Philly311] connects to government as much as possible. It's interactive to see what's on people's minds." Philly311 is a connection point, and it's more than just service.

> People want government to be more connected through technology; they want to know more about how their government works."
>
> ***-Richard Negrin, Managing Director, Philadelphia***

Citizen engagement. Philly311 makes it easy for citizens to become involved in their community by simply picking up the phone to report a problem they see. Once citizens see how reporting a problem can impact the neighborhood, for example, removing graffiti from a local park or clearing up a vacant property, they are further inspired to become involved in improving the neighborhood they live in. With Philly311, citizens see in concrete ways how they can make a difference in the quality of life in their community.

Neighborhood liaison volunteers. One of Philly311's unique characteristics is its neighborhood liaison program. "[The liaisons] are community leaders. We train them to use our system. They can put information directly into our system," said Sheryl Johnson, Philly311's Operations Manager. "That's our strong connection in a different way of outreach. Multiple sources of information are embedded in neighborhoods." A neighborhood liaison is someone who serves their community by reporting issues directly to the Philly311 system and provides the community with progress reports. This program is open to all residents who are willing to participate in a 90-minute training session, through which they are made familiar with various city departments and the electronic reporting system.

External accountability. Users of Philly311 receive a tracking number for service requests. This allows them to monitor their request either by calling back or visiting the 311 homepage and entering their number. Customers are also given a specific time frame within which they can expect the service to be delivered. Rich Negrin, the City's Managing Director, said, "People want government to be more connected through technology; they want to know more about how their government works."

Preparation for emergency. Philly311 has proven to be effective communication tool for emergency management in the city, issuing disaster warnings, publicizing evacuation instructions, directing residents to shelters, addressing the special needs of disabled residents, and relaying information to the media. Most recently, many Philadelphians turned to Philly311 for information during Hurricane Irene, the October 2011 snow storm, and the earthquake of August 2011. Furthermore, when those events occurred, Philly311 was ready to dispatch help where it was needed.

Back End Functions

Enabler of other programs. Philly311 enables innovative programs in other city agencies and departments. For example, PhillyRising is a neighborhood revitalization program initiated by the Managing Director's Office.

THE MISSION OF PHILLY 3-1-1

Serving the citizens of Philadelphia by providing courteous, fast, and accurate customer service that results in transparent access to government information and services.

Source: www.phila.gov/311/

Philly311 data from residents and liaisons helps PhillyRising staff understand the immediate wants and needs of distressed neighborhoods. In addition, neighborhood information from Philly311 keeps police officers aware of potential crime-prone areas (e.g., abandoned houses).

Data-driven performance management. Philly311 is part of the mayor's overall performance improvement program. The mayor, managing director, relevant deputy mayors, and representatives from the departments and agencies meet regularly for performance management meetings; PhillyStat meetings. Philly311 data is pivotal to PhillyStat meetings providing service request and response data for monitoring agency performance. Such data-driven management is being used to guide changes in roles and responsibilities of managers throughout the city.

Internal accountability. Data collected from Philly311 is used in conjunction with the PhillyStat process to track, evaluate, and, if necessary, correct service patterns in the departments. The guidelines described in service level agreements create accountability that was noticeably absent before 311. In PhillyStat sessions, each department must account, in front of the City's executives, for their performance with respect to service standards put forth in their service level agreements.

Collaboration and partnership. Philly311 staff work closely with other city staff to review, update, and revise service level agreements and the knowledge base. Regular meetings with internal partners who are key to citizen services (Streets, Licenses and Inspections, Police, Water,

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The opportunity and challenge of collecting street-level information

Creating a new national data resource for foster care administration

Natalie Helbig, Senior Program Associate
Anthony Creswell, Senior Fellow

With the hope of changing the lives of youth in foster care, in 1999 the U.S. Congress enacted the Foster Care Independence Act, also known as the Chaffee Independent Living Act (Act). The Act provided $140 million in block grants to states to support youths' transitions to independent living and required the Federal Administration for Children and Families (ACF) to develop a national data collection and reporting system. The system, known as the National Youth in Transition Database (NYTD), seeks to track outcomes of youth receiving independent living services and to trace certain youth outcomes over time, even as they age out of the foster care system.

The NYTD follows a long history of federally mandated reporting systems. However, it is the first national, longitudinal data collection effort focused on gathering data directly from the youths themselves, and not just defaulting to *administrative data* as the source of evidence. To get this type of *first-hand* data directly from youth requires not just policy at the federal level, but also action and resources from state and county agencies, as well as the youth. From our experience, the cost to government agencies that do not possess the technical capabilities required to develop innovative data collection, transmission, and analytics make it increasingly difficult to find value in this data and to be compliant with reporting.

In 2010, the Center for Technology in Government at the University at Albany (CTG), partnered with the New York State Office of Children and Family Services (OCFS) to design a model for data collection for NYTD that fit OCFS' current technological and structural environment. While the experiences in the first wave of NYTD data collection have varied, the experience in New York sheds light on ways to improve upon the NYTD design and system going forward, as well as provide similar insight for efforts in other policy domains.

NYTD AS "CLOCKWORK" REPORTING

On February 26, 2008, the final data collection design emerged in the form of a final rule (Federal Register 73 FR 10338) that established the National Youth in Transition Database (NYTD). ACF and its various collaborators took almost ten years to decide on the types of information needed to fulfill the intention of the legislation and to develop a plan for data collection.

The ACF designed and mandated a data collection and reporting program that had a *clockwork-like* logic: each state extracts data from the local agencies, providers, and youth; then this data flows back to Washington, then the data is disseminated by the federal government and used for various analyses. This logic is described in more detail below:

1) States use foster care data to identify all youth turning 17 while in care and identify their location.
2) Surveyors (whether hired or in-house) locate and offer the questionnaire to all youth within 45 days of their 17th birthday.
3) Youth agree to participate and complete the survey.
4) Surveyors re-locate the same youths that completed the survey at 17 again at two-year intervals (at 19 and 21).

NEW YORK'S STRATEGY

The New York data collection model included phone and paper surveys. CTG recruited another partner, the Center for Survey Research at Stony Brook University to conduct the telephone surveys. Paper surveys were coordinated by CTG, but administered to youth through caseworkers at facilities. To acquire the completed surveys, the agency team, CTG, and survey staff had to solve a mix of interrelated problems that grew primarily out of the complex environment of the foster care system.

5) The 19 and 21 year olds, whether in or out of care, are invited, agree to and complete the follow-up surveys.
6) The state agency stores results in an NYTD compliant database and transmits the data to the ACF on time.
7) Repeat baseline cohort (a new group of 17 year olds) at three year intervals.

What this simple logic fails to take into account is the administrative complexity of the foster care context and the willingness of youth to participate. The foster care system supports hundreds of separate organizations, distributed data collection processes, extensive possibilities for data errors, and inevitable gaps in the youths' records.

NYTD DATA COLLECTION CHALLENGES

The challenge of the NYTD data collection effort is that it reaches all the way to individual youth, and requires tracking some of them for five years during which many, if not most, have left any formal state foster care program. The NYTD is designed to collect administrative data from state agencies and additional data directly from youth in the transition population through surveys. Starting in October 2010, states were required to collect data on cohorts of foster youth, beginning with those who reached their 17th birthday between October 1, 2010 and September 30, 2011.

> It is crucial that federal, state, and local governments work together to develop new tools and systems that facilitate better practices and help improve outcomes. The goal is to collect and report data that is useable to help policymakers, program administrators, and caregivers at all levels to provide better services and support to our youth."
>
> ***-Commissioner Gladys Carrión, Esq., Office of Children and Family Services in New York State***

Furthermore, state supervised, locally administered systems like New York's have few clockwork qualities. Foster care in New York involves 57 semi-autonomous counties outside of New York City and hundreds of voluntary service providers of all sizes. And, like other states, and perhaps most importantly, New York faces the significant challenge of maintaining contact with youth over several years and securing participation with a population of mobile, diverse, and often circumstance-challenged youth.

The main problems resulting from clockwork type assumptions for data collection, as implemented in a complex foster care system, are outlined briefly below.

Direct participation. Administrative data is collected on individuals receiving services as a matter of course without those individuals necessarily knowing it. It is standard practice and allowed, mainly because that data is stripped of identifying information. The NYTD requires youth turning 17 to actually complete the survey themselves. Youth in this cohort are minors and the state, local providers, caseworkers, and parents have a responsibility to protect the privacy and safety of the youth. Despite outreach and education about the merits and legitimacy of the NYTD, various gatekeepers to the youth refused access.

Contact information accuracy. Casework systems are designed to serve several purposes. Therefore, the fitness for use of the state's administrative databases or local databases was not as helpful as one might anticipate. In a complex administrative system like New York's, the data elements related to "contact information" may have many different meanings depending on uses and who owns the data. The contact information in the system may be accurate and correct for billing purposes or for other legal requirements, but is not set up to track movements of individual youths within an agency. Contact information may be in the "notes" sections of the database systems or in the paper files of caseworkers. The data quality issues we experienced with contact information vividly illustrates the extent of the problem: Approximately 80 percent of the initial contact information we received from the state systems was not fit for our purpose or incomplete or both. That does not mean it is not fit for other purposes already established and required by previous mandates for data collection.

NEAR REAL-TIME REPORTING

While not designed as a real-time data collection and reporting model, the NYTD approach mandates certain reporting time frames. The first timeframe is that youth must take the survey within 45 days of their 17th birthday. The second is that states must transmit data back to Washington every six months during the reporting period. In our experience, the average time to complete a survey was around 30 days, mostly due to the need to navigate around local gatekeepers. When contacting over 100 different agencies, the surveyors had to navigate different organizational structures and work practices to find the right person that could put them in touch with the youth. State and county records were of little help in this regard. Even with cooperative respondents, the many organizational layers often slowed responses and prevented contact during the 45 day window. Every delay due to additional time needed to repeatedly explain participation or correct contact information errors reduced the likelihood of contacting the youth within the required time period. This was a symptom of the difficulty, in spite of repeated efforts, of establishing effective communication lines from the state level down to the hundreds of different locations and care givers spread throughout the state, and maintaining that relationship.

When data collection requirements and guidelines are designed from afar, the distance between that view and the reality on the ground results in a number of unexpected consequences. These include overly cumbersome data collection processes, less than adequate data, and mismatches between data collected and data needed, among others.

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Collaborative Data Sharing Networks

Data-centric collaboration and sharing among researchers can provide profound and valuable benefits to the scientific enterprise and the general public.

Djoko Sigit Sayogo, Graduate Assistant
Theresa Pardo, Director
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Research and even business is becoming a collaborative enterprise that brings together multiple institutions, sectors and, increasingly, different countries. Nowhere is this more apparent than in the natural sciences where the phenomenon being examined and questions being asked are not contained in the borders of one discipline, institution, country, or continent. Both a reason for and often the purpose of collaboration in the sciences is the need to amass, maintain, and share large and diverse structured data resources that no one research team or institution has the resources or expertise to collect, make available, and maintain.

Such data-centric collaborations among researchers are providing profound and valuable benefits to the scientific enterprise and the general public, including:

- **Enriching scientific knowledge** and accelerating scientific progress by encouraging researchers to generate new knowledge through using archival datasets in new ways and improving the quality and usefulness of existing datasets.
- **Fostering collaborative works** among researchers through the sharing of research datasets as well as materials, skills, and knowledge, and thereby increasing the quality of research.
- **Improving accountability** by encouraging a new ethos of open science and peer review that can increase accountability and reduce fraud related to data falsification and fabrication.
- **Increasing efficiency** of research effort through reducing the cost and time spent in collecting data and avoiding redundant data collection.
- **Expanding reputation and scientific merit** through increasing researchers' recognition and visibility by journals and peer committees, and, organizationally, improving data quality and efficiency and fostering trusted relationships among participating institutions.
- **Encourage long term data preservation and integrity** by reducing the redundancy and duplication in data processing, maintenance, and protection thereby reducing the cost and increasing the likelihood of long term data preservation.

Given the benefits of data-centric collaboration and sharing in the sciences, it is not surprising that organizational structures to facilitate this activity through the use of information technology are emerging. One such structure, called a collaborative data sharing network (CDSN), is being used to facilitate collaborations among dataset producers and users resulting in successful sharing of data and knowledge across traditional disciplinary, organizational, geographical, and political boundaries.

AN EXAMPLE OF A CDSN

A prime example of a CDSN is DataONE (www.dataone.org), a collaborative earth observational data sharing networks initiative supported by the National Science Foundation. DataONE is taking advantage of information and communication technologies to share data in a broader fashion than has been attempted in the past. It aims to ensure the preservation of, and access to, multi-scale, multi-discipline, and multi-national science data. DataONE is designed to transcend boundaries not only related to the field domains (e.g. biological and environmental), but also across organizational boundaries and, in the future, across national boundaries.

A collaborative network such as DataONE consists of various members with various capabilities and resources. Its proposed participants range from individual field research stations to governmental organization (e.g., USGS, NASA, EPA). DataONE classifies these participants into users and nodes based on the level of services and fees for participating. Users are participants who will have capability to access and store datasets with no fees and nodes are the institutional-based participants who, upon joining DataONE, will have the ability to store, distribute, and coordinate datasets. DataONE itself will act as coordinating nodes that will mediate and direct the information flows and manage the connection between different member nodes. These diverse participants have different capabilities in terms of knowledge, experience, and resources. DataONE aims to connect multiple data repositories, collected and preserved by various organizations without regard to size and location.

FIVE CHARACTERISTICS OF A COLLABORATIVE DATA SHARING NETWORK (CDSN)

1) Collaboration of heterogeneous, autonomous, geographically dispersed, and inter-organizational social actors.
2) Members share common and compatible goals, including similar or different data and information.
3) Information may flow one-way, or the flow may be bi-directional.
4) Collaboration is mediated and dynamic within a trusted network.
5) Collaboration is supported with an interoperable infrastructure.

CHALLENGES

Notwithstanding the many benefits of data sharing, CDSNs such as DataONE face the same challenges of most data sharing initiatives. These challenges are embedded in social,

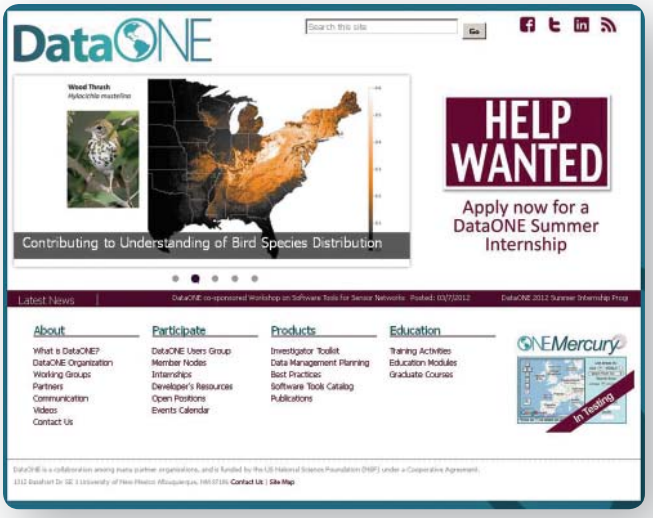
legal, economic, and political factors and fall into four broad categories: technological, organizational, legal and policy barriers, and local context.

Technological barriers to data sharing exist when data sharing entities do not have compatible data architectures and technological infrastructures or consistent data definitions and standards. Data with different formats, definitions, content, and from multiple sources are difficult and costly to integrate into a single useable data repository or to improve so they are suitable for sharing.

Social, organizational, and economic barriers such as structural conflicts, managerial practices, lack of funding, institutionalized disincentives, and professional cultures can discourage data sharing. The intense competition in scientific fields may, for example, contribute to resistance to sharing data. Research about scientific data sharing has shown that fear for reputational damage if data is found to be faulty or lacking in some way is a deterrent to data sharing. Another deterrent is the lack of relevant resources to prepare data for sharing and to sustain sharing mechanisms. Scientists and institutions are not often recognized or rewarded for making datasets openly available and usually can't spare the time or resources to prepare the labor-intensive documentation necessary to share data. Arranging for outside access and storage may involve lengthy and onerous negotiations or drawn-out administrative processes.

Legal and policy frameworks created by government, funding agencies, or other regulatory bodies often complicate the process of data sharing. Legal and policy mechanisms can create a paradoxical situation in relation to data sharing and may be the greatest obstacle in building a knowledge network. On the one hand, such frameworks can enhance data sharing by ensuring proper and accountable use of data and information as well as mandating the sharing of data. On the other hand, rigidity of policies and regulations, such as those designed to address privacy concerns, can often inhibit data sharing. Unresolved legal issues have been found to deter or restrain collaboration, even if the scientists or institutions are prepared to proceed.

Local context, in the case of DataONE and the natural sciences, can create unique challenges to data sharing. Datasets in ecological research are complex, heterogeneous, and highly context dependent. Natural scientists usually pursue a specific question about a specific phenomenon at a specific site. Each subject might have different characteristics and require a different methodology. Data quality is highly correlated with the context underlying



production, storing, and initially intended use. Using a diversity of data from multiple sources and contexts may lead scientists to question the data's reliability and its research value or usability.

CRITICAL CAPABILITIES

The success of CDSNs such as DataONE depends on the ability of many, if not most, of the participating entities to overcome the challenges described above. Success of a CSDN then requires new understanding of data sharing and calls attention to the following questions:

- What kinds of capabilities are needed to effectively participate in cross-boundary scientific data sharing?
- Given the variations in the capabilities of scientific data stakeholders, what factors are critical to the success of data integration and reuse in a scientific CDSN?

It is precisely these types of questions that CTG and others are trying to answer for DataONE and similar types of CDSNs. Through previous research, CTG modeled the complexity of data sharing initiatives including the interdependencies of technical and organizational capabilities and the relationship between those capabilities and successful data sharing. Building on this past research and new data on DataONE, four categories of capabilities continue to stand apart as critical to the success of a data sharing initiative.

1) **Collaborative management capabilities** include strategic planning, organizational compatibility, and resource management. These capabilities are necessary

for mobilizing the resources and building the organizational structures necessary to participate in a CDSN. Assessments of this set of capabilities prior to entering could be used to decide the level of participation appropriate for each member node and services users could reasonably expect from that node.

2) **Data governance and policy capabilities** include data assets requirements, governance, information policies, and secure environment. These refer to the ability of an entity, in this case an institution considering becoming a member of a scientific CDSN, to provide and encourage sharing through wide-ranging, clear, and precise information policies and management practices including policies on data stewardship, use, and security. This requires also the governance of data collection, description, usage, sharing, reuse and long term preservation. These capabilities are critical to supporting open sharing of research datasets, particularly to mitigate the fear of data misuse and misinterpretation. Intellectual property has been found to be a major concern in sharing ecological research datasets. Scientists are wary of the issue of recognition for data ownership.
3) **Collaborative space and operational agreements** that address all the elements necessary to collaborate are critical for a collaborative network. These elements include not only the infrastructure but also other elements essential for fostering collaboration and managing interdependencies among stakeholders such as effective communication procedures, working principles, and operational protocols. This capability is essential to sustaining the collaboration. Collaboration-ready entities are entities with successful collaboration experience who actively seek new opportunities for partnering. They are entities with the negotiation skills and experience necessary to achieve agreement, compromise, and mutual understandings on the distribution of authority and responsibilities within a cooperative network.
4) **Technology capability** includes technology acceptance, technology knowledge, and technology compatibility. Technology acceptance refers to the attitudes of entities toward technological change and their degree of comfort in accepting the new technology. Previous experience with technology often results in a more receptive attitude toward technology-based data sharing initiatives. Technology compatibility includes the presence of agreed-upon standards, interconnectivity among entities, and a staff experienced in sharing activities.

ORGANIZATIONAL SUPPORT & COMMITMENT FOR CDSN

Organizational support plays a major role in sharing research datasets, particularly considering the heterogeneity of collaborators and complexity of the data sharing process (Sayogo & Pardo, 2011; 2012). Analysis using a logistic regression and structural equation modeling technique of survey responses from 587 researchers found that organizational involvement is crucial for two reasons:

- Providing support for data management.
- Reducing the burden of complex data sharing process for the researcher.

The study also found that organizational support significantly influences the intention of researchers to publish their datasets.

FACTORS FOR SUCCESS

CTG's extensive work in cross-boundary information sharing and collaboration has consistently identified three factors as critical to the success of cross-boundary data sharing initiatives. Preliminary insights from scientific data sharing initiatives support these findings:

1) **High-level of Trust.** Collaboration requires peer relationships between actors where trustworthiness is the most prominent ingredient. Hierarchical mechanisms do not exist in the governance of collaborative networks. The participating entities are autonomous and heterogeneous. Therefore, it is necessary to have common working principles, value systems, policies, and a set of base trustworthiness criteria. Trust and trustworthiness are important determinants in ensuring a successful data sharing initiative.
2) **Common Working Principles, Values, Policies, and Organizational Commitment.** Incentivizing participants to continuously participate in a CSDN is essential to its success. Research shows that previous efforts in biology networks and collaborative databases have failed, in large part because of minimum contribution by members. For example, in one collaborative network in biology, 70% of the data contributions came from the founding members while only 30% from other contributors. A successful data sharing initiative also depends on well-

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Open Data and Fitness for Use: A Realistic Look

Sharon Dawes, Senior Fellow
Natalie Helbig, Senior Program Associate

The basic assumption of the open data movement is that more intensive and creative use of information and technology can improve policy-making and generate new forms of public and economic value. Open data initiatives are focusing on education, public health, transportation, environmental stewardship, economic development, and many other areas. Ironically, this information is often treated as a black box in the open data movement. Stakeholders, analytical techniques, and technology tools all receive considerable attention, but the information itself is often seen as a given, used uncritically and trusted without examination. However, the very kind of data that is now being released as *open data* was actually collected or created for other purposes. It has undeniable potential value, but it also contains substantial risks for validity, relevance, and trust.

GOVERNMENT DATA FOR POLICY ANALYSIS AND EVALUATION

The explosion in so-called *administrative data*, is attracting great attention for its potential value both inside and outside government. Administrative data reflects the operations of government programs through the operation of automated activities and the advent of electronic government services. Much of this data is collected in real-time as these systems do their regular processing. For example, transactional data reveals the workflow activities of case management systems or the steps and results of customer service exchanges. Government-deployed sensor networks gather data about transport, air quality, and other topics for regulatory purposes. Financial management systems record budgets, grants, contracts, cash flow, and reconciliations.

The open government movement is making tens of thousands of these administrative data sets available to the public through programs like Data.gov in the US, whose purpose is to make more data from federal government agencies readily accessible for external use. Its central Web portal provides electronic access to raw, machine-readable information about government finances, program performance, trends, transactions, and decisions. The goal is to allow people and organizations outside government to find, download, analyze, compare, integrate, and combine these datasets with other information in ways that provide value to the public. And this phenomenon is not limited to the federal level. States and municipalities are experiencing similar growth in data holdings and taking advantage of new technologies to gather and analyze data from routine operations.

Certain sources of government data have been used by external analysts for decades. These include government agencies that have the formal responsibility and professional skill to collect, manage, maintain, and disseminate data for public use. They represent a long-standing government commitment to collect and provide specific kinds of social, economic, and demographic information to the public. The census, economic, and other formal statistics they produce are well-understood and readily usable because they apply the standards of social science research in data collection and management. They collect well-defined data on specific topics using well-documented methodologies that follow a logical design. The data files are managed, maintained, and preserved according to explicit plans that include formal rules for access, security, and confidentiality.

However, because administrative data are not typically created with external or unplanned use in mind, they are not managed in the precise and structured way that we have come to expect from the Census Bureau or the Center for Health Statistics. They offer new opportunities, but they are also more difficult to use and interpret and therefore more subject to misunderstanding and misuse (Dawes, 1996; Ballou and Tayi, 1999).

SOURCES OF INFORMATION PROBLEMS

Information problems stem from a variety of causes that both government information providers and independent analysts need to understand.

Conventional wisdom

A set of common beliefs and unstated assumptions are often substituted for critical consideration of information. These include assumptions that needed information is available and sufficient, objectively neutral, understandable, and relevant to the task of evaluation. Left unchallenged, they compromise all forms of program assessment and policy analysis. Emerging open data initiatives present similar problematic beliefs. They convey an unstated assumption that large, structured *raw* data sets are intrinsically better than processed data, and that data in electronic form suitable for delivery on the Internet is superior to other forms and formats for information. Thus the *low-hanging fruit* of available machine-readable raw datasets receives more attention than better defined and potentially more suitable traditional datasets that reflect some interim processing or cannot easily be posted on the Web.

Provenance

Much *open data* emerges from activities and contexts that are far different in purpose, context, and time from its eventual use. Taken out of context, the data loses meaning, relevance, and usability. Although the public may be offered thousands of data sets from one convenient Web address, these information resources are actually distributed among different government organizations, locations, and custodians. The datasets are defined and collected in different ways by different programs and organizations. They come from a variety of different systems and processes and represent different time frames and geographic units or other essential characteristics. Most come from existing information systems that were designed for specific operational purposes. Few were created with public use in mind. Metadata is essential to understand this data but unfortunately, it receives little attention in most organizations. An administrative or operational dataset is usually defined at the point of creation in just enough detail to support the people who operate the system or use the data directly. As the underlying data set or system changes over time, corresponding maintenance of metadata tends to be a low priority activity.

Common beliefs and unstated assumptions are often substituted for critical consideration of information.

EGOVPOLINET

The eGovPoliNet/Crossover Consortium, sponsored by the European Commission FP7 research program, is an expanding international network of research institutions investigating globally important data and technology challenges in policy making.

As an NSF-funded consortium member, CTG is investigating how social networks, information, and technology influence policy analysis, decision making, and policy evaluation in different parts of the world. Involvement in this international community enhances our work in the US on the value and use of government data for governance, policy-making, and social and economic benefit.

Practices

Research shows that in order to understand data, one needs to understand the processes that produce the data (Dawes, et al., 2004). Data collection, management, access, and dissemination practices all have strong effects on the extent to which datasets are valid, sufficient, or appropriate for policy analysis or any other use (Dawes and Pardo, 2006). Data collection schemes may generate weekly, monthly, annual, or sporadic updates. Data definitions and content could change from one data collection cycle to the next. Some data sets may go through a routine quality assurance (QA) process, others do not. Some quality assurance processes are rigorous, others are superficial. Some data sets are created from scratch, others are byproducts of administrative processes; still others may be composites of

multiple data sources, each with their own data management practices.

Data sets may be readily accessible to internal and external users, or require some application or authorization process. They may be actively disseminated without cost or made available only on request or for a fee. Access may be limited to certain subsets of data or limited time periods. In addition, data formats are most likely the ones that are suitable and feasible for the organization that creates and manages the data and may not be flexible enough to suit other users with different capabilities and other interests.

DATA QUALITY AND FITNESS FOR USE

Given the practical realities outlined above, we can see that even if government information resources are well-defined and managed, substantial problems for use cannot be avoided. The term *data quality* is generally used to mean *accuracy*, but research studies identify multiple aspects of information quality that go well beyond simple accuracy of the data. Wang and Strong (1996) adopt the concept of "fitness for use," considering both subjective perceptions and objective assessments, all of which have a bearing on the extent to which users are willing and able to use information.

The current emphasis on open data plus the evolving capability of technological tools for analysis offer many opportunities to apply big data to complex public problems. However, significant challenges remain before most government data can be made suitable for this kind of application. Policies, governance mechanisms, data management protocols, data and technology standards, and a variety of skills and capabilities both inside and outside government are needed if these information-based initiatives are to contribute to better understanding of critical social and economic issues and better policies to address them.

CONCLUSION

Open data presents both promise and problems. We are more likely to achieve its promised benefits if we take a hard, realistic look at its character. One way to do this is to consider data in conjunction with the policies, management practices, and technology tools that create and shape it. Further, we need to understand how this ensemble of considerations is embedded in social, organizational, and institutional contexts that have substantial influences on data quality, availability, and usability.

In this view, some of the challenges of government information use can be understood as technical problems addressing information storage, access, inquiry, and display. Another way to understand the challenges are as management problems such as defining the rationale and internal processes of data collection, analysis, management, preservation, and access. The challenges also represent policy problems including examining the balance and priority of internal government needs versus the needs of secondary users, the resources allocated to serve both kinds of uses, as well as traditional information policy concerns with confidentiality, security, and authenticity.

These many new sources of government data offer potential value for society – but the value will be realized only if government information policies and practices are better aligned with the needs of external users. Likewise, analysts and other users need to take responsibility for *looking under the hood* of data sources and adjusting their expectations and assumptions to more closely match the realities of data quality and fitness for use. ■

Much open data emerges from activities and contexts that are far different in purpose, context, and time from its eventual use.

FITNESS FOR USE*

- Intrinsic quality most closely matches traditional notions of information quality including ideas such as accuracy and objectivity, but also believability and the reputation of the data source.
- Contextual quality refers to the context of the task for which the data will be used and considers timeliness, & relevancy. completeness, sufficiency, and value-added to the user. Often there are trade-offs among these characteristics, for example, between timeliness and completeness.
- Representational quality relates to meaning and format and requires that data not only be concise and consistent in format but also interpretable and easy to understand.
- Accessibility comprises ease and means of access as well as access security.

** Wang & Strong (1996)*

PROJECTS

FOSTERING INNOVATION IN GOVERNMENT

The goal of every CTG partnership project is to share knowledge that improves the way government works. Government practitioners and academic researchers use the results of these projects to better understand the role of information, provide policy and practice guidance, and inform organizational decisions. CTG projects have helped government agencies at all levels increase productivity and coordination, reduce costs, enhance quality, and deliver better services to citizens and businesses.

OPENING GOVERNMENT

Throughout 2011, federal agencies were dedicating resources to meet the Obama Administration's *Open Government Directive*, in which priority was given to create an unprecedented level of openness in government. By requiring federal agencies to submit open government plans, hundreds of initiatives were set off across the federal government. These initiatives aim to encourage the federal government to open their operations to the public and to actively engage citizens in the work of government in a manner that is collaborative, transparent, and participatory. Initiatives range from releasing data to the public, to asking the public for online comments on government regulations, to sponsoring prizes and challenges to solve complex government problems.

To help government leaders in making better informed decisions about their open government investments, CTG developed a *Public Value Assessment Tool* (PVAT). Using the lens of public value, CTG's tool takes agencies through an analysis of their open government portfolios in order to produce information that informs decision-making about which investments will likely produce the greatest value for stakeholders.

While federal agencies were still in their first year of implementing their open government plans, CTG worked with a small set of program leads to test the underlying philosophy and assumptions of public value assessment and, at the same time, learn about their existing planning processes. Through an iterative and real time approach, agencies used the PVAT in their planning efforts and then gave immediate feedback on functionality and usability. As a result, the end product is a practical tool that governments can use as a way to plan, assess, understand, and document the public value of their open government efforts.

OPEN GOVERNMENT RESEARCH AND DEVELOPMENT AGENDA SETTING WORKSHOP

CTG was host to a two-day workshop to outline a research and development agenda focused on the use of government data to improve the lives of citizens. CTG partnered with the Tetherless World Constellation (TWC) at Rensselaer Polytechnic Institute, the Institute for Information Law and Policy at New York Law School (IILP), and Civic Commons. The workshop took place April 27-28 with participants from academic, government, private, and nonprofit organizations. Results from this event include a completed workshop activity report and a forthcoming research agenda.

> *"Our office focuses on providing federal agencies with the tools and resources they need to deliver the most effective and efficient services to citizens. This tool gives federal open government leaders a new resource for assessing and planning their open government strategies."*
>
> **-Martha Dorris, Deputy Associate Administrator, Office of Citizen Services and Innovative Technologies, U.S. General Services Administration**

UNDERSTANDING TRANSNATIONAL PUBLIC SECTOR KNOWLEDGE NETWORKS

Sharing knowledge, information, technology and practices across cultural and national boundaries has become a means to address critical global problems. As governments strive to improve public health and safety, protect the environment, respond to disasters, or promote international commerce, they are engaging in new kinds of knowledge sharing networks as mechanisms for regional and global collaboration. Much of the work of a transnational knowledge network is embodied in the effort to shrink contextual differences so that the participants can create shared meaning and productive collaborations.

Through an applied research project, sponsored by the US National Science Foundation, CTG has been studying these issues in the context of two bi-lateral international collaboration efforts regarding air quality monitoring and reporting initiatives that involve the United States and Mexico, and the United States and China. An international network of native research partners led by CTG analyzed the actual experiences of government and partner organizations involved in these two efforts as the basis for developing both conceptual models and practical tools for effective transnational knowledge sharing.

In 2011, CTG finished the case study of AIRNow-International (AIRNow-I), an initiative led by the US Environmental Protection Agency (EPA) to redesign the US air quality monitoring and public reporting system to be scalable, interoperable, portable, and affordable to any country. The case study assesses the internationalization of AIRNow through the lens of a collaborative project between EPA and the Shanghai Environmental Monitoring Center (SEMC) in China.

The case study traces the history of air quality policy and management in both countries and then explores the structure and dynamics of their joint effort to build AIRNow-I Shanghai. In the report, CTG describes the influences of the separate Chinese and American contexts on the participants and their interactions, and identifies the ways in which they bridged many types of contextual distances to produce successful results.

In February 2011, Sharon Dawes (speaking) and Brian Burke (to her left) visited Shanghai to gather additional information for CTG's case study on the AIRNow-International Shanghai system. They were hosted by their research partner on this project, Dr. Lei Zheng (right of Dawes), UAlbany PhD '09 and now professor at Fudan University in Shanghai. Pictured is their meeting with staff from the Shanghai Environmental Protection Bureau and the Shanghai Environmental Monitoring Center, along with several of Dr. Zheng's doctoral students.

As the two cases for this research focused solely on the area of environmental air quality, future research efforts by CTG will include the testing of these findings in other domains that face shared global problems. Examples of other areas include public health, financial markets, and disaster management. CTG will also develop its research findings into an executive level training program for government professionals and their private sector partners who are increasingly engaging in transnational networks.

> *"The findings and lessons of AIRNow-I Shanghai show that the AIRNow-I system can be successfully implemented and customized outside the United States and most likely can be replicated in a wide variety of national settings. But despite consistency in the technology, strong cultural influences will make the process of engagement different for each new partner."*
>
> **-Sharon Dawes, Senior Fellow, Center for Technology in Government**

PROJECTS

SMART CITIES SERVICE INTEGRATION

Cities around the world are facing complex challenges. Their problems are increasingly intertwined and their solutions require the collaboration of multiple local agencies, nonprofits, businesses, and the society at large. They urgently need innovative arrangements to solve a great variety of technical, physical, and social problems. Due to these problems and rapid urbanization, cities have to become more intelligent in terms of efficiency, effectiveness, transparency, sustainability, and openness, among other aspects. This is being done in many cities by interconnecting and integrating critical city infrastructures and services through the use of sophisticated technologies.

There are many labels to represent this phenomenon—a smart city, a digital city, an intelligent city, etc. While some labels emphasize the technological aspects of these efforts, others pay more attention to the development of human capital or physical infrastructure. The commonality among them is likely their attempt to describe and design a comprehensive vision of a city for today and the foreseable future. Various lenses, frameworks, and models currently exist to understand and create a smart city.

CTG is working with an international research team to create a framework for service integration for smart cities. In addition, the team is conducting a series of comparative case studies of Quebec City, Canada, New York City, Seattle and Philadelphia, U.S., Mexico City, Mexico, and Shanghai and Macao, China. The team includes researchers and graduate students from the US, Canada, Mexico, and China (see sidebox). The funding for the project is also intended to build the capacity of graduate students as international researchers.

Information about each city is being collected through interviews with those involved in the planning, design, implementation and evaluation of specific initiatives. The interview questions focus on management, technology, policy and governance aspects of the initiatives as well as their impact on the environment and communities. At CTG, graduate assistant Taewoo Nam, a third-year doctoral

SMART CITIES RESEARCH TEAM

Partners

- **J. Ramon Gil-Garcia**, Assistant Professor and Director, Data Center for Applied Research in Social Sciences, Centro de Investigacion y Docencia Economicas, Mexico
- **Sehl Mellouli**, Professor, Department of Information Systems, Université de Laval, Quebec City, Canada
- **Adegboyega Ojo**, Research Fellow, Center for Electronic Governance, International Institute for Software Technology, United Nations University, Macao
- **Jochen Scholl**, Associate Professor, The Information School, University of Washington, Seattle, WA
- **Lei Zheng**, Assistant Professor, Department of Public Administration, School of International Relations and Public Affairs, Fudan University, Shanghai, China

Students

- **Armando Aldama-Nalda**, graduate student, Centro de Investigacion y Docencia Economicas, Mexico
- **Hafedh Chourabi**, graduate student, Université Laval, Quebec City, Canada
- **Taewoo Nam**, doctoral candidate, Rockefeller College of Public Affairs and Policy, University at Albany
- **Shawn Walker**, doctoral candidate, Information School, University of Washington, Seattle, WA

> *"Many cities around the world already consider themselves smart cities, while many others are just beginning to consider the possibilities. The early stage of adoption is an important time to learn more about how local conditions are influencing how cities use technology to become smarter."*
>
> **-Theresa Pardo, Director, Center for Technology in Government**

candidate in Public Administration at the Rockefeller College of Public Affairs and Policy, University at Albany, has been working with Theresa Pardo on a case study of Philadelphia's 311 System, which he is applying to his dissertation.

The results of the overall project will provide implications for academic research and practical recommendations for smart city initiatives.

I-CHOOSE: BUILDING INFORMATION SHARING NETWORKS TO SUPPORT CONSUMER CHOICE

In today's global market, it is increasingly difficult for consumers to know exactly how, where, and by whom the products they want to buy are being manufactured and brought to market. This information asymmetry makes it difficult for consumers to assess the quality of the products they buy or exercise their preferences for safe, environmentally sustainable, and economically just products and services. A team of researchers from the University at Albany, led by Theresa Pardo, received a $710,000 grant from the National Science Foundation to develop a data interoperability framework for providing such information in the North American Free Trade Agreement region.

The I-Choose framework will be developed in collaboration with a network of international researchers and practitioners from Canada, Mexico, and the United States. The project will focus on the development of interoperability among stakeholder communities for the single case of coffee grown in Mexico, which is distributed and consumed in Canada and the United States.

While the focus of this grant is on the North American coffee network, the knowledge gained through constructing this framework could inform a wide range of future collaborations in terms of how to create a trusted environment where incentives for collaboration and competition are complementary, not mutually exclusive. What makes this project unique is that it aims to empower consumers by exploring interoperability between three previously disconnected information systems: (1) those designed and maintained by government regulators; (2) those designed and maintained by consumer advocates; and (3) proprietary data systems from the private firms in the coffee supply chain.

The team is working on producing the following:

- An ontology that describes the domain of coffee production, distribution, and consumption.
- A hierarchical taxonomy that describes the domain of coffee production, distribution, and consumption.
- A Data architecture.
- An I-Choose consumer preference prototype evaluated by selected stakeholder groups.
- Policy analysis and recommendations.

CASE STUDY: PHILADELPHIA, PA

Theresa Pardo and CTG graduate assistant Taewoo Nam conducted interviews with Mayor Michael Nutter, Managing Director Richard Negrin, and many of their city government colleagues. In Philadelphia, the Mayor's staff have been actively promoting the use of data and new technologies to create a citizen-centric service strategy, earning the city runner-up status in the category *City of the Year* in the **2011 GovFresh Awards**, which honored the most innovative citizen, and city and local government technology projects of the year. In addition, OpenDataPhilly won in the category *Best Open Data Platform*.

LEARNING CRITICAL THINKING IN CONTEXT: USING PROBLEMS AND CASES IN FINANCIAL MARKET REGULATION

In 2010 CTG, as a member of an interdisciplinary team at the University at Albany, received an $800,000 grant from the National Science Foundation (NSF) to develop new curriculum that applied critical thinking principles within the context of financial market regulation. The project team focused their efforts in taking the data gathered from numerous interviews with members of the Financial Market Regulation (FMR) community on IT-based challenges in FMR to create courseware to be used in a variety of different academic classes within the University.

PROJECTS

I-CHOOSE PROJECT PARTNERS

- **David Andersen**, Distinguished Service Professor, Department of Public Administration and Policy, Rockefeller College of Public Affairs and Policy, UAlbany
- **Deborah Andersen**, Associate Professor, Information Studies and Informatics, UAlbany
- **Holly Jarman**, Assistant Professor, Department of Public Administration and Policy, Rockefeller College of Public Affairs and Policy, UAlbany
- **Luis Felipe Luna-Reyes**, Associate Professor, School of Business and Economics, Universidad de las Américas Puebla
- **Rejean Roy**, Senior Advisor, CEFRIO (Centre Francophone d'Informatisation des Organisations), Quebec Province, Canada
- **Giri Tayi**, Professor, Department of Management Science and Information Systems, School of Business, UAlbany
- **Jing Zhang**, Associate Professor, Management Information Systems, Clark University

Drawing upon our extensive relationships with people in both the financial firms and those organizations that regulate them, we have gathered a rich set of material. We have been extracting from this material cases, modules, labs, etc. that promote the Computational Thinking (CT) in FMR. The goals of the project are to create materials that use the relationship between FMR and CT to 1) increase motivation and interest in technical fields such as Computer Science, Information Management, and Information Policy, and 2) use FMR to introduce CT in non-technical areas with large numbers of students such as Business, Finance, Public Policy, etc.

As a member of this project team, CTG focused on creating modules that drew on real life experiences of this community regarding the challenges of applying regulation within the fast changing world of information technology. CTG piloted its modules in Theresa Pardo's graduate level class in Rockefeller College's Masters in Public Administration program.

The module and case piloted in Dr. Pardo's class are now being refined based upon feedback so that the module and course materials can be added to the project's repository. This repository will be made available so that others within academia can readily adopt not only the materials but also the guidelines on successful use within classrooms.

In addition to the curriculum development, the CTG project team presented and published several papers related to information challenges being faced by FMR professionals. CTG plans to continue development of class modules based on this research for use in classes to promote both information management and computational thinking.

ASSESSING MOBILE TECHNOLOGIES IN CHILD PROTECTIVE SERVICES

During the course of a workday, a child protective service (CPS) caseworker handles a variety of assignments and tasks that require traveling to different locations or accessing and entering sensitive information about child abuse and neglect allegations. Beginning in 2006, OCFS, local districts, and the state legislature embarked on a coordinated effort to deploy and assess mobile technologies to support that CPS work. At the time, New York State was among a handful of states examining the use of mobile technologies to enhance child welfare and child protection service delivery.

The state legislature charged OCFS with deploying and assessing the use of mobile technologies as part of each yearly appropriation. To conduct these independent assessments, OCFS partnered with CTG. Since that time, CTG has conducted annual assessment studies that have established a solid foundation of information to support a reasonably clear picture of the short term impacts of deploying and using laptops in CPS work. However, both OCFS and CTG recognized the need to learn more about the long-term impacts and conditions necessary for a statewide deployment.

To do so, in 2011 CTG conducted a cumulative study that provided the opportunity to survey CPS caseworkers who had a wide range of experience in using laptop

computers, from a few months to over five years. In order to learn more about how laptops have been integrated into CPS casework, the CTG examined findings on use, mobility, productivity, and satisfaction.

CTG also included a set of recommendations for NYS in the report (see sidebox) and concluded that, overall, this is an opportune time to exploit the opportunities that mobile technology offers. It is no longer a future state that "might" occur. Smart devices and connected laptops are transforming the way governments are delivering services, and citizens and employees are beginning to expect it. And, as with many government program areas, caseworkers are learning how mobility affects their work, changes policies and practices, and impacts the decisions they make. It's a learning curve—a big one—and NYS is already way ahead of the pack.

ADVANCING NEW YORK STATE'S BROADBAND GOALS

For New York State to remain competitive in the global economy, universal broadband access and adoption is critical for every New Yorker to fully participate in the modern digital economy. One of the major steps toward achieving this goal is a massive effort by the NYS Office of Cyber Security (OCS) to build a statewide broadband map showing usage and access to broadband technology in effort to understand the existing broadband landscape — where broadband is available and where it is not. CTG is working with OCS on several initiatives to collect data to improve the overall accuracy of the map and to add deeper context through layers such as low broadband adoption indicators. In 2011, CTG released a Broadband Adoption Report with results from a survey completed by CTG in 2010 of New York households to discover the extent of adoption of broadband services and how those services are used. Overall, the results show that adoption and use of broadband is widespread and diverse, with a pattern of high user satisfaction overall, but that substantial disparities exist in both access and adoption for economically and socially disadvantaged New Yorkers. The report recommends a combination of initiatives to reduce the overall costs of broadband, reduce knowledge and attitude barriers, and encourage investment in greater access and online security.

CTG also continued its Broadband Speed Test initiative to collect broadband speeds of residents throughout the state. Through this initiative, OCS is able to verify the accuracy of the data on the NYS Broadband Map with actual broadband speeds consumers are experiencing and where they are located.

William (Bill) Johnson, Deputy Director of NYS Office of Cyber Security for the NYS Division of Homeland Security & Emergency Services, gave a demonstration at CTG of how his agency is using the results from the Broadband Adoption Survey as layers on the NYS Broadband Map.

In conjunction with the residential speed test, CTG and OCS began to plan and design a strategy for collecting upload and download speeds for Community Anchor Institutions (CAI). CAIs are essential for delivering important services to communities throughout New York State and can often be the only access to broadband for many in their communities. Examples of these institutions include libraries, schools and colleges, hospitals, municipal halls, and police and fire stations. This data will also be added to the NYS Broadband Map.

NATIONAL YOUTH IN TRANSITION DATABASE

The National Youth in Transition Database (NYTD) is the first national, longitudinal data collection effort focused on understanding the transitions of youth from state foster care to independent living as adults. In 2010, CTG partnered with the New York State Office of Children and Family Services (OCFS) to design a model to fit their current capabilities for surveying youth. From April 2011 to the end of October 2011, CTG, in collaboration with Stony Brook University, worked with local districts and voluntary organizations to offer youth who turn 17 while in foster care the opportunity to participate in the NYTD data collection.

The type of data NYTD is mandated to collect comes from two sources—administrative data and data directly from youth being asked a series of questions. The challenge of the NYTD data collection effort is that it reaches all the way to individual youth and requires tracking some of them for five years.

PROJECTS

CTG graduate assistant, Amanda Kronen attended the 2011 NYTD Technical Assistance (TA) Meeting in Washington, DC. The TA meeting was hosted by the federal Children's Bureau to provide an opportunity for states to learn about the first round of national data collection and associated data quality issues, federal plans for data analysis and dissemination, and preparations for engaging youth in the next round of NYTD surveys.

To acquire the completed surveys, the agency team, CTG, and survey staff had to solve a mix of interrelated problems that grew primarily out of the loosely coupled nature of the foster care system in the state. Our experiences brought to light very clear and important issues regarding developing and implementing a national information resource. Without a well-grounded and realistic model of the administrative context, policies that establish large-scale, national systems like NYTD, which call for time sensitive data collection designs that must find and track service recipients, are less likely to yield good quality data and be easily implemented. From our experience, the cost of compliance for government agencies that do not possess the technical capabilities to engage in innovative data collection, transmission, and analytics will make it increasingly challenging.

A way forward for NYTD is to enact new policies and practices that provide data for program management and assessment at any level of government. Such new policies and practices should take into account the range of capabilities at the state and local level, the relationships, and the complexity of the service delivery system. Federal, state, and local governments must work together to find where new work practices or systems are called for and provide additional financial and other support that are likely to improve the results.

The project will continue on until 2015. The follow-up surveys of youth when they turn 19 will not begin until September 2012. States are experimenting with various ways of keeping in touch with youth, who in many cases will have elected to move out of foster care or, more commonly, will have aged out of the foster care system. The NYTD design creates more strict regulations for compliance on that population, with an expected survey response rate of 60% for youth not in care as of their 19th birthday and an 80% response rate for youth still in care. County level data, perhaps on other services these youth receive, may be integral in finding and staying in touch with youth.

VISIONING WORKSHOP FOR GOVERNMENT LEADERS IN WEST INDIES

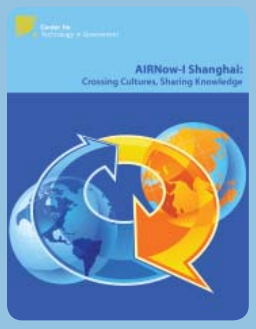
In 2011, CTG was host to a visioning workshop for government leaders from the West Indies. *Building Capability for Government Transformation: A Visioning Workshop for Government Leaders* took place in Port of Spain, Republic of Trinidad and Tobago. The workshop was endorsed by the Ministry of Public Administration, Government of Trinidad and Tobago and sponsored by Microsoft Corporation.

Using a capability-based perspective, the workshop presented visionary perspectives on emerging technologies and offered workshop participants a framework to turn those visions into an action plan for their governments. Throughout the three days, government leaders from the West Indies engaged with thought leaders from academia, government, and Microsoft about the role of technology in fostering public sector innovation.

The workshop was attended by over 50 representatives from the governments of Trinidad and Tobago, Jamaica, and Dominica.

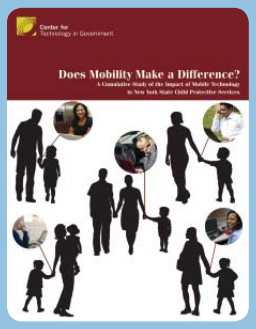
REPORTS

RESOURCES FROM CTG



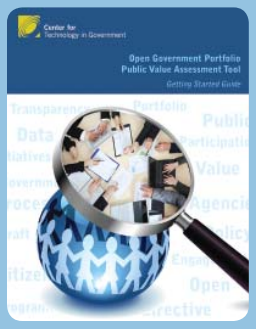
Airnow-I Shanghai: Crossing Cultures, Sharing Knowledge

AIRNow-International (AIRNow-I) is an initiative led by the US Environmental Protection Agency (EPA) to redesign the US air quality monitoring and public reporting system to be scalable, interoperable, portable, and affordable to any country. This case study assesses the internationalization of AIRNow through the lens of a collaborative project between EPA and the Shanghai Environmental Monitoring Center (SEMC) in China. We trace the history of air quality policy and management in both countries and then explore the structure and dynamics of their joint effort to build AIRNow-I Shanghai. This report describes the influences of the separate Chinese and American contexts on the participants and their interactions, and identifies the ways in which they bridged many types of contextual distances to produce successful results.



Does Mobility Make a Difference?

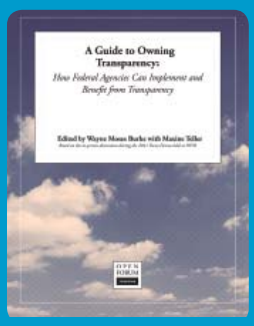
Over the past six years, the New York State (NYS) Office of Children and Family Services (OCFS) has invested in a mobile technology strategy to support child protective services (CPS) work. This report presents results from a multi-year assessment on how the use of mobility technology has affected CPS casework. Findings suggest that laptop use has transformed on-call work processes, provided caseworkers with access to critical information while away from the office, and enabled an immersive community experience for caseworkers.



Open Government Portfolio Public Value Assessment Tool

CTG's *Open Government Portfolio Public Value Assessment Tool* (PVAT) provides government decision makers an approach for making more informed decisions about their agency's or ministry's open government investments. The PVAT provides a framework for governments to assess the public value of each of their initiatives and a set of steps for making comparisons about likely impact across a portfolio of initiatives.

A GUIDE TO OWNING TRANSPARENCY



Meghan Cook was a contributing author to the Open Forum Foundation's *A Guide to Owning Transparency*, which focused on providing new context and knowledge to anyone interested in federal government transparency. Meghan contributed a chapter entitled *Delivering Public Value Through Transparency*, which addresses the question of how public value can accrue as a result of an open government initiative. Get the guide:
http://open4m.org/2011/10/03/owning-transparency/

Broadband Internet Service Adoption and Use in New York State Households

Broadband access for households has become an important resource for individuals and communities. A high speed connection to the internet provides opportunities for a great many economic, social and cultural benefits. This study was done to explore the extent to which those opportunities and benefits are currently available to households in New York State. With the support of the NY State Office of Cyber Security, and the New York State Broadband Development and Deployment Council, the CTG partnered with Stony Brook University to conduct the study. We surveyed 3,044 New York households to discover the extent of availability and adoption of broadband services and how they are used. We also asked about the social and economic characteristics of the households to explore how those factors affect broadband adoption and use.

PROVIDING THOUGHT LEADERSHIP

CTG continues to take a leading role in building a global community of practice for researchers and managers to advance knowledge about information technology innovation in government. We are actively involved in advisory boards and committees at all levels of government and around the world to explore and advise on key issues related to digital government. We are regularly invited to participate in local, national, and international academic and practitioner conferences and workshops.

CONFERENCES

New York State

A Dialogue on Opening Government Through Technology: Can Open Data Drive Innovation?
NYC Internet Week
New York, NY

Against All Odds: Facing Challenges in Records Management
NY Association of Local Government Records Officers
Verona, NY

Annual Meeting & Fall Training Academy
New York State Conference of Mayors
Saratoga Springs, NY

Critical Decision Making During Crisis
National Center for Security & Preparedness, UAlbany & NYS Division of Homeland Security and Emergency Services
Oriskany Falls, NY

Ethics and Public Utility Practice
NYS Bar Association's Institute on Public Utility Law
Albany, NY

GTC East Conference
Government Technology
Albany, NY

NY Celebration of Women in Computing
UAlbany, Union College, Siena College, & RIT
Albany, NY

NYS CIO Council and Local Government Joint Roundtable
NYS Local Government IT Directors Conference Spring Conference
Saratoga Springs, NY

New Trends in Informatics Research - NTIR 2011
6th Annual Informatics Spring Research Conference
College of Computing and Information
University at Albany, SUNY
Albany, NY

Quarterly Meeting
NYS Broadband Development and Deployment Council
Albany, NY

NEW YORK STATE CIO COUNCIL & LOCAL GOVERNMENT JOINT ROUNDTABLE SESSION

Albany, NY

Meghan Cook led a team from CTG, the NYS Office for Technology, and The Forum in a round table session at NYS Local Government IT Directors' Spring Conference. The roundtable was a joint effort among the NYS Agency CIOs and the NYS Local Government IT Directors (NYSLGITDA). The goal of the session was to provide a space to identify and discuss common concerns and interests; talk about solutions; and provide opportunities for enhancing professional relationships across state and local jurisdictions.

NYSLGITDA is dedicated to the coordination and improvement of information technology in all types of governments in New York State. CTG plays an active role each year in their spring and fall conferences.

National (U.S.)

2011 Technology Seminar
Conference of State Bank Supervisor's
Atlanta, GA

Civic Platform Summit
Civic Commons
New York, NY

Designing a Mobile Strategy
US General Services Administration (GSA)
Washington, DC

Digital Preservation Management Workshop
Digital Preservation Management (DPM) Workshops
Albany, NY

Evaluating Open Government: A Research-Practice Dialogue
Digital Government Society (DGS) and the Brookings Institution's Center for Technology
Washington, DC

Federal Open Government Working Group Meeting
Washington, DC

ISM 2011: Enabling Change: Deep in the Heart of Technology
IT Solutions Management for Human Services (ISM)
Austin, TX

11th National Public Management Research Conference
Maxwell School of Citizenship and Public Affairs at Syracuse University
Syracuse, NY

NYTD Technical Assistance Meeting
National Youth in Transition Database (NYTD)
Washington, DC

Open Government R&D Summit
Networking and Information Technology Research and Development Program and the National Archives and Records Administration
Washington, DC

Social Media for Government Conference
Advanced Learning Institute
Washington, DC

Seeking Solutions to Complex Policy and Management Problems
Fall Research Conference Association for Public Policy Management & Analysis (APPAM)
Washington, DC

Usability and Assessment Working Group
DataONE Working Group Meeting, Socio-Cultural Issues
National Science Foundation
Knoxville, TN

Workshop on the Future of Patent Data
National Science Foundation and the United States Patent and Trade Office
Washington, DC

International

4th Annual Government Innovation Forum (GIF)
Netmedia
Mexico City, Mexico

5th International Conference on Theory and Practice of Electronic Governance (ICEGOV2011)
UNU-IIST Center for Electronic Governance & e-Governance Academy Foundation
Tallinn, Estonia

Borderless eGovernment Services for Europeans
6th European Ministerial eGovernment Conference (egov2011PL)
European Commission
Poznan, Poland

Digital Government Innovation in Challenging Times
12th Annual International Conference on Digital Government Research (dg.o 2011)
Digital Government Society of North America
College Park, MD

e-Government Seminar
INFORTE
Turku, Finland

ICEGOV 2011 | TALLINN, ESTONIA

CTG was co-organizer of the 5th International Conference on Theory and Practice of Electronic Governance (ICEGOV2011), which took place in Tallinn, Estonia. At this year's conference, Chris Vein, Deputy U.S. Chief Technology Officer for Government Innovation in the White House Office of Science and Technology Policy, gave a keynote on Open Government. Vein's keynote was followed by an open government panel moderated by Theresa Pardo, with Rick Falkvinge, founder and first party leader of the Swedish Pirate Party, Sweden; Liia Hänni, Director of the e-Democracy Program, e-Governance Academy, Estonia; Stefan Gehrke, Open Data Network Germany e.V., Germany; and, Robert Marshall, Member of the Parliament, Iceland.

Hawaii International Conference on System Sciences (HICSS-44)
Kauai, Hawaii

IFIP e-Government Conference 2011
Delft, The Netherlands

Innovative Government – Learning from the Past, Looking to the Future
45th Annual ICA Conference
Taipei, Taiwan

Opening Up Development: How Can Countries Start and Run Open Data Ecosystems?
Global Dialogue on the Role of Open Data (Webcast)
World Bank Institute

Performance Management and Evaluation on E-Governance
2011 E-Governance International Forum
Taiwan E-Governance Research Center at National Chengchi University
Taipei, Taiwan

The Power of Open: A Global Discussion
Open Government Partnership
New York, NY

The SAP Future State Summit
SAP
Singapore, Republic of Singapore

LEADERSHIP

Anthony Cresswell gave a presentation, *Improving Access to Government Programs: A Public Value Approach*, to provincial and local government officials of Quebec. The presentation was at the Seminiare Public NetGouv 2011, sponsored by CEFRIO (Centre francophone d'informatisation des organisations), a CTG partner organization for close to a decade.

Seminiare Public NetGouv
CEFRIO (Centre francophone d'informatisation des organisations)
Quebec City, Quebec, Canada

Transforming Government Workshop (tGov2011)
Brunel University in West London, UK

Transparency & Openness
ePractice Workshop
European Commission
Brussels, Belgium

WSIS Forum 2011
World Summit on the Information Society (WSIS)
United Nations
Geneva, Switzerland

CONFERENCE LEADERSHIP

5th International Conference on Theory and Practice of Electronic Governance (ICEGOV2011)
-Co-Organizer
-Conference Co-Chair
-Steering Committee
-Program Committee
-Chair of the Doctoral Colloquium

IFIP e-Government Conference 2011
Delft, The Netherlands
-Program Committee
-Chair of the PhD Colloquium.
-Organizers of a workshop on *Social Media and Democratization*

11th National Public Management Research Conference
Syracuse, NY
-Session Chair for Social Media Networks

Microsoft's DigiGirlz Day at UAlbany
-Co-sponsor
-Organizing Committee

EDITORIAL BOARDS

Government Information Quarterly

International Journal of Electronic Government Research

International Journal of Electronic Governance

International Journal of Social and Organizational Dynamics

Journal of Information Technology and Politics

Transforming Government: People, Process and Policy

ADVISORY BOARDS/ COMMITTEES

New York State

Advisory Board
Government Technology East Conference (GTC East)

APPAM FALL RESEARCH CONFERENCE

Natalie Helbig and Sharon Dawes participated at the 2011 Fall Research Conference of the Association for Public Policy Management & Analysis (APPAM) *Seeking Solutions to Complex Policy and Management Problems*. Sharon was one of the panelists for the session *Symposia on Policy Informatics* to address how advances in information technology and computational modeling have enhanced our ability to address complex research questions. Natalie was a speaker at the Roundtable discussion *Policy Informatics and the APPAM Community*, which explored what policy informatics is, how and why it is relevant to the APPAM community, and how to involve policy makers and practitioners to be interested and effective users of these approaches. Also attending the conference, pictured left to right: David Anderson, Distinguished Service Professor at UAlbany's Rockefeller College, Taewoo Nam, CTG graduate assistant and PhD student at Rockefeller College, Dawes, and David Rousseau, Interim Dean, Rockefeller College.

Meghan Cook gave the keynote presentation at the 4th Annual Government Innovation Forum (GIF) in Mexico City. Cook's presentation focused on the key challenges and opportunities governments are facing with pressures to use new technologies to build the government of the future, one that is open, transparent, and collaborative.

Open Government, Collaboration and Communication Committee
NYS CIO Council

Enterprise Architecture Committee
NYS CIO Council

Webmasters' Guild
The NYS Forum

IT Skills Development Work Group
The NYS Forum

Board of Directors
The NYS Forum

Advisor
NYS Local Government IT Directors Association

Local Government Work Group
NYS Office of Cyber Security

National

Steering Committee of the National Gap Analysis
Applied Science Foundation for Homeland Security

Advisory Board
Educating Stewards of Public Information in the 21st Century

Advisory Board for Digital Preservation Management Workshop
Inter-University Consortium for Political and Social Research (ICPSR), University of Michigan

Advisory Committee on the Electronic Records Archives
National Archives and Records Administration

Data One Socio-Cultures Working Group
National Science Foundation

Open Government Advisory Working Group
U.S. Office of Personnel Management

Executive Council for Information and Technology Management
U.S. Government Accountability Office

International

Board
Digital Government Society of North America

Advisory Board
Centro de Investigacion y Docencia Economicas (CIDE)

Senior Overseas Advisors
State Information Center, People's Republic of China

Jury Panel
Sultan Qaboos Award in Excellence in eGovernment Authority of Sultanate of Oman

Advisory Board (Chair)
United Nations University International Institute for Software Technology

University at Albany

Advisory Group
National Center for Security and Preparedness

Campus Committee
University-Community Engagement

Campus Committee
Program for Career, Leadership and University Excellence

Strategic Planning Committee
UAlbany Strategic Planning Process

DAWES APPOINTED CHAIR OF UNITED NATIONS UNIVERSITY-IIST BOARD

At the Annual Board Meeting of the United Nations University, International Institute for Software Technology in Macao, China, Sharon Dawes (pictured center, first row) was appointed Chair. The Institute's research and activities revolve around the application of ICTs in four thematic areas of Education, Governance, Health, and Poverty Reduction. UNU-IIST is a small institute, yet as an organ of United Nations, it is well positioned globally to establish collaborations with industry, governments and universities from all over the world, while simultaneously developing closer ties with Macao and neighboring countries in the region. Also attending the meeting were UNU Rector Konrad Osterwalder (third from right, first row) and UNU-IIST Director Peter Haddawy (far right, first row).

SCHOLARSHIP

VISTING SCHOLARS

CTG has built a strong network of international scholars who have spent time at our center in Albany, NY as part of our **Visiting Scholars Program**. While at CTG, they share their research, participate in knowledge and information exchanges with staff, University at Albany faculty, and NYS government professionals, and launch new collaborative efforts. In 2011, it was our pleasure to host:

Rodrigo Sandoval Almazan
Teaching Professor
State Autonomous University, Mexico
Rodrigo's main research focus is in on e-government, social networks in organizations, the digital divide, and online political marketing. During his time at CTG, Rodrigo met with CTG staff and students to discuss open government, social media, and advancements in e-government research. He also shared his research about open government adoption in Mexico.

Ignacio Criado
Assistant Professor
Universidad Autónoma de Madrid, Spain
Ignacio's research activities focus on Interoperability, inter-organizational collaboration, and Europeanisation of e-Government. During his time at CTG, Ignacio conducted research about interoperability of e-Government developments in multi-level systems, with a special focus on the case of health policy in the United States and Spain.

Olivier Glassey
Assistant Professor
Swiss Graduate School of Public Administration, Switzerland
Olivier's current research topics are public registers' harmonization and data governance of population registers, identity and privacy management, open access and transparency, and more generally eGovernement and eParticipation. During his time at CTG, he presented his research on the tensions between privacy and transparency issues from a European perspective through proposing a model for data, identity, and privacy management.

VISITING STUDENT

Tuo Zheng is a visiting student from Fudan University in Shanghai, China, where he is a second-year doctoral student at the School of International Relations and Public Affairs. His research interests include how governments use ICTs to provide public services, interact with citizens, and improve the quality of public management. His current research is focusing on social media, specifically the role of China's "Twitter" in public services and the relationship between social media and emergency response. Using this research, Tuo is working on a joint paper with CTG on *Management Mechanisms of Government Use of Social Media: Comparing the US* and China for submission to the Public Management Research Conference at Fudan University in May of 2012.

Karim Hamza
Academic Researcher
Maastricht School of Management, Netherlands; Part-Time Professor, American University, Egypt
Karim's research activities focus on Government Development Strategies through application of new technologies and innovative government management approaches. His doctorate, which he is currently working on (due to finish 2012), is entitled *E-Governance Framework Design Process Model EGov's-FDPM*. During his time at CTG, he gave a research discussion on governance structures for building democracy in Egypt, and met with CTG staff to plan future research collaborations focused on the use of social media in government. This led to a joint workshop with Theresa Pardo and Jeremy Millard (Danish Technological Institute) on *Social Media and Democratization* at IFIP e-Government Conference 2011.

SCHOLARSHIP

PUBLIC ADMINISTRATION

CTG's research program contributes in many ways to the academic life of the University at Albany. Through courses, internships, and other opportunities for faculty and students, we are closely aligned with UAlbany's teaching and research missions. As part of the Rockefeller College of Public Affairs and Policy's Master of Public Administration (MPA) Program, CTG was critical to the development of the nationally-ranked *Information Strategy and Management Concentration*. According to *U.S. News and World Report's* most recent graduate school rankings, this specialty area is ranked #2 in the country for best public affairs schools for information and technology management programs.

Part of the reason this program is so highly regarded is due to the opportunity that Theresa Pardo and Sharon Dawes, both faculty at Rockefeller College, have given students to learn from the practical problems facing government. The concentration offers specially designed courses that focus on the real-world issues in government, along with special topics and readings that augment advanced study. The curriculum focuses on the ways in which information policy, management, and technology interact in the design, operation, and evaluation of public programs. Students tackle these issues in course work, projects, and individual research.

New York State CIOs participated on a panel, The Role of the Government CIO, contributing their expertise to students studying for a Masters in Public Administration at the Rockefeller College of Public Affairs and Policy. NYS Acting Chief Information Officer Daniel Chan (far right) was joined by Bill Travis, CIO of NYS Office of Children and Family Services, Brian Scott, CIO NYS Health Department, David Walsh, CIO of NYS Department of Education, and Adam Gigandet, CIO of NYS Department of Motor Vehicles.

A team of UAlbany students from Treresa Pardo's class presented recommendations to New York State Acting Chief Information Officer Dr. Daniel C. Chan and CIOs from several state agencies on two important information technology (IT) issues:

In Theresa Pardo's 2011 fall semester course, co-instructed with Dr. Moses Kamya, CIO of the Governor's Office of Employee Relations (UAlbany '09), students learned to use analytical tools and techniques to help identify and manage complex decision making regarding public sector IT challenges.

Early in the semester Pardo invited a panel of state CIOs to speak about *The Role of the Government CIO*. The students were then challenged by NYS Acting CIO Daniel Chan to research and recommend ways that emerging information technologies can be leveraged by NYS government. Using the tools and techniques learned in class, the students took on two important information technology (IT) issues: cloud computing and the use of personal devices in the workplace. At the end of the semester, the two teams of students presented recommendations to Chan and CIOs from several state agencies.

"By performing these projects, students gain an appreciation of how to evaluate new technologies and make business-oriented recommendations. They tackle real issues, apply logical thinking, and find a balance between business benefits and policy/ management issues."

-Dr. Daniel Chan, Acting Director
NYS Chief Information Officer

SCHOLARSHIP

PUBLICATIONS

BOOK CHAPTERS

E-Government and Inter-Organizational Collaboration as Strategies for Administrative Reform in Mexico
L.F. Luna-Reyes & J.R. Gil-Garcia (2011). In Thanos Papadopoulos y Panagiotis Kanellis (Eds). (pp. 79-101). *Public Sector Reform Using Information Technologies: Transforming Policy into Practice*. Hershey, PA: IGI Global.

JOURNAL ARTICLES

Benchmarking E-government: A Comparison of Frameworks for Computing E-government Index and Ranking
A. Rorissa, D. Demissie & T.A. Pardo. *Government Information Quarterly,* 28(3), 354-362.

Mapping the evolution of e-Readiness assessments
D.D. Potnis & T.A. Pardo. *Transforming Government: People, Process and Policy*, 5(4), 345-363.

The Role of IT Literacy in the Definition of Digital Divide Policy Needs
E. Ferro, N.Helbig & J.R. Gil-Garcia. *Government Information Quarterly*, 28 (1): 3-10.

Using Institutional Theory and Dynamic Simulation to Understand Complex e-Government Phenomena
L.F. Luna-Reyes & J.R. Gil-García. *Government Information Quarterly*, 28 (3): 329-345.

CONFERENCE PROCEEDINGS

Building and Sustaining a Transnational and Interdisciplinary Research Group: Lessons Learned from a North American Experience
J. Zhang, J.R. Gil-Garcia, L.F. Luna-Reyes, M. Nakashima, D.S. Sayogo, & S. Mellouli. (2011). *Proceedings of the 44th Hawaii International Conference on System Sciences (HICSS)*, Mānoa, Koloa, Kauai, Hawaii.

Computing and Information Technology Challenges for 21st Century Financial Market Regulators
T.A. Pardo, D.S. Sayogo & D. Canestraro. *Proceeding of the10th IFIP E-government Conference*, pp. 198-209. Delft, Netherlands.

Conceptualizing Smart City with Dimensions of Technology, People, and Institutions
T. Nam & T.A. Pardo. *Proceedings of the 12th Annual International Conference on Digital Government Research (dg.o 2011)*, College Park, Maryland.

Cultivating the Next Generation of International Digital Government Researchers: A Community-Building Experiment
N. Helbig, S.S. Dawes, M. Cook & J. Hrdinova. (2011). *Proceedings of the 2011 IFIP eGov Conference*. Delft, Netherlands.

Evaluating the Impact of Online Collaborative Media on the Formation of Cross-Boundary Digital Government Research Collaboration: A Social Network Approach
D.S. Sayogo, T.A. Pardo & J. Zhang (2011), *Proceeding of the 12th International Digital Government Research Conference (dg.o2011)*, pp. 64-73. College Park, Maryland.

Exploring the Determinants of Publication of Scientific Data in Open Data Initiative
D.S. Sayogo, & T.A. Pardo. *Proceeding of the 5th International Conference on Theory and Practice of Electronic Governance (ICEGOV2011)*, Tallinn, Estonia.

Government Information Sharing and Integration in Metropolitan Areas: A Conceptual Framework
J.R. Gil- Garcia & A. Aldama-Nalda. *Proceedings of the 2011 IFIP eGov Conference*. Delft, Netherlands.

I-Choose: Consumer Choice, Digital Government, and Sustainability in North America
H. Jarman, L.F. Luna-Reyes, J. Zhang, A. Whitmore, S. Picazo-Vela, D.L. Andersen, G.K. Tayi, T.A. Pardo, D.F. Andersen, & D.S. Sayogo. *Proceedings of Fall 2011 APPAM Research Conference*, November 3-5, 2011

Knowledge and Information Sharing in Transnational Knowledge Networks: A Contextual Perspective
S.S. Dawes, M.A. Gharawi, & G.B. Burke. *Proceedings of the 44th Hawaii International Conference on System Sciences (HICCS)*. Hawaii.

Open Government and E-Government: Democratic Challenges from a Public Value Perspective
T.M. Harrison, S. Guerrero, G.B. Burke, M. Cook, A.M. Cresswell, N. Helbig, J. Hrdinová, and T.A. Pardo. *Proceedings of the 12th Annual International Conference on Digital Government Research (dg.o 2011)*. College Park, Maryland.

Promoting International Digital Government Research Collaboration: an Experiment in Community Building
S.S. Dawes, N. Helbig, & M. Cook. *Proceedings of the 12th Annual International Digital Government Research Conference (dg.o2011)*. College Park, Maryland.

Smart City as Urban Innovation: Focusing on Management, Policy, and Context
T. Nam and T.A. Pardo. Proceedings of 5th International *Conference on Theory and Practice of Electronic Governance (ICEGOV2011)*. Tallinn, Estonia.

Understanding the Capabilities and Critical Success Factors for Scientific Data Sharing in DataONE Collaborative Network
D.S. Sayogo & T.A. Pardo. *Proceeding of the 12th International Digital Government Research Conference (dg. o2011)*, pp.74-83. College Park, Maryland.

PARTNERS

BUILDING PARTNERSHPS

CTG projects depend on active and ongoing partnerships with government agencies, technology companies, nonprofits, and members of the academic community. We are grateful to the many organizations who supported our work in 2011.

Government

City of Seattle, Washington
City of Philadelphia, Pennsylvania
Consejo Nacional de Ciencia y Tecnología (National Council on Science and Technology of Mexico)
Mexico City, Mexico
National Council on Science and Technology of Mexico
New York City Department of Information Technology and Telecommunications
NYS Chief Information Officer's Council
NYS Office of Cyber Security
NYS Office of Children and Family Services
NYS Chief Information Officer and NYS Office for Technology
The NYS Forum
Shanghai Environmental Monitoring Center
U.S. Department of Transportation
U.S. Environmental Protection Agency
U.S. General Services Administration
U.S. National Science Foundation
U.S. Office of Personnel Management
U.S. Office of Science and Technology Policy

Universities, Centers, and Institutes

California State University, Dominguez Hills
Center for Electronic Governance, International Institute for Software Technology, United Nations University, Macao
Center for Survey Research, Stony Brook University
Centro de Investigacion y Docencia Economicas (CIDE), Mexico
Centre Francophone d'informatisation des Organizations, Canada
China National School of Administration, China
Claremont Graduate University
Clark University
Dalhousie University, Canada
Delft University of Technology, Nertherlands
Fudan University, Shanghai, China
Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico
National Chengchi University, Taiwan
The Nelson A. Rockefeller Institute of Government
Simmons College
Stanford University
Taiwan Governance and Technology Center, Taiwan

Anthony Cresswell presented results from CTG's broadband adoption survey of New York households to the NYS Broadband Development and Deployment Council. The purpose of the survey, conducted by CTG in partnership with the NYS Office of Cyber Security and Stony Brook University, was to discover the extent of adoption of broadband services and how those services are used. Pictured left to right: Daniel Chan, Acting NYS CIO and Acting Director of NYS Office for Technology; William Johnson, Deputy Director, NYS DHSES, Office of Cyber Security; David Salaway, Director, CIO/OFT Broadband Program Office; Andew Karhan, Director of Program Develoment, Wildwood Programs, Inc.; and Anthony Cresswell, Deputy Director, CTG.

Universities, Centers, and Institutes (cont)

Universidad de las Americas, Mexico
Université de Laval, Canada
Université de Sherbrooke, Canada
University of Bremen, Germany
University of Massachusetts Amherst
University of Salford, United Kingdom
University of Washington

Nonprofit

National Association of State Chief Information Officers (NASCIO)

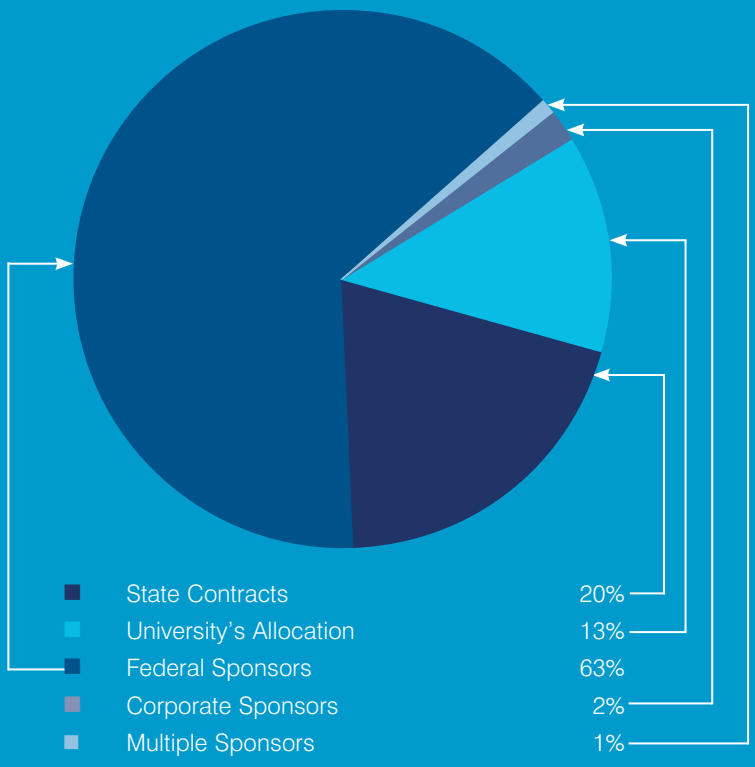
Corporate

MicroKnowledge, Inc.
Microsoft Corporation
Sonoma Technology

A full list of all the partners CTG has worked with over the past 18 years can be found on our website at www.ctg.albany.edu/about.

FINANCIAL PORTFOLIO

In 2011, CTG's work was funded by a diverse portfolio of multi-year projects funded through partnerships with state and federal agencies and corporations. The Center's financial portfolio of $7,654,590 continues to provide opportunities to collaborate with researchers, practitioners, and students from New York State, the United States, and around the world.



STAFF

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Theresa Pardo

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Meghan Cook, Program Manager
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(continued from page 5)

Parks and Recreation, and Fairmount Park) are used to jointly review and revise processes, and to share knowledge about Philly311 and agency operations. "We get everyone's input. People bring their concerns into the table," said Rosetta Carrington-Lue, Director of Philly311. "We own the system and they own the content."

Effective use of resources. The information Philly311 provides to other city agencies and departments is driving internal business process changes. Ms. Johnson gave an example, "[The Streets Department] had a fairly random process in how they prioritized replacement of street lights. Once we provide data, we are able to provide a GIS map that shows where the calls come from—hot spots." Mark Cooper, the Philly311 Knowledge Management Specialist added, "[The Streets Department] can visually see the clusters. Now they have a data source. The data source actually gave them an opportunity to say 'we need to do this always in the right places.'"

City-level information integration. 311 is about service-related information. Ms. Johnson said, "We have the information center, so we give information and get information." Ms. Carrington-Lue also emphasized, "We are the only agency-level centralized database. Nobody has that." The call center manages the repository of all logs of communication (calls, emails, and text messages) with citizens. The data is extracted from the repository and then used for PhillyStat or other purposes.

Internal customer-oriented service. Customers come first, this is a principal of Philly311. But not just the citizen as customer, Philly311 staff see other city employees as their customers. Along with this view, the Mayor created a unique position among city-level 311 programs, Chief Customer Service Officer. The Philly 311 vision is for customer service representatives to view themselves as city ambassadors who have a major role to play in the relationship with those who live in or do business with the city. One way this has been implemented is giving Philly311's staff extensive roles in the Customer Service Leadership Academy for internal training of all city employees.

Technology integration. In addition to integrating information and services, Philly311 also relies on the integration of customer relationship management and geographic information systems software. Requests from residents can be grouped by map and zip codes, displaying where services need to be directed. Philly311 will be launching a mobile application as the next platform for users given its potential to enable more accurate positioning of reported problems and the inclusion of visual images.

CLOSING

Philly311 has changed Philadelphia. Not completely and not alone, but in real and significant ways. City government is more open and transparent; citizens are being served, engaged, and given the opportunity to see inside government and to hold government officials accountable.

Increasing citizen service during a period of budgetary constraint and creating new relationships with government agencies, citizens, and the corporate sector is no small task. But Philly311, still only three years old, has found a way to use a good idea, some basic technologies, collaboration, and hard work to make their city smarter. Much can be learned from their example. ■

Street Level Information

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IMPACT OF COLLECTION ON STATES AND COUNTIES

The legal responsibility for the NYTD falls on state agencies, but for a national project like this to succeed, states together with counties must bear the main data collection and reporting burden, both the benefits and the costs.

The weight of the data collection and reporting burden can vary substantially from state to state and county to county depending on their foster care systems and technical and administrative capabilities. In October 2010, some states already had information and management systems designed for and capable of responding to most of the NYTD administrative data reporting requirements. And any state with such an existing information system and administrative authority for foster care would be well positioned to find and survey the youth as they reached their 17th birthday. Other states, those with data in multiple statewide and local level systems, were not configured to respond in the same way to the NYTD task.

For state-run, county-administered settings, a large portion of the administrative authority for foster care resides at the county level. These states and county agencies faced different, and in some cases, a more difficult challenge in becoming NYTD compliant. Non-compliance risked financial penalties to states, penalties that could reduce foster care funds for counties as well.

While the costs of data collection are shared across state and local levels, so is the benefit. Improved data about foster youth in transition can help policy makers, program administrators, and care givers at all levels to provide better services and support. These efforts are sure to be a difficult and costly undertaking, involving individual service providers and supervisors in foster homes or voluntary agencies, county social workers and supervisors, and state agency IT and program operations.

LOOKING TO THE FUTURE

Our experience implementing the survey portion of NYTD brought to light very clear and important issues regarding developing new types of data resources. Policy makers and practitioners should be looking at future information supply issues. Is the future in clockwork data collection systems like the NYTD or in opening data? Can open data strategies solve the need to create new data resources?

Opening government data may not be the answer to all the lack of information problems government faces. So much of what government does, especially in the areas of complex service delivery, such as welfare, education, or child protection, or relating to accountability or transparency is not collected through agency legacy systems. The NYTD clearly shows that the needed information tends not to be part of government agency legacy systems. Legacy systems house governments' machine-readable data, and the data within them are often collected for specific purposes and programs.

Going forward, the aim should be to make the necessary adjustments to account for the range of capabilities at the state and local level, the relationships, and the complexity of the service delivery system and enact new policies and practices. ■

Data Sharing

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documented procedures for collaboration and sharing of different resources, assessment of collaboration readiness, and measurement of the alignment between the value systems, principles, and policies.

3) **Harmonization of Multiple Contexts.** Lastly, a data sharing initiative that transcends geographical boundaries must also deal with harmonizing different external contextual factors. Participants from different geographical regions may speak different languages, use different scientific notations and laws/regulation, and be concerned with different cultural issues. Acknowledging these differences and developing mechanisms to work with and within them is a prerequisite for a successful data sharing initiative.

CONCLUSION

The sharing of research datasets is recognized as central to global efforts to advance science. Ensuring the success of sharing however, is a difficult and challenging endeavor that goes beyond a single knowledge domain, organization, or nation. Encouraging the sharing of datasets in a collaborative network in the interest of advancing science requires balancing expected benefits with identified challenges. If data sharing is conducted within a collaborative network such as DataONE, where the actors are autonomous, heterogeneous, and geographically dispersed, sharing is not purely based on personal decision but also affected by social and institutional arrangements. Looking at scientific data sharing through the lenses of CTG's work in information sharing and collaboration provides new insights into how capability for data sharing in the scientific community can be created and advances in science enabled. ■

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