Tech Knowledge and Governance: How Can Managers Integrate Technology Issues?

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Web sites are the public faces of local governments' technology capacity. They can facilitate service delivery and information sharing, as well as project an image of technological competence. Internet accessibility, however, is just the tip of the technology iceberg for local governments. This article discusses what the term "technology-enabled" means for local governments, why managers are engaged in technology issues, and how local governments can best plan to use technology.

What Does "Tech-Enabled" Mean?

Government Web Sites Are Popular And Influential!

Sixty-eight million American adults have used government-agency Web sites to research public policy questions, send comments to public officials, and gather information about how to vote. Thirty percent of them claim that using these sites has improved their interactions with local government and increased their level of civic engagement. Additionally, a Web user's trust in governmental entities closely correlates with the perceived quality of the respective Web site.[1]

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[1]*Elena Larsen and Lee Rainie*, The Rise of the E-Citizen: How People Use Government Agencies' Web Sites *(April 2002). This report was produced by the Pew Internet and American Life Project, Washington, D.C. (http://www.pewinternet.org/).*

A tech-enabled local government strives to use technology to improve internal and external business operations. Internally, technology increases efficiency and accuracy in the performance of day-to-day tasks. These improvements can take the form of increased collaboration and greater efficiency in information collection and exchange. Improved operations can be achieved, for instance, through the use of geographic information systems (GIS) to coordinate functions and information across departments. A shared GIS enables emergency response, public safety, public works, and community and economic planning staff members to collect a single set of data and use it with a range of applications and purposes.

Externally, a tech-enabled government provides improved services and access to information. The use of the Internet is the most obvious example. A local government that is using technology for its citizens, however, might also be employing intelligent transportation systems to increase the efficiency of its traffic patterns and to diminish traffic congestion.

A tech-enabled local government ensures that its physical infrastructure serves the technical needs of its citizens, works to attract and retain organizations and businesses that are similarly advanced, and creates a more economically viable community. A tech-enabled government also purposefully addresses the digital divide among its citizens, its "haves" and "have-nots."

What "Tech" Qualities Does a Local Government Manager Need?

In times when technology issues can confuse even the most proficient "techie," good leadership and management are all the more imperative. They can enable the accomplishment of these five advantages and initiatives:

1. Identification of challenges.
2. Flexibility in adapting new technologies and practices, as well as the willingness to take risks.
3. Confidence in and empowerment of the chief technology officer (CTO).
4. Education and engagement of all business operations.
5. Concentration on the human response to change.

Growing GIS Uses in Rural
New York[1]

The Southern Tier West Regional Planning and Development (RP&D) Board in Salamanca, New York, began to use GIS to evaluate housing stock but expanded it for a range of other purposes. Southern Tier West also uses GIS to market development opportunities such as brownfields, industrial parks, and other land use development projects.

Another of Southern Tier's GIS-related projects is Community GIS, which began two years ago through a grant from the Appalachian Regional Commission (ARC). It serves as an Internet-based tool to empower local government officials in southwestern New York with GIS capabilities. With the use of ArcIMS, Southern Tier sets up the data on its server, and, via the Internet, local government officials can access information from their desktops.

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[1]Economic Development Digest, *published by the National Association of Development Organizations (NADO) Research Foundation (November 2002).*

The challenges facing a local government seeking to expand its technology capacity might include:

- Data management and accuracy overload. (With increased amounts of data, how is information to be managed, and how is accuracy to be ensured?)
- Cultural intractability: institutional barriers, trust-building problems, and misaligned roles and responsibilities.
- Budgeting difficulties.
- Digital divides within local government staff and among citizens.

Since the objectives of any tech-enabled organization include uniting informational and operational processes and using them in new ways, managers must be able to disassemble old standards and operations, understand the qualities and competencies of each of them, and envision systems assembled in new ways. Part of flexibility is the willingness to take risks and to conduct risk assessments of decisions and investments.

Managing technology requires weighing a balance of resources and outcomes. It is important that managers and staff acknowledge the presence of risk and the possibilities of failure, and that they discuss how to assess and manage risk. They also need to know how to learn from mistakes without being punished for them.

In the state of Missouri, for example, "every technology program undergoes a risk assessment before a budget is requested. The officers in oversight positions need to establish what the mitigation strategies are before big problems arise. . . . Project managers must understand the indicators that show [a project's performance]."[1]

A third important requirement for a tech-knowledgeable local leader is good working relationships with the CTO and staff members. Practices and advice from the private sector can be transferred to local government management.

According to Jack Brennan, chief executive officer (CEO) of the Vanguard Group, which is a financial and information services investment company, a cooperative CEO-CTO relationship is one in which the CEO is invested in technology and the CTO is equally invested in the day-to-day business operations. In this way, both can be thinking about developing business and technology strategies jointly.

It is important that the CEO's and the chief technology officer's (CTO) commitments to each other are articulated and reflected throughout the organization so that all members of the group are thinking about ways to integrate technology and business practices across disciplines.[2]

The education and engagement of department heads and leaders to unify business functions across technology platforms is the fourth crucial aspect of management and leadership that a manager needs to bear in mind. This can be accomplished through the coordination of business functions, missions, and infrastructure upgrades. For example, Fairfax County, Virginia, has brought the operations of the county library systems, cable communications, and consumer protection under the management of the chief information officer (CIO)/CTO. (In Fairfax County, the CIO position has authority similar to a CTO.)

In addition, elected leaders, budget officers, and others need to be educated about new-business cases that cut across disciplines and about the return on investment strategies that technology investments require. Old models do not always work for new strategies, so it is important that decisionmakers and stakeholders are flexible and open to new performance standards. Such education and such partnerships will help to create institutional, political, technical, and financial support.

Everyone wants progress, but no one wants change. This reality was discussed in May 2002 at the ICMA Strategic Management Forum. One theme discussed was that of acknowledging and addressing the human changes that technology management requires. As staff members confront all logistical, technical, and business operation facets, they also must consider the human aspects of technology management.

Creative Services
Get Tech-Savvy in Portland[1]

Portland, Oregon, boasts more than 800 creative service firms and has made a $6 million investment in keeping them and attracting more. This sector—high-wage industry—has recently experienced twice the job growth rate of the overall Portland economy. Creative businesses export services, making bandwidth and Internet connectivity indispensable. By developing a space for creative service entrepreneurs, Portland development officials offered a building in which they thought creative clients would prosper.

More important than the attractiveness of the building, however, bandwidth is essential to creative services. Portland's building is wired to accommodate the most advanced communications systems. The city also is embarking on a $50,000 national ad campaign to promote itself as a hub for creative services. City officials hope that, by providing a combination of amenities, the building will attract the minds that will sustain high-wage job growth in Portland.

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[1]*John B. Horrigan,* Cities Online: Urban Development and the Internet, *produced by the Pew Internet and American Life Project, Washington, D.C. Copyright 2001.*

Managers should recognize that staff members will have reactions to technology and operational changes that can be difficult to understand. Resistance may not only come from the Luddites on staff but also from the technical staff, who find themselves in new situations that require them to understand and work across program areas in new ways. In planning how to address technology management issues, the human factor is an important element that should not be overlooked.

Tech-Enabled Practices

Several competencies identified through ICMA University's Practices for Effective Local Government Management clearly apply to leadership and management in a tech-enabled workplace. The most applicable ones are:

Staff effectiveness, advocacy, and interpersonal communication, as demonstrated through team leadership and empowerment whereby an individual facilitates group relations, coordination, responsibility, and decision making across disciplines.

Policy facilitation. A manager helps staff, elected officials, and citizens understand the value of technology and builds cooperation and consensus among groups to achieve goals.

Operational planning, financial analysis, and strategic planning that anticipate long-term needs and that establish timetables and budgets for meeting them.

Initiative, risk taking, and innovation. Technology programs are expensive and will compete against other longstanding calls on program dollars. A leader must be innovative and must demonstrate initiative in implementing technology programs.

Technological literacy, by which a leader ensures appropriate technology uses that will improve service delivery, information sharing, and citizen engagement.

How to Plan and Pay for Technology

As this list of the competencies conveys, planning for a technology-enabled government and community is a multidimensional effort that requires short-term changes in business practices and orientation; medium-term planning for staffing, training, and retention; and long-term planning for the maintenance and development of technology programs and infrastructure. Likewise, planning requires refining, unifying, and redefining goals and missions across program areas.

In developing an information technology plan, a government should keep its goals simple and measurable. For example, Fairfax County, Virginia, has enumerated six goals that are closely tied to its business objectives and service demands:

1. Provide convenient access to information and services.
2. Deliver timely and effective responses to customer requirements.
3. Guarantee a reliable communication and computer infrastructure.
4. Effectively manage the county's information and knowledge assets.
5. Effectively manage Fairfax County's technology assets.
6. Effectively manage the county's human resource assets.[3]

In addition to mission-driven goals, each business component of IT can involve more specific goals related to its particular objectives, such as developing infrastructure, addressing citizen issues, or improving service delivery. Local governments also have benefited from developing advisory groups and steering committees to help guide the development and implementation of such large and comprehensive planning efforts.

Steering committees are excellent opportunities to engage academic, community, and private sector partners in contributing expertise and sharing the lessons of their own experiences. Such groups of advisers also can carry the theme of integrated business operations outside the local government and can develop new civic partnerships.

Online Building
Permits in Georgia[1]

In 2000, Valdosta, Georgia's construction community and city manager asked the South Georgia Regional Development Center (South Georgia RDC) to build an electronic permit system. Today, the system gives contractors and citizens the opportunity to save hours normally spent waiting in lines to purchase building, electrical, sprinkler, mechanical, and plumbing permits by logging onto www.valdostacity.com and completing a virtual city-hall application.

Once the permit has been approved or denied, a notice is sent to the applicant, who may pay by credit card or electronic check. Permits can be printed at the home or the office. The system has

been cost-effective and convenient, compelling the city to create more online services.

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[1]Economic Development Digest, *published by the National Association of Development Organizations (NADO) Research Foundation (October 2002).*

Financing IT requires short-, medium-, and long-term planning whereby local governments must account for the following expenses: modernization efforts; ongoing equipment purchasing and maintenance; operations and personnel costs; attracting and keeping highly qualified, tech-savvy staff; and technology infrastructure and development. In Fairfax County, funding for IT programs comes from one of four funds that spread the cost over the three ranges of financial projections.[4]

Many local governments clearly do not have the staff capacity or expertise for this kind of planning and prefer hiring outside contractors for services and support. The disadvantages of outsourcing are 1) that expenses may be higher and 2) that knowledge and expertise are not institutionalized, so that they may not be adapted so easily to other business operations.

On the other hand, the advantage of outsourcing is that a local government does not need to worry about its own staffing turnovers when a staff member gains experience and expertise that can easily translate into more profitable opportunities outside local government. Of course, the inability to afford such staff members is a problem in and of itself, and project delays caused by staff turnover represent another cost.

Finally, many people recognize that an investment in IT results in cost savings through time savings, increased efficiency, improved accuracy, and greater business integration. And some IT investments can result in direct cost recovery. Many local governments fund their GIS efforts by collecting, compiling, and selling mapping information to private sector entities that use it for a range of demographic analysis and market research purposes. This fund of information—for which local governments must be careful to protect their security and privacy—is often a crucial source of funding for the maintenance of local IT efforts in general.

There Is Potential

Like interstate highways, rural electrification, and the birth of telephone service, in their days, information technology is the newest infrastructure that our society is undertaking. And, as with these developments that went before—while there is an expense and an amount of uncertainty that went along with the introduction of each innovation—there also is a potential to improve social and economic conditions with its proper use.

As stewards of community resources, local government officials should be in the position of leading this change and of creating models of economic, educational, and civic engagement through technology resources, to help generate and support the communities they envision.

Notes

[1]Ellen Perlman, “Policy, Politics and Leadership,” *Governing.com* (December 4, 2002).
[2]Jack Brennan, “How to Partner with Your CEO” *CIO* Magazine (February 1, 2002).
[3]Fairfax County Information Technology 2002 Plan.
[4]Fairfax County Information Technology 2002 Plan.

ICMA’S Technology Management Institute

ICMA has unveiled its newest center, the Technology Management Institute (TMI), which is dedicated to helping local government executives use technology to improve government through internal management and external services.

Purposes

TMI is working to help local government managers address the ICMA University competencies by:

- Establishing a network of local government executives who are working to understand the relationships between technology and management.
- Serving as a clearinghouse for news, strategies, and best practices.
- Providing professional development opportunities for the profession.
- Fostering partnerships among levels of government, private sector entities, nonprofit groups, and communities to promote excellence in governance.

TMI Activities for 2003

- **GIS and GASB 34 Webcast** will be held in March 2003.
- **ICMA’s Best Practices** activities (March 20–22, 2003), Tacoma/Pierce County, Washington. A special-guest plenary speaker will discuss the role of technology in governance. An ICMA University Workshop—Are You Ready for E-Government, E-Commerce, and the E-Lectorate?—also is scheduled. There will be technology demonstrations where local government and private sector representatives will demonstrate computer applications that have been developed expressly for local governments. The session "Managing Technology Applications in Your Back Pocket" will highlight innovative technology applications, ranging from traffic control to environmental management. Also covered will be "mobile government" and the use of technologies to document and process information so as to promote intra- or interjurisdictional data sharing.
- **Technology Leadership Forums.** ICMA is convening a group of leaders from the public and private sectors to examine technology management issues and to explore the challenges facing local governments. Forums planned for May and June 2003 will examine the role of technology in enabling local governments to fulfill their responsibilities.

- **ICMA's Annual Conference** activities will be announced in summer 2003.
- **ICMA's E-Governance Task Force.** A member-driven leadership group works to frame such technology management concerns as financing services, developing tools for varying sizes of communities, and assessing community readiness.

Through all of these activities, TMI will prepare local government professionals to manage networked, real-time, Web-savvy, and responsive organizations. Participants will formulate strategies for success in carrying out public management responsibilities affected by technology.

Functioning as a community of practice, TMI will assist managers with the ongoing, twin imperatives of understanding the impacts of rapid technological advancements and pursuing continuous improvement in governmental operations and citizen-service delivery.

ICMA's Technology Partners Offer a Range of Resources and Solutions to Local Governments

In addition to its traditional vehicles, publications, and networks, ICMA is establishing and sustaining diverse corporate partnerships to serve local governments that have technology management needs and challenges. In an effort to share new and innovative technology applications, solutions, and best practices, technology firms ranging from Motorola to Microsoft, among others, are working with ICMA and its members to enable local governments to improve their business processes and citizen services. For a list of current ICMA Corporate Partners and for the latest partner news, visit the Web site at http://icma.org/partners.

ICMA Puts the "G" in E-Gov

ICMA's Geographic Information Systems (GIS) Consortium is open to local, state, and federal government officials, private sector companies, nonprofit organizations, educational centers, and community groups. It works to:

- Encourage coordination of GIS resources among and within governments.
- Maintain a clearinghouse of information related to the management of GIS.
- Connect GIS Consortium members with private sector experts and federal agencies.

Members' benefits include participation in the GIS electronic mailing list, complimentary access to consortium publications, and participation in such activities as Webcasts and pilot projects. ESRI, an ICMA Corporate Partner, also provides complimentary registration to its user conference for local government members.

ICMA Pilot Project: Pocket P-City

Pocket P-City, conducted with ICMA Corporate Partners ESRI and HP, has supplied 10 local governments with a mobile handheld computer (from HP) and with software (from ESRI). The pilot project, which is focusing on mobile government, addresses a range of tasks, including emergency response, IT infrastructure inventory, well and stormwater quality, inspections, and

infrastructure maintenance.

GeoSpatial One-Stop

ICMA is working to test the feasibility of, build awareness of, and cultivate support for the Geospatial One-Stop (GOS) Project within local governments. GOS is a federal initiative that seeks to provide a geographic component for use in all Internet-based e-government activities across all levels of government. Specifically, ICMA has developed and administered a survey to assess local governments' engagement with geospatial data.

ICMA.org: Answers to Your Technology Questions

ICMA's Web site offers a wide range of resources that can assist local governments in implementing information technology solutions. Access to these resources is simple. Go to the "Browse by Topic" section on the ICMA.org home page, and select "Technology."

Selecting a topic or subtopic from the "Browse by Topic" section enables users to find electronic documents from ICMA's electronic library (e-Library) and from other Web sites, as well as to locate resources in ICMA's Bookstore and news articles that relate to the specified topic. Here is a list derived from ICMA's e-Library, with a small sample of helpful plans, articles, and other informative documents related to the information technology that local governments are using in their day-to-day activities. This e-library of 5,000 local government documents is accessible to ICMA members who are directly employed by local governments.

- The County of Marin and the Internet, Marin County, California (2000).
- E-Government Strategic Plan, City of Mercer Island, Mercer Island, Washington (2001).
- "Instituting E-Procurement in the Public Sector," *Public Management (PM)* (November 2000).
- "Keeping Up with Telecom: Convergence, Broadband, and Access," *Public Management (PM)* (July 2002).
- Rockville Strategic Plan for Information and Technology, Rockville, Maryland (2001).
- The Role of the Chief Information Officer: Technology Planning and E-Government in Fairfax County, Fairfax County, Virginia (2001).
- "Rural Telecommunications: Partnerships Bridge the Digital Divide," *Public Management (PM)* (July 2001).
- Telecommunications Implementation Plan, City and County of San Francisco, California (2002).
- Telecommunications in the General Plan, Davis, California (2000).
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