

Intergovernmental Solutions Newsletter

The Role of the Government Chief Information Officer

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The Role of the Government CIO

By Darlene Meskell
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In October 2007, *CIO Magazine* celebrated the 20th anniversary of its inaugural issue by looking back on how the role of the CIO, or chief information officer, had changed since 1987. Carl Wilson, now CIO of Marriott International, traced the emergence of the IT professional from data processing managers to business leaders “with a meaningful seat at the table.” Today, CIOs “are accountable not only for using technology to enable business processes but also for helping shape the strategic direction of our companies and driving profitability,” he said. “We are now expected to be business leaders foremost,” positioned “to achieve the real value of IT.”

The role of the public-sector CIO, in states, municipalities, and federal agencies, and in countries around the world, has been developing in the same fashion, and at the same pace, but lagging behind the private sector. As in business, CIOs were initially viewed as the managers of an organization's computers, but have since grown in stature to be mission-critical enablers and important strategists. They guard the gateway to innovation—that ephemeral and ill-defined quality that is seen as the key to the future. They are now expected to achieve quantum-leap efficiencies, produce previously unheard-of capabilities, create information out of disparate data sets, and provide citizen services that are so fast, accurate, and user-friendly that the public's trust in government achieves record heights.

Leaders are looking to new technologies to make their operations more economical and more effective by harnessing this relentless force that is accelerating dramatically with use of the Internet and the world-wide adoption of Web-based technologies. Following close on the heels of electronic commerce, electronic government has become a prime tool for transforming the business of government and improving the delivery of citizen services.

The role of CIO in the federal government was formally created by passage of the Clinger-Cohen Act of 1996. It centralized authority for IT in the

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White House Office of Management and Budget (OMB) and consolidated existing responsibilities for technology management in the new position of CIO in federal agencies.

A Presidential Executive Order was issued that same year requiring agencies to establish CIOs *"...with the visibility and management responsibilities necessary to advise the agency head on the design, development, and implementation of those information systems...and to promote a coordinated, interoperable, secure, and shared Governmentwide infrastructure that is provided and supplied by a diversity of private sector suppliers and a well-trained corps of information technology professionals."*

It also created the federal CIO Council as the principal interagency

CIOs are now expected to achieve quantum-leap efficiencies, produce previously unheard-of capabilities, create information out of disparate data sets, and provide citizen services that are so fast, accurate, and user-friendly that the public's trust in government achieves record heights.

forum for improving the design, modernization, use, sharing, and performance of federal information resources.

Since then, the role of the federal CIO has been shaped by the government's increased investment in IT (up to \$68 billion in 2008) and its increased reliance on information technology to do the business of government. The recognition of growing threats to cybersecurity, physical security, and individual privacy and of the need for interoperability and communication among government agencies at all levels has only intensified the significance of the CIO's role. The trend toward consolidation of back-office systems to achieve multiple efficiencies and the need to adopt constantly changing technologies to maintain effectiveness have added complexities, as has the coming-of-age of portentous IT management

issues such as "green IT," "e-discovery" and records management, and "e-democracy."

This newsletter presents the views of 17 individuals who understand the role of the CIO in 21st century government. They are the IT leaders of nations, states, federal agencies, and municipalities. They are thought leaders who have worked with CIOs and who have seen how important effective IT is to modern governing. They have differing perspectives, with some highlighting the qualities of the individual who serves as CIO and others focusing on the CIO's place in the organization. Most take a long view of the CIO as indispensable to government in the future, with an ever-expanding leadership function. And many agree with **Karen Evans**, the OMB administrator for e-government and IT, that "in this posi-

tion you must be able to do three things well: master IT policy, commit to results, and focus on transparency and accountability." **Mark Forman**, her predecessor in the job, views the role somewhat more expansively, however, as "rationalizing, securing and integrating an enterprise's vital information."

Sharon Dawes, former director of the Center for Technology in Government at the University of Albany, lays out the qualities of the government CIO. Drawing on her 30 years working with government IT professionals, she describes how the role of the CIO has evolved from chief IT coordinator, chief standards enforcer, and chief IT budgeter, to chief IT strategist, chief IT policy advisor, and, most recently, chief security officer. This combination, she says, "demands a set of competencies that cover more territory than we

demand from most other leadership positions."

Marty Wagner, formerly the federal government's chief official in charge of IT policy (now at the IBM Center for the Business of Government), frames the debate about the role of the CIO this way: The CIO "is frequently offered as a fix to the government's information technology or service delivery problems," he writes. "The discussion tends to then move on to what kind of CIO—strategic or hands-on implementer, technically oriented or business-focused—and the ubiquitous 'seat at the table' of the senior management team. So the issue is less what kind of CIO and more how to attract someone with the right talents and organizing a government agency to leverage those talents."

California just recently named its first CIO with responsibility for IT policy—**Teri Takai**. Writing here from the perspective of her previous position as CIO of Michigan and head of the National Association of State CIOs, she offers her view that the possibilities are "endless" if decision-makers are willing to give the CIO a seat at the senior leadership table. **P.K. Agarwal**, California's Chief Technology Officer, views executive sponsorship and strong leadership as essential to the success of a government IT program.

Many contributors echo their belief that it is essential for the CIO to be part of senior leadership. A former administrator of the U.S. General Services Administration who appointed GSA's first CIO, used to call for the CIO to be "joined at the hip" with the head of the agency.

The CIO is the one position at the executive table with a full view of how the organization operates, according to **Wanda Gibson**, CIO/CTO of Fairfax County, Virginia. To leverage that position, the CIO needs to focus on understanding the business, its programs, legislation, and policy—not just hands-on operations, she writes.

Ron McKerlie, who holds the dual title of corporate CIO and chief strategist-service delivery for the Province of

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Ontario, helped create a technology infrastructure that is a major departure from the government's traditional approach of organizing activities by ministries. This "corporate CIO" model is designed to strengthen links between technology and the government's business directions, to enhance leadership and coordination at the corporate level, and to have an expanding role in information management and service delivery.

An increasingly important aspect of the CIO's job is the role of innovator and agent of change. CIOs who support a culture of experimentation and innovation are critical to the future of technology in government, according to **Jerry Mechling**, director of the Leadership for a Networked World Program at Harvard University's Kennedy School of Government. Government CIOs must become effective members of the leadership team and "trusted agents of innovation and change," he writes, calling on CIOs—as a community—to make it easier to monitor emerging applications and disseminate innovative technologies.

The National Association of State CIOs states in a white paper that the role of the state CIO is to transform government through change management, and offers 10 "calls to action" to help CIOs become change leaders. The state CIO "must be seen within state government as a change leader who leads and facilitates government organizational transformation efforts in support of and in coordination with the agenda of the government, the state legislature and the state judiciary," according to NASCIO.

CIOs around the world are keen to take advantage of the emerging Web 2.0 technologies to give government the tools and connectedness of the Net Generation, and create a Government 2.0. **Ken Cochrane**, CIO for the government of Canada, believes the great challenge to his successor will be "to look further into the future and to plan, develop, and implement the next generation of government—Government 3.0."

John Suffolk, his counterpart in the United Kingdom, agrees. "The rise of technologies like Web 2.0 and social networking offers many opportunities to improve the communication between citizen and state, to develop new and responsive service offerings for those who often have no choice but to use our services, and to build new partnerships with intermediaries," he writes.

Anthony Williams, who, with Donald Tapscott, is partnering with governments around the world to define and design Government 2.0, writes about how "the new function-rich infrastructure of Web 2.0 provides public sector CIOs with significant opportunities to infuse innovation into the business of delivering services."

"These new approaches to the design of government programs and their delivery will only happen if we have imaginative, innovative CIOs in place at every level of government, prodding and pushing their leaders to create a government equal to the task of governing in a Web 2.0 world," says **Morley Winograd**, director of the National Performance Review during the 1990s and author of *Millennial Makeover: MySpace, YouTube and the Future of American Politics*. "CIOs will have to be

both teachers to their government bosses and enablers to their target service populations."

Douglas Merrill, CIO of Google (recently designated the World's Most Innovative Company by *Fast Company Magazine*), calls on government CIOs to look for opportunities to approach old problems in new ways, with "a commitment to helping their users, a fresh approach to security, and a relentless pursuit of solutions to 'solved' problems."

The CIO should be concerned with the quality of the information he or she controls and whether it meets the needs of citizens and other users, Web content consultant **Gerry McGovern** writes from Northern Ireland. "The great (management guru) Peter Drucker once said that we've spent the last 50 years focusing on the 'T' in IT, and we'll spend the next 50 years focusing on the 'I.' It is my experience that precious few IT professionals understand the true value of information/content."

Bill Vajda, CIO for the U.S. Department of Education, takes a broad view of the role, reaching back to the early days of the American Republic, when the role might have been termed "Chief Scribe." Attributing the effectiveness of today's CIOs to those who have gone before, Vajda sums up the role of the CIO in government as being "like standing on the shoulders of giants, and enjoying the view." ■

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The Role of the Federal CIO as Established by the E-Gov Act of 2002

The Administrator for E-Government and IT

The E-Government Act of 2002 established a Federal Chief Information Officer in the Office of Management and Budget and created the Office of Electronic Government and Information Technology, which is headed by a Presidentially appointed Administrator.

The Administrator provides overall leadership and direction to the executive branch on electronic government and oversees implementation of IT throughout the Federal government, including:

- Overseeing the E-Government Fund to support interagency partnerships and innovation in using E-Government;
- Directing the activities of the CIO Council, which consists of Federal agency CIOs, advising on the appointments of agency CIOs, and monitoring and consulting on agency technology efforts;
- Advising the Director of OMB on the performance of IT investments, as well as identifying opportunities for joint agency and government-wide IT projects;
- Overseeing the development of enterprise architectures within and across agencies, which is being fulfilled through the Federal Enterprise Architecture, the framework for describing the relationship between business functions and the technologies and information that support them;
- Overseeing specific IT reform initiatives, activities, and areas of shared responsibility relating to:
 - Capital planning and investment control for IT;
 - The development of enterprise architectures;
 - Information security;
 - Privacy;
 - Access to, dissemination of, and preservation of government information;
 - Accessibility of IT for persons with disabilities; and
 - Other areas of electronic government.

Agency CIOs

The federal agency CIO's role was established by law in the Information Technology Management Reform Act (Clinger-Cohen Act) of 1996 and strengthened by the E-Government Act of 2002.

The E-Government Act called on CIOs to consult key stakeholders throughout their agencies, including program and project managers, content managers, librarians, public affairs representatives, records managers, and human resources managers.

CIOs were told to consider the following when selecting IT investments:

- Delivering services and information to citizens electronically;
- Reducing burden on citizens and businesses;
- Determining that the investment is part of the agency's modernization blueprint;
- Ensuring interoperability of systems; and
- Simplifying business processes and reusing technology where applicable.

Specific CIO requirements include:

- Participating in the functions of the CIO Council;
- Monitoring implementation of IT standards, including common standards for interconnectivity and interoperability, categorization of federal government electronic information, and computer system efficiency and security;
- Ensuring Privacy Impact Assessments are conducted and reviewed for applicable IT systems; and
- Insuring that agency IT training programs comply with IT development provisions for the Federal workforce. ■

The Role of the Federal Government's CIO

By Karen Evans
Administrator, E-Government and Information Technology
Office of Management and Budget

Chief Information Officers today—in both public and private sectors—must be proficient business managers as well as knowledgeable about technology and systems management. In the past, CIOs were only expected to be competent in managing operations—and responding to anxious executives who misplaced their network passwords. In recent years, as technology has developed at warp speed, it has become clear the CIO cannot adequately support an organization's mission without having a comprehensive understanding of the

Twenty years ago, technical expertise was the critical variable; today, the CIO must possess the leadership and communication skills to propose the potential of doing "business" differently and more effectively.

organization's business goals. Twenty years ago, technical expertise was the critical variable; today, the CIO must possess and/or develop the leadership and communication skills to propose the potential of doing "business" differently and more effectively. In this position you must be able to do three things well: master IT capabilities and policy, commit to results, and focus on transparency and accountability.

As Administrator of Electronic Government and Information Technology at the Office of Management and Budget (OMB), I serve as the deputy CIO. I oversee the implementation of IT throughout the Federal government and advise the Director of OMB on the performance of the approximately \$68 billion spent yearly on Federal IT invest-

ments. I also oversee the development of enterprise architectures within-/across agencies, direct the activities of the CIO Council, and oversee the use of the E-Government Fund to support interagency partnerships and innovation. I also have responsibilities in capital planning and investment control, information security, privacy, accessibility for persons with disabilities, and access to, dissemination of, and preservation of government information.

When named administrator in 2003, I inherited a new organization full of vision and promise. The E-Government

Act of 2002 had formally mandated cross-agency collaboration on e-government, and the President's Management Agenda called for expanding e-government and for making government work more efficiently. Not surprisingly, however, Federal agencies were resistant to sharing resources and working across boundaries.

There was a reluctance to embrace a cross-agency shared-services model which impeded progress on the 25 Presidential E-Government Initiatives and slowed establishment of Lines of Business (government-wide efforts to provide common sources for basic, government-wide services). Agencies were content to discuss the strategic approaches but resisted moving into an operational phase.



With a mandate to deliver significant, tangible results, recognizing the challenges to E-Government were not due to the technology per se, but rather the need for strong-willed change management to use technology to achieve efficiencies on a government-wide basis. By working with the agencies to use shared services providers, the Federal Government was venturing into uncharted waters. Agency managers lacked the tools and mechanisms (and thus the confidence) to ensure external service providers delivered a level of service commensurate with in-house providers. The challenges were understandable considering the lack of experience with E-Government – but not insurmountable.

Leveraging legislative precedent embodied in the Privacy Act of 1974, Clinger-Cohen Act of 1996, and E-Government Act of 2002, OMB developed a framework to sustain the implementation of cross-agency efforts. Key components included transparency (via frequent agency reporting and public posting of performance measures), accountability (via the President's Management Agenda scorecard, the budget process, and various executive directives), and a focus on outcomes rather than outputs. This framework empowered agencies to determine their own courses of action.

On the basis of the framework, agen-

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cies' efforts have yielded positive, timely results for the E-Government and Line of Business initiatives:

- All 25 E-Government initiatives have launched and are operational, leading to major improvements in citizen service and increases in the efficiency of government operations. For example:
 - More than 3.9 million taxpayers in 2007 filed tax returns online using the Free File E-Government initiative.
 - GovBenefits.gov has served over 22 million visitors and provided over 5 million citizen referrals to government-provided benefit programs.
 - Through the E-Payroll initiative, the Federal government has consolidated from 26 payroll systems to 2; and the government-wide E-Travel initiative reduces agency travel management costs.

- Nine cross-agency Lines of Business initiatives have been established, in areas ranging from Federal Health IT, to Financial Management, to Information Systems Security. The IT Infrastructure LoB alone is estimated to yield \$19 to \$27 billion in savings government-wide over the next 10 years.
- E-Government has been incorporated into the Federal capital planning and budgeting process, institutionalizing cross-agency concepts in service of lasting results. These achievements speak to the need for an innovative approach to the management of technology and for translating these concepts and tools into other arenas. In the past year, we have implemented important cross-agency efforts, including the government-wide migration to IPv6, the establishment of standard ID cards/credentials for Federal employees and con-

tractors (known as HPSD-12), provided detailed information regarding Federal spending (contracts, grants, or otherwise) via USASpending.gov, and improved citizen access to Disaster Assistance support programs. In each case, success entails harnessing the collective wisdom of Federal agencies to function as one government focused on delivering results.

It will be gratifying to see results: how well cross-agency efforts transform the U.S. government into a truly efficient, citizen-centric organization by using technology more effectively to deliver superior government services.

■ *Karen Evans oversees implementation of IT throughout the Federal government, directs the activities of the federal CIO Council, and oversees use of the E-Government Fund to support interagency partnerships and innovation.*

Changing Role of the CIO

By Mark Forman
Partner, IT Advisory
KPMG LLP

For years, we've heard people say, "If only the people in government could work together!" Often this lament comes from a beleaguered citizen who has tried to get help from a government employee who is unable to work across agencies to solve problems.

All too often this decade, U.S. citizens have asked their government for help in a crisis. But, as the 911 Commission and other studies have found, a lack of collaboration across agencies and levels of government creates serious consequences for Americans.

Since Senator Cohen introduced legislation in 1995, the vision for the job of the government CIO has been to mod-

We are early in a transitional period where the CIO may be the only person who can figure out what to do about voluminous overlapping agency data bases that support single purpose applications. In fact, in this new, emerging role, the CIO will become less a technologist and more a business leader who can create a broad information framework for the enterprise. Knowledge of how to integrate operations may become more important for the CIO of the future than knowledge of technology.

For most of the past 15 years, the 'I' in CIO really referred to "IT". The CIO was primarily an "information technology" guru, responsible for figuring out



silos have strong incentives to protect their operational interests and little incentive to give up their rice bowl to make the entire enterprise healthier. At the same time, CIOs have not been able to change their role and power relationship with business unit executives, which is necessary if CIOs are to drive enterprise business transformation.

Today, technology is being used to create "services" that enable people to accelerate getting insights out of data, making decisions, and acting as an integrated enterprise. The "I" in CIO may become just "Information" and imply a much more important role: rationalizing, securing and integrating an enterprise's vital information. CIOs will have to provide leadership, vision, and the framework enabling an agency to function as an integrated whole. All this is occurring while a new generation of workforce enters government, having grown up with the Internet, and brings a new set of issues to CIOs. Not an easy task at all.

Evidence of this emerging new role can be seen in the commercial software world. Enterprise information and enterprise integration go hand-in-hand, and commercial firms now want software that integrates operations. Responding to this demand, companies like SAP have moved to an enterprise services concept and away from creating modular, discrete applications. It has become

The CIO is rapidly becoming the information point person for an enterprise – figuring out how to enable better collaboration and information sharing, while developing information policy and securing information.

ernize government, driving business transformation by using technology so that government works better.

That's still a role for the CIO but, in the coming years, no longer the only role. Single purpose applications that improved performance in the 1990s have created information silos that are today a major source of risk to organizations. The CIO is rapidly becoming the information point person for an enterprise – figuring out how to enable better collaboration and information sharing, while developing information policy and securing information. It's also important to note that the CIO role is evolving as governments are experimenting with the Chief Technology Officer concept.

the most efficient and cost-effective way to implement new technology so an agency could do its work. In the 1990's, the predominant IT project was a single purpose application coupled with a dedicated database. Often, the application merely collected data, assembled a data base, and produced reports.

Several years ago, the CIO focused on governance of technology spending and gaining control over IT infrastructure. Functional elements of the organization "owned" the applications, and the silos continued to grow. Even today, few CIOs have been able to shake their IT infrastructure label and gain control over the business units' siloed applications. The people who own information

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too expensive, too risky, and too slow for businesses to use independent IT applications that create inconsistent data and limit interoperability. That explains why you see big database firms buying business process applications companies, enabling processes to be assembled around a consistent set of corporate data.

CIOs are in a unique position: they see the opportunity and challenge of integration, without being encumbered by the incentives that create agency silos. But they should not take their eye off of the next round of technology trends. A huge emerging opportunity that will challenge and define the role of the modern CIO is the rise of Web 2.0 tools (e.g. Twikis) and social networking sites like Facebook and MySpace. These tools reduce transaction costs and barriers, while taking advantage of the “knowledge of masses” to improve quality and results of collaboration. Because of the content management

and collaboration capabilities, there are new information policy issues. If history is any guide, government agencies take to new IT pretty quickly – but in a disorganized fashion.

These emerging web-based technologies present another fundamental challenge. In the old days, CIOs could carefully oversee the adoption of new technologies through IT investment controls. But Twiki technology, for example, is cheap, ubiquitous and can't be easily controlled – yet it must be leveraged to benefit the enterprise.

CIOs who learn how to harness the power of these “Web 2.0” phenomena and make these trends work to the benefit of the government will be hailed as the next great visionaries. But this will be particularly challenging for many CIOs, who will have to develop expertise needed to reconcile information policies for content creation and sharing, as well as grapple with the government's siloed approach to IT. So the

CIOs who base their career on the unofficial title of “tech expert” will likely be pushed aside for those willing to take on bigger roles in information policy and enterprise business optimization.

The job of the CIO is certainly not going to get any easier in the coming years. Integrating processes and protecting information is a far more complicated task than 10 years ago when the main job was making smart IT purchases. But it's a certainty that in the future, agencies that do the best job of serving the citizenry, will likely have CIOs who understand the new world. ■

Mark Forman was appointed Administrator of the Office of E-Government and Information Technology in the Office of Management and Budget from 2001 to 2003.

What Makes a Successful CIO?

By Sharon S. Dawes
Senior Fellow, Center for Technology in Government
University at Albany/SUNY

Want to succeed as a government chief information officer? Here's what you need to know.

The position we call Chief Information Officer didn't exist in the 1970s when I began my now-30-year engagement with government IT. Most likely, the person in charge of technology for a government agency was called the Director of Electronic Data Processing (EDP) – and the idea that there should be a government-wide leadership position devoted to strate-

In the past decade, the position of CIO... has evolved from chief IT coordinator, chief standards enforcer, and chief IT budgeter, to chief IT strategist, chief IT policy advisor, and, most recently, chief security officer. In short, CIO is not a single role but a combination of roles. It demands a set of competencies that cover more territory than we demand from most other leadership positions.

gic use of technology still was many years in the future.

The notion of technical leadership, of course, was salient decades ago, but mostly it meant keeping the lights blinking in the computer center and trying to keep costs down and mistakes to a minimum. Times have changed.

In the past decade, the position of CIO has become a fixture in government management. It has evolved from chief IT coordinator, chief standards enforcer, and chief IT budgeter, to chief IT strategist, chief IT policy advisor, and, most recently, chief security officer. In short, CIO is not a single role but a combination of roles. It demands a set of competencies that cover more territory than we demand from most other leadership

positions. In working with dozens of CIOs in national, state, and local governments, I've come to understand just how hard the job can be – and what it takes to succeed. I leave it to others to discuss essential personal characteristics and necessary political requirements. I want to talk about the things a CIO must know and do—in other words, competencies that can and must be learned.

These boil down to five core considerations: strategic thinking and evalua-

tion, systems orientation, appreciation for complexity, information stewardship, and technical leadership.

Strategic Thinking and Evaluation

For CIOs, the key strategic issues surrounding IT in government emphasize in-depth understanding of the program and policy goals that drive the selection and use of IT. These issues demand broad consideration of the public service impacts of IT-based initiatives, as well as careful assessments and decisions about what kinds of efforts are worthy of initial and continued public funding. This kind of thinking makes it more likely that organization-wide interdependencies and priorities



are understood and supported and that government-wide initiatives are given the critical analysis and evaluation they deserve.

Systems Orientation

This competency addresses the relationship between IT and the fully fleshed-out functioning of an agency, program, or policy initiative. “Systems-oriented” in this sense means much more than information systems. It extends to an appreciation for the many interacting elements that make up “service systems” such as Social Security or property tax assessment, as well as broad “social systems” such as public safety or higher education. It encompasses awareness of the organization, its functions, and its environment as an interconnected whole, and it recognizes how strongly IT shapes work processes and the operation of policy choices. Because these processes often cross work units, agencies, and levels of government, appreciation for process and workflow provide powerful lenses for identifying and tackling the conflicts, overlaps, gaps, and mismatched expectations that so often lead to poor performance.

Appreciation for Complexity

The ability to lead and manage complex IT-supported program initiatives goes well beyond the ability to specify,

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plan, budget, and execute a complicated work plan. Rather, it emphasizes appreciation for the special requirements of large scale, high-risk, high-visibility projects whose participants seldom hold exactly the same values and expectations and often report to different leaders. This kind of complexity requires:

- The capacity to negotiate and communicate with a variety of players;
- The patience to understand the true nature of the enterprise; and
- The ability to recognize, manage, and mitigate the risks that are inherent in the highly interdependent, multi-organizational settings that characterize so many public programs.

Information Stewardship

The CIO's job is generally understood to be about technology – but the heart of the matter is actually information. The best CIOs know this, and they take responsibility for promoting information quality, transparency, usability, and preservation. Data management, quality control, and technical migration strategies are all necessary components of stewardship for which CIOs have leadership responsibilities. Because government information systems almost always raise these and other information policy issues (about access or confidentiality, for example), CIOs need to be at the forefront of these concerns so appropriate stewardship capabilities are routinely built-in, not haphazardly bolted-on, to information strategies, systems, and services.

Technology Leadership

This is the basic expectation for CIOs, and it's no less important today than it was 30 years ago. The nature of this expectation, however, has changed dramatically. When IT was confined to closed internal processing systems, the expectation was pretty straightforward: build (or buy) and operate systems that accurately and efficiently process

Competencies of Successful Chief Information Officers	
Strategic Thinking and Evaluation	<ul style="list-style-type: none"> • Business and Policy Reasoning • IT investment for Value Creation • Performance Assessment • Evaluation and Adjustment
Systems Orientation	<ul style="list-style-type: none"> • Environmental Awareness • System and Social Dynamics • Stakeholders and Users • Business Processes • Information Flow and Work Flow
Appreciation for Complexity	<ul style="list-style-type: none"> • Communication • Negotiation • Cross-Boundary Relationships • Risk assessment and Management • Problem Solving
Information Stewardship	<ul style="list-style-type: none"> • Information Policies • Data Management • Data Quality • Information Sharing and Integration • Records Management • Information Preservation
Technical Leadership	<ul style="list-style-type: none"> • Communication and Education • Architecture • Infrastructure • Information and Systems Security • Support and Services • IT Workforce Investments

transactions for a particular organization. Then we wanted technology leaders to avoid the attention of the “front office.” Now we want them on the leadership team to communicate with and educate other leaders about the possibilities and risks of technology. Architectures, infrastructures, policies, human resource investments, and all kinds of contractor relationships are prominent elements of technology leadership. And, the ever-increasing complexity of government programs mean we need technologies and information strategies that cross boundaries, take advantage of networks, and keep an eye on an ever-changing array of new tools, concepts, and, yes, threats.

In short, today's successful govern-

ment CIO needs an array of skills and knowledge that bridge policy, organizational, technical, and political spheres. Much of the work depends on skill and knowledge, but it also rests on a certain perspective about the role – a perspective that embraces complexity, risk, technology, and change as necessary ingredients in the generation of public value.. ■

Sharon Dawes was the founding Director of the Center for Technology in Government and served in that capacity from 1993 to 2007.

Success Depends on the Abilities of the CIO and the Readiness of the Organization

By G. Martin Wagner
Senior Fellow
IBM Center for the Business of Government

The creation or strengthening of a CIO is frequently offered as a fix to the government's information technology or service delivery problems. The discussion tends to then move on to what kind of CIO—strategic or hands-on implementer, technically oriented or business focused and the ubiquitous “seat at the table” of the senior management team. There is even a sub-debate on whether the CIO should be subordinate to the Chief Financial Officer or vice versa—a discussion that fails to recognize the important differences between these important roles.

The more useful discussion is on ensuring that the CIO has the right skills and that the organization is ready to respond. Well-designed roles can be executed poorly and even good processes can be managed badly. Success depends on more than bringing in yet another person with a title.

Let's begin with why we might want a CIO. Technology is difficult. It is game changing. It will do more to change how organizations work and society interacts with government than almost any other factor. It is no longer about the back room, internal operations, or doing more with less. It is about doing completely different things in completely different ways. We can't leave technology to the technologists, nor can we allow the business side to make decisions without considering the technology. Technology is interwoven with everything we do. Business as usual won't work. Someone needs to pay attention.

As technology transforms society, programs that were once viewed as independent affect the same citizens in different ways and must be brought into alignment. New tools allow employees to field applications outside the IT shop that can support customers in the short term, but may create major problems in the long run. Looking internally, the application that was once devoted to

...the CIO needs to be able to enforce how expenditures are made. Otherwise, the organization will choke under the weight of locally effective systems that fail to work together for the enterprise.

one group must now be resized to deal with multiple groups. The economies of scale are clear, but the governance arrangements are not. Organizations that have ensured service delivery through direct control now need to find mechanisms to safely depend on providers other than themselves.

The rate of technological change continues to be high. The right technical answer for today may be the wrong technical answer for tomorrow, so work on aligning today's solutions to tomorrow's remains critical. Even the IT operating model is being forced to change from one that is application centric (you upgrade an application to meet new requirements) to one that is services centric (applications are services on a network that evolves with customer needs).



These and other trends mean successful organizations need to have effective mechanisms for integrating technology and mission solutions. They need to be more agile. They need effective governance structures that enable

enterprise applications to support multiple users who need to know they can depend on the applications in a crisis. Finally, operational models need to change since application services need to be more flexible and responsive than the traditional applications development process.

This is why we see successful organizations focusing on the talents of their executives, flexible architectures, improved internal governance, and a tight relationship between the business and technology sides. This is where the CIO must play a critical role. An effective CIO has one leg in mission delivery and one leg in the technology and must bridge the gap between the two communities.

On the talent front, the CIO needs to have vision and be skilled in both the technology and the mission. This is not

Continued on next page...

a common talent, and people who have it tend to be compensated at more than the government rate. Those already in government should be prized. If not available in government, it is necessary to go outside rather than succumb to the temptation to name an existing government official who lacks the necessary qualifications.

The CIO also needs to understand the government or work closely with those who do. Operating effectively in government is hard for outsiders to master. As one wag put it, in the private sector a decision is the beginning of implementation while in the public sector a decision is the beginning of negotiations. A CIO from the private sector will need guides from within to succeed in the government environment.

On the organizational side, the organization must cede power to the CIO. Typically, this comes through the budget process. The CIO may control all

the resources or sign off on their use. The specifics may depend on the characteristics of the organization, but the critical factor is that the CIO needs to be able to enforce how expenditures are made. Otherwise, the organization will choke under the weight of locally effective systems that fail to work together for the enterprise.

The CIO needs to be an effective member of the executive team. This is much more than the "seat at the table". Not everyone at that table has influence. The CIO needs to be someone who does. He or she needs to actively participate in executive decision-making and, more importantly, get the executive team to support IT decisions. This has become absolutely critical since nearly all important decisions cross organizational lines.

Finally, the CIO needs to be accountable for service delivery, but must operate within a governance framework that resolves issues that cross organiza-

tional lines. Nearly all projects involve the participation of many groups. Nearly all important projects have problems that can only be resolved when there is a joint process to get the problem to the right group and then resolution. Failures of governance will lead to failures in program delivery.

So the issue is less what kind of CIO and more how to attract someone for the CIO position with the right talents and then organize the government agency to leverage those talents. Organizations that recognize the importance of information technology to service delivery and the need to manage appropriately can leverage the talents of a capable CIO. Those that don't will be left behind. ■

Marty Wagner was the first Associate Administrator for the GSA Office of Governmentwide Policy, charged with developing governmentwide IT policy.

The Brave New State CIO

By Teri Takai
Chief Information Officer
State of California

Only one thing holds constant in information technology and that is change. The role and demands for top IT leaders are also on the move. Today's Chief Information Officer is progressing beyond operational executive to chief business strategist and innovator, as well as to cross boundary broker and policy leader.

And it really is different for the state government CIO. We must deliver on daily operations, gain efficiencies in light of shrinking state budgets, and

The potential for government transformation depends greatly on the relationships between CIOs and agency partners. If decision-makers are willing to give the CIO a seat at the executive team table, then the possibilities are endless.

meet expectations that we will work across and beyond boundaries—all in the face of increased scrutiny from legislators and the media.

Five years ago, when I exited the private sector to enter public service, the typical CIO tenure was about a year and a half. Today, the average tenure—according to the National Association of State CIOs—has doubled to nearly three years.

In addition to holding our positions for longer periods of time, the pool of public CIOs is drawn from a larger variety of career paths. A fair number still hail from within local and state government. These individuals tend to be technological and operational in focus. Some CIOs come from the private sector, bringing with them a focus on strategy and innovation. Still others are former legislators or lobbyists who have a policy focus.

The good news is that, through all of this, the role of state CIO has risen in importance. The bad news is that, through all of this, the role of the state CIO has risen in importance... operational excellence is no longer enough.

Today, we are navigating major organizational changes along with transitions between administrations, dealing with legacy equipment and budget constraints, preparing for pandemic flu and disaster recovery, and building collabo-

rative efforts around health information and electronic records management.

As part of the governor's policy team, some CIOs are even active players on projects like economic development and broadband deployment. The value of the CIO to the governor's agenda is more visible and is receiving more recognition as governors increasingly view CIOs as key strategic partners.

So with all of these competing interests and juggling of responsibilities, what action steps can the savvy state CIO take to be successful?

Getting There: Top Five Action Steps for the Savvy State CIO

Step 5: Don't Discount Strategy

CIO's need to develop appropriate strategies and action plans to build momentum around IT projects both large



and small. Success does not happen by accident or in a vacuum. Pay attention to your administration's priorities as well as those of peers and the experts; develop capabilities in tracking, assessing, planning for and managing technology and best practices.

Step 4: Organizational and Operational Maturity Matters

Governance processes, portfolio management, enterprise architecture, and project management must be in place, and inputs from agencies and citizens need to be an integral part of business planning. Be sure to invest in your staff. The solid skills and competencies of both the CIO and the leadership team are essential to successfully meet these new role requirements.

Step 3: Build Partnerships. Start Today!

The potential for government transformation depends greatly on the relationships between CIOs and agency partners. CIOs must fully engage customer business drivers, demand, relations, and governance requirements. A successful history of cross-boundary partnerships will be pivotal in achieving success. If decision-makers are willing to give the CIO a seat at the executive team table, then the possibilities are endless.

Continued on next page...

Step 2: It's Not a Popularity Contest

Remember, there will always be naysayers! But perseverance on the part of CIOs will pay off and contribute significantly to the excellence and efficiency of citizen service.

Step 1: Keep Your IT House in Order

None of the work to innovate government will matter if the IT networks are down or the servers are crashing. Maintaining essential IT services for citizens and agencies should always be the highest priority.

Looking ahead

In addition to structural and historical precedence, opportunities and possibilities for CIOs also vary based on the CIO's experience. Those just entering the job are focused on the first 100 days—setting the stage, building credibility, and making the organization their

own. More established CIOs are starting to focus on leadership and management development and some strategy and policy activities.

Proactive state CIOs are preparing for the next level of service to their agencies and the state's citizens by maintaining an edge and moving their IT organizations forward. The focus must turn to:

- Enterprise-level innovation;
- Fostering partnerships and serving as liaisons across agencies and beyond government borders; and
- Focusing on business and process redesign.

The CIO role has already begun evolving into three major components:

- The **functional role**, which currently predominates;
- The role of the **strategist and innovator**, becoming established in selected jurisdictions; and
- The role of the **cross-boundary broker and policy leader**,

emerging in organizations both within the United States and beyond.

While each state is evolving at its own pace, for a variety of reasons, we all seem to be heading in the same direction.

As we are entering this brave new world, leaping tall buildings in a single bound, we must also remember that organizational excellence and service delivery cannot be cast aside. If we are not able to deliver on the routine, daily technology operations—the critical needs of our citizens and agencies—the rest will remain beyond our grasp.



Teri Takai was CIO and Director of the IT Department for the State of Michigan and President of the National Association of State CIOs when she submitted this article.

Take 5 (Ideas) for IT

By P.K. Agarwal
Chief Technology Officer
State of California



When thinking about the value of IT and the role of the CIO, consider these five ideas:

1. IT Is an Economic Force

We are in the midst of an economic sea of change. The well-paying jobs are shifting to areas such as information technology and telecommunications, as well as other knowledge industries like education, biotechnology, and financial management. While agrarian and industrial economies were geocentric, this new knowledge economy is people, information, and infrastructure centric, transcending geographic boundaries. IT is the underpinning of this new knowledge-based global economy. Already, IT is the second largest component of the U.S. economy (12%), following Health Care (16%). Governments need to pay close attention to policy issues surrounding IT, ensure they reap the benefits from IT, and capitalize on the potential advantages IT provides in the evolving knowledge economy.

2. Constituents Have Come to Expect the “Amazon” Experience and More

In the midst of the go-go days of the late 90's during the Internet boom, e-Government was born. Many forward-looking technologists and government policy makers realized the potential of the Internet to change government in ways that had never been imagined before. Much like the Berlin wall, the walls of government could be made to tumble down. Many clichés came about—such as the 24/7 government, government at your doorstep, “online not in-line”—to name a few. All of them were metaphors for a single powerful

idea – to take government information and transactions and make them available via the Internet. Most government agencies immediately embraced the concept of e-Government. Accordingly, many routine government services involving licenses, registration, and reservations are now available online. However, so far we have done just the easy part—we have taken government transactions as is and put them online. IT insiders sometimes call this “putting lipstick on a pig” or “paving cow paths.”

Here's the hard part—capitalizing on the power of the Internet to transform government services. There is a

Sponsorship for this IT agenda needs to come from the chief executive, and the CIO needs to provide the leadership for change... Being a CIO is not a technical job. Being a CIO is a leadership job.

realization that the Internet offers the potential for achieving a lot more than putting existing services online. Internet could take the “silos” of government and bring them closer together, perhaps even integrate them into a single cohesive service function. This idea has been given many names such as “functional, not organizational,” “life events,” or “no wrong door.” The underlying idea is very simple. Let's mask the organizational complexity of government and put it “behind the curtain.” The customer sees a view that is truly customer-centric. Thus, instead of navigating the web sites of multiple agencies to start a new business, one could go to a single web page and all of the requirements and interactions would be available on a single web page.

Sound easy? It's not! This is hard because it requires different silos of government to work together. It is no longer a technology challenge, but a people and process challenge – a leadership challenge. But, at the other end of this challenge lies a government that can truly be transformed and serve con-

stituents in ways never before imagined.

Finally, while we grapple with these transactional issues, new Internet-based tools and technologies are being born and have value for constituents. These new tools and technologies are clustered under the label of Web 2.0. Tools such as video, podcasting, blogs, and social networking can provide a new value to constituents by making “24/7 government online, not in-line” a reality.

3. IT Can Help Make Government Services More Efficient

It is not uncommon for a typical government program to have 25% to 30% of its resources go into information handling functions or administration. There is a lot to be learned from the private

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sector experience of supply chain management and enterprise resource planning. Intelligent application of new IT technologies can help lower the cost while making the service more effective and more readily available. The end result could be that more of these program dollars go toward providing services instead of administrative tasks, such as processing paperwork and handling information.

4. IT Infrastructure Is As Critical As Roads, Electricity, Water, and Other Utilities

A common definition of a utility is that you only realize its existence when it is not there. A utility is expected to be predictable and stable in its performance. In the case of IT utilities, the expectation is for it to be available 100% of the time, "24/7 forever." It is an interesting sign of our times that many people would forgo utilities such as water or electricity before they would give up their e-mail or Internet access. In fact, when these common utilities are unavailable, the IT utility becomes even

more critical. Common IT services such as e-mail, other messaging services, and Internet access are now, in effect, a new utility.

A successful utility requires a robust infrastructure behind it; a perfect example would be railroads. The critical IT infrastructure is telecommunications. Generally speaking, government has a limited role in provisioning the IT infrastructure. However, as a major buyer of telecommunications services and for policy reasons, government needs to ensure that telecommunication infrastructure is being developed to meet current and future needs.

5. IT Deserves a Seat at the Cabinet Table

If the four ideas outlined above are to be addressed successfully, they need attention at the highest levels of government. These issues cut across traditional organizational boundaries and need considerable investment. IT needs a strong voice on the chief executive's agenda. Absent that voice, it sends a message that this issue is not critical

or strategic enough, and change will not take place. Obviously, the person representing these IT interests at the cabinet level needs to have political and business skills, as well as credibility. Those business skills need to extend well beyond the business of IT to the business of government. Being a CIO is not a technical job. Being a CIO is a leadership job.

Every major transformation requires strong sponsorship from the top and leadership to initiate and sustain the change. Significant policy issues as well as substantial funding decisions need to be made. Sponsorship for this IT agenda needs to come from the chief executive, and the CIO needs to provide the leadership for change, thus setting the stage for success in the new century. ■

P.K. Agarwal is President of the National E-Commerce Coordinating Council and a former President of the National Association of State CIOs.

Role of the CIO/CTO in Fairfax County Government

By Wanda M. Gibson
Director & Chief Technology Officer
Fairfax County, Virginia

Fairfax County, VA, one of the wealthiest counties in the United States, faces major challenges and opportunities due to the heightened expectations of its constituents, citizens, and business community for high-quality, high-tech services. To be successful in meeting their demands, the county's Information Technology (IT) resource must be contemporary, responsive, flexible, scalable, and secure.

In FY1994, the Fairfax County Board of Supervisors initiated a study that led to the creation of an executive level CIO/CTO to head its new Department

The centralized approach allows larger county departments to have their own IT staffs to lead projects and be first-tier resources for smaller department-specific applications. The IT staffs in other departments have a matrix-reporting relationship to DIT, which provides architectural standards consultation, enterprise tools, licenses and platforms, new-project planning, budgeting for continuity, and alignment with cross-cutting initiatives to control overall investment value.

In Fairfax County, the IT department is closely aligned with other information-related functions of government,



Being connected to the county departments and being inclusive, open-minded, and collaborative have been critical to making the CIO concept work here.

Recognizing that the CIO directly affects county policy and the way technology is used, the Board of Supervisors appointed two committees to provide advice, policy consideration, and strategy and to review IT investment plans: an internal executive governing committee and a separate advisory committee composed of outside executives who reside in the county. They help the CIO support the Board's vision and priorities, leverage information and technology assets to create a secure, stable technology infrastructure for all departments, and provide convenient access 24/7 to information and services for citizens. The process ensures that there is a high-level champion for IT and that solutions are chosen that match the goals of the enterprise as a whole, giving the CIO a direct link to the Board of Supervisors and a sounding board within the county.

Managing the dynamic of change and common enterprise approaches is often challenging, with significant time and effort spent in team-building and staff re-alignment. It is important to keep up skills in the face of an ever-growing, diverse portfolio of systems. It is also important to temper enthusiasm of

Organizations like ours, which don't have a single "uber"-CIO with highly centralized budget and planning authority, must be supported by a process that concentrates on oversight of enterprise-wide collaboration for technology budgets and planning, standardization and integration, and goal setting. Placing the CIO position at the right level within government is crucial to accomplishing this mission.

of Information Technology (DIT). DIT provides centralized technology architecture framework and enterprise level technology infrastructure and managed systems and projects for all county government agencies.

Under the Board's plan, the CIO is part of the county's executive management team. He or she oversees the department and technology countywide and manages the enterprise technology investment process and funding, with authority over county-wide IT planning.

such as the enterprise infrastructure and e-government program, the library system, cable television, document services, and the Office of Public Affairs. This alignment has been particularly successful in supporting enterprise-wide initiatives such as customer relationship management systems; geographical information systems; document imaging, content, and workflow management; and the county's Web, kiosk, Interactive Voice Response (IVR), and alerting/notification systems.

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agencies that want new technology immediately and to optimize business efficiencies before new technology is acquired. This means more focus on the key IT positions that are not just 'technobots' but will be a positive force in fostering group dynamics and cooperation between business and technology. Other key senior management functions must be in place, as well, including portfolio management, project management, IT security, and a chief technology architect with a capability for research and development of technology standards.

The Fairfax County CIO fosters regionalism and collaboration with state and federal governments. He or she plays a critical role in national security, if only because of the county's location in the suburbs of Washington, DC. Working toward interoperability in the 21 jurisdictions in the National Capital Region, state and local CIOs in Virginia, Maryland, and the District of Columbia endeavor to connect key communications infrastructures and create common standards for secure exchange of data and information.

The NCR Interoperability Program supports regional emergency response, recovery, re-unification, and mitigation goals supporting public safety, health,

and homeland security. Collaboration on security issues is absolutely essential in this region, but it is not the first cross-government program the county has undertaken successfully. Years ago, the "Government without Boundaries" project created a website where federal, state, and county recreation facilities were posted in a single place so citizens seeking information wouldn't have to navigate far to find out what public parks there were in Fairfax County. This pilot project later grew into the Recreation.gov Presidential E-Gov Initiative.

Our local CIO is viewed as a valuable "C"-level executive. With a good reputation for sound leadership and balance, coupled with a keen sense of issues and foresight, he or she can make a major contribution to the county's innovative financial and resource management and its overall reputation for excellence.

The CIO and CTO roles have evolved well beyond IT management and stewardship of information assets to mission- and knowledge-enabler. As the one position at the executive table that has a full view of how the organization intersects, the CIO needs to lead the IT organization to focus on understanding the business, its programs and

industry, legislation and policy—not just hands-on operations. The CIO model that has been adopted by the Fairfax County Government really is one to prioritize; establish standards and policy; ensure integration, cooperation, and collaboration; and promote innovation and excellence in customer service.

The CIO must be a visionary, setting goals based on the vision and strategic direction of the organization and rallying people to achieve these goals. The CIO must also promote the achievement of goals internally and externally, both to show progress and to set an example. Organizations like ours, which don't have a single "uber"-CIO with highly centralized budget and planning authority, must be supported by a process that concentrates on oversight of enterprise-wide collaboration for technology budgets and planning, standardization and integration, and goal setting. Placing the CIO position at the right level within government is crucial to accomplishing this mission. ■

In 2007, Government Technology Magazine named Wanda Gibson as one of government's most influential women CIOs.

Leading Transformative Change Within Government: The Role of the CIO

By Ron McKerlie
Corporate CIO & Chief Strategist-Service Delivery
Government of Ontario, Canada

In Ontario, Canada, the provincial government is in the midst of a sweeping modernization program focused on improving efficiency as well as the quality of service delivery.

In my role as both Corporate Chief Information Officer and Chief Strategist Service Delivery, I am responsible for helping to accelerate the delivery of operating efficiencies as

The CIO's primary role is to ensure alignment of information and information technology with the business directions and priorities of the government.

well as improvements in service delivery. The corporate CIO's office and, indeed, the entire organization are focused on an enterprise-wide approach of consolidation and standardization to facilitate services that cost less and deliver better value.

Ontario is home to 12 million people, who represent one-third of the Canadian population and 40% of its GDP. More than half of the people have a post-secondary education. Ontario is also one of the most ethnically and culturally diverse populations anywhere in the world.

To serve this highly demanding, diverse population, the government employs roughly 60,000 staff located in about 1,100 locations across the province. Services range from health care to education to highways, provincial policing, courts, jails, and social assistance.

All of these services are considered

mandatory for a strong, healthy, and prosperous Ontario that offers a high quality of life to the people who live and work here. And all of these services need technology solutions and support to be successful.

The Fundamentals

Modernizing government has required a strong enterprise approach,

supported by multiple parallel streams of effort. For example, there are numerous information and information technology (I&IT) enabled business initiatives intended to transform the government; these include integrated service delivery to the public, internal shared services, and changes to the way we organize and govern ourselves.

Part of modernizing public service is providing the underlying technology, information, infrastructure, and processes to enable the Ontario government to act as a single enterprise. A common I&IT infrastructure for the government offers a foundation for providing public services. It enables us to manage government information simply and effectively, enhance our capacity to use and share information across the enterprise, strengthen our efficiency and accountability, and deliver on government priorities in innovative and cost-effective ways.



By acting as one enterprise, we have also been able to generate savings of more than \$100 million a year in annual operating costs (approximately 8% of our IT budget). We've accomplished this primarily through consolidation of infrastructure – our network services, telecommunications, e-mail services, desktop services, servers, and data centres.

Where We Were

Until about a decade ago, individual Ontario ministries adopted infrastructure technologies that met their unique business needs. This resulted in many systems that could not communicate with one another and were costly to maintain. It made it difficult or costly to coordinate functions or share information across the government.

A 1997 review revealed that several critical obstacles stood in the way of our ability to transform government through I&IT. These included the lack of corporate authority and capability to provide enterprise-wide direction, an inadequate existing IT structure, and diffuse accountability for financial control over IT spending.

To tackle these obstacles, an I&IT Strategy was developed around a few essential components – a new organization, common infrastructure, policies, standards, and, most importantly, vision. Together, these components

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would help the government drive and enable business transformation initiatives and enterprise directions across ministries, while managing the rate of growth in technology expenditures.

As the pace of change escalates and advances in technology create new opportunities and challenges, the development, implementation, and updating of I&IT policies and standards continues to be a key focus for the I&IT organization.

The I&IT Organization Model – An Integrated Approach

The I&IT organization was reconfigured into what we now refer to as the federated model and was set up to implement the Ontario government's new integrated approach to I&IT. It is made up of the Office of the Corporate Chief Information Officer, also known as the Corporate Centre, and eight business clusters.

The Office of the Corporate CIO includes functions such as strategy, architecture and standards, security, privacy, service delivery, and program management. The business clusters have a portfolio type set-up, where they support application development and information management for anywhere from one to eight ministries.

This organizational structure is a major departure from the government's traditional approach of organizing activities by ministries. It is designed to strengthen links between technology and the government's business directions and to enhance leadership and coordination at the corporate level. It

results in a strong corporate CIO model that provides corporate leadership for I&IT in the government and advances the government's business vision. The model supports flexible, responsive, and innovative public service and enables the government to provide modern and efficient services.

The corporate CIO model has a large degree of corporate influence and direction over information and technology in regards to strategy, policy, architecture, and standards. With responsibility for I&IT controllership, the Office of the Corporate CIO delivers consolidated infrastructure, security services, common or "enterprise" applications, and IT services. The corporate CIO model also has an expanding role in information management and our service delivery strategy.

The CIO's primary role, as head of a business cluster, is to ensure alignment of I&IT with the business directions and priorities of the government. The corporate CIO and cluster CIOs are positioned to look and act across the organization – I&IT resources serve clusters of ministries based on common themes, clients, and needs.

The cluster CIOs focus on business solutions and application development. Going forward, they will have an expanded leadership role in information management as well as more accountability for I&IT business solutions. They will also help integrate business requirements across the organization and approve implementation plans for initiatives and applications that will serve the entire organization.

There have been challenges along the way. Maintaining business and IT alignment at a corporate and ministry level and demonstrating the value of I&IT in a tight fiscal environment are a few of the challenges we face.

Part of our response to the challenges includes establishing and communicating a clear vision and action plan. We recently confirmed our vision, mission, and values and launched a new five-year I&IT strategic plan. The plan outlines five major goals and 26 strategies for the I&IT organization to support improved service delivery. The five goals are:

- More reliable, cost-effective IT solutions
- Convenient, accessible service delivery
- Improved information management
- Better engagement and e-collaboration
- Dependable, professional I&IT staff.

Our approach to transforming the Ontario Public Service into a modern public service starts with a vision, leadership from the top, and a focus on a few key priorities. Add to that mix a healthy dose of targets, performance measures, and implementation. Top it all off with consistent relentless communication. With all these ingredients, we believe Ontario has found a winning recipe for success! ■

What Does Your CIO Really Need to Know?

Dr. Jerry Mechling
Faculty Chair, Leadership for a Networked World
Kennedy School of Government
Harvard University

CIOs are responsible for information technology, so that's what they need to know, right?

Well, yes, partly. They need enough technology to decide on infrastructure, operations, and staff, and when they need help. They need to maintain legitimacy "down and in."

However, as technologies continue to grow explosively more productive,

quent and less-structured work: data and analysis for medical research or battlefield awareness is much different than for payroll. Infrastructure, including computer skills, has also become pervasive: the Internet -- even with wireless and broadband connections -- has rapidly woven connections around the globe. Serious applications can now be built within a few months and flexibly

...it important for CIOs to know how technology can shape strategic goals and implementation within and across programs, agencies, jurisdictions, and industries.

your CIO also needs to build relationships "up and out." So... here's what your CEO *really* needs to know:

How Information Technology Influences Goals and Strategy

Fundamentally, work is a series of **if/then** steps. If you've worked a certain number of hours at a known rate and with known deductions, then calculating your paycheck is straightforward. If the work can be objectively codified, computers can do much of it once they've been programmed to follow the routine.

This was true even with expensive computing, but only for high-volume, well-structured operations. Think payroll again or -- more generally -- accounting. Computerization was automation, infrastructure was limited, and applications were rigid, typically taking years to implement.

Over the past 20 years, however, off-the-charts productivity growth has enabled computerization for less-fre-

modified as new needs emerge; consider Wikipedia and YouTube.

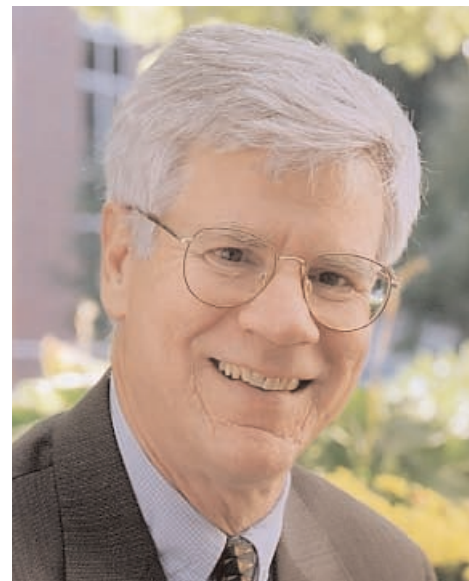
Fundamentally, we've shifted from a technology usable only after the routines were well-established to technology serving as an up-front change agent for all sorts of social, economic, and political innovations.

This makes it important for CIOs to know how technology can shape strategic goals and implementation within and across programs, agencies, jurisdictions, and industries. You don't find the best opportunities anymore by looking down and in. You need also to look across and up and out and to implement via negotiation as well as command-and-control.

How To Be Part of the Leadership Team

As CIOs focus on strategic innovation, they need to earn their place on the leadership team.

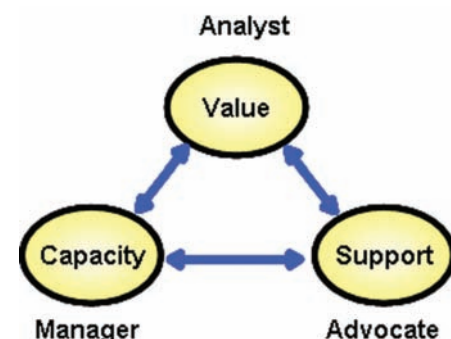
In the private sector, CIOs and other leaders focus on building organization-



al capacity in relation to two critical groups: customers and competitors. With a good strategy, the organization produces value for customers greater than that offered by competitors.

In the public sector, the challenge is similar, yet more complex. See Figure 1.

Figure 1



Organizational *capacity* is again one element. The organization must learn to analyze, decide, organize, control, and innovate. For IT-related issues, it must develop infrastructure. *Public leaders, including CIOs, must have strong skills as managers.*

Value, again, is the second element of the triad. But where private value can be assessed largely by analyzing customers, public value requires more complex analysis. Governments deliver *obligations* (requirements to pay taxes and to not speed or not pollute) as well as services (education, recreation, and

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health care). Governments must thus analyze the entire community, not just those they deal with directly. Leaders need to understand market failures and make tradeoffs among productivity, equity, transparency, uncertainty, and immediacy. *Public leaders, including CIOs, must have strong skills as analysts.*

Finally, in the public sector, the third part of the strategic triad shifts from competition (which guides and constrains via markets) to *political support* (which guides and constrains via the authorizing environment). Governments need capacity to create value in ways that gain political support. Leaders must negotiate their case in the face of competition. *Public leaders, including CIOs, must have strong skills as advocates.*

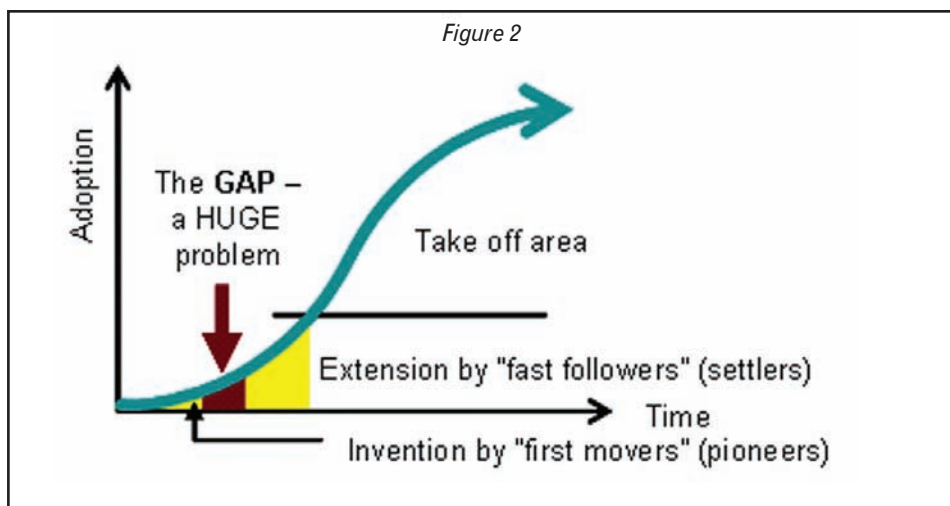
What CIO's really need, as individuals within the leadership team, are skills as managers, analysts, and advocates, with good judgment to balance and align those elements.

How To Improve the Dissemination of Innovations

In addition to working effectively inside the enterprise, CIOs, as a community, need to share knowledge with outsiders to improve the dissemination of innovations. See Fig 2.

The S-shaped learning curve all too often exhibits -- near its beginning -- an unproductive chasm between pioneers and settlers, between the first movers who develop an innovation and the fast followers who apply and adapt it until it is robust enough to take off on its own. Distance and distrust raise barriers, partly because those most strongly motivated to carry innovations to new locations are vendors. The "fast followers" are often properly suspicious of vendor-supplied information, becoming "not so fast" followers.

We need better networking within



the CIO community. This can be facilitated by organizations such as the Federal CIO Council, the National Association of State Chief Information Officers (NASCIO), and the National League of Cities, and by publishers such as *eRepublic* and *Governing Magazine*.

In a world dependent on innovation, these scouts of "what's happening out there" are extremely important. Note that net-delivered reporting is becoming more important than paper, and conferences are being leveraged with streaming video and webcasts.

Given these trends, CIOs need to follow their own advice and use technology to:

- Make it cost-effective to find trustworthy information on innovations.
- Identify applications that have penetrated to 5% of the potential users, but not yet to the 30% that typically results in "take off."
- Assemble the bureaucratic tools needed for action -- good examples and explanations of: budget proposals, RFPs, winning bids, project plans, job descriptions, program evaluations, and speeches given about IT-enabled innovations.
- Share the experience of early adopters.

Yes, we still need task forces to travel and check innovations "up close and personal." But we should also make it easier to reach early adopters via video to explain what to do and what to avoid. How about assembling global CIO advisory boards and meeting via video?

In general, government CIOs as a *community* need to make it easier to monitor emerging applications and support dissemination.

The world is becoming more turbulent. We live in a global, knowledge-based economy, with an aging population, under unyielding financial pressures. Innovation will be key to our success, especially to harvest the capabilities of digital technologies.

As we move deeper into the 21st century, CIOs must become effective members of the leadership team and trusted agents of innovation and change. Filling these roles will define what the CIOs *really* need to know. ■

Transforming Government through Change Management: The Role of the State CIO

By Doug Robinson, Executive Director
and Eric Sweden, Enterprise Architect
National Association of State CIOs

State government is facing a number of dramatic changes from Medicaid reform and burgeoning regional health organizations, an aging workforce, an aging population, more and more need to do more with less, changing expectations from citizenry, more collaborative relationships with federal government. Change is the norm and its velocity is increasing. States are responding with a variety of solution paths including outsourcing, in-sourcing, shared services, consolidation, and potential intergovernmental collaborations, partnerships and purchase agreements. Collaborative relationships that cross lines of business are on the rise.

As state government faces new challenges it must recognize that change has become an inherent characteristic of any organization. As information technology, and knowledge management capabilities arrive on the horizon, change will become even more rapid. Global economic dynamics are having an impact on every facet of American life. And citizens are looking to government to provide leadership and vision in an uncertain world.

The state CIO has risen to and must be seen within state government as a change leader who leads and facilitates government organizational transformation efforts in support of and in coordination with the agenda of the governor, the state legislature and the state judiciary. Those agendas must in turn reflect the agenda of the citizens of the United States.

Therefore, the state CIO must acquire and continually hone skills in leading change and organizational

transformation initiatives. The state CIO must be able to assimilate a myriad of information regarding the aforementioned uncertainties, and deliver government capabilities that protect the interests of the citizens. So, how is this done? How is government organization transformed? And how is this transformation perspective embraced within an ongoing operation that reshapes itself as necessary to effectively identify challenges, understand the impact of these challenges, and launch appropriate response?

More than any other skill, the change leader must be a communicator. Characteristics of effective CIOs

The state CIO has risen to and must be seen within state government as a change leader who leads and facilitates government organizational transformation efforts...

include the following. Exemplary communications skills are inherent in each of these characteristics.

- *Listening* more than telling.
- Managing *relationships* one at a time.
- Establishing *trust* within the organization.
- Maintaining a *sense of mission* that is focused on *ultimate outcomes*.
- *Motivating* associates who are dedicated to serving state citizens.
- Providing the *capabilities* to associates to initiate change.
- Engaging the necessary *resources*, wherever they may be found
- *Delivering* results

And all of this must be done within the limited tenure of a state CIO.



In state government there have been multiple failed attempts to make change using the “big bang” approach. This has been consistently ineffective. Typically the next CIO coming in after one of these attempts is tasked with “smoothing things over” so everyone is working together again. State government is distinctly different from private enterprise. In many ways, it is far more complex in terms of organizational models, exter-

nal relationships, motivations, and funding. This brings about certain bounding on how government establishes and implements strategic initiatives as well as operations.

Given the nature of state organizations, transformation efforts rely more heavily on stakeholder support than what may be experienced in the private sector.

Stakeholders are primarily the agencies within the executive branch. Other critical stakeholder relationships include the governor and the legislature. Most stakeholders will provide support along the transformation path – however, a significant concern within state government is interruption of services, disruption to the organization, and

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lengthy initiatives that don't promise results within the short tenure of some officials. A large transformation initiative therefore presents significant risks related to completion of the initiative within the short time frames relevant to policy makers, and the potential disruptions to operations that span administrations. Large transformation efforts may be viewed as too chaotic to gain sustained support.

These concerns and perceptions naturally drive transformation efforts in state government toward an incremental delivery process. This approach provides the capability to properly manage risk, expectations, and relationships, ensuring transformation efforts have long term success.

Change management and transformation efforts gain additional support if they are tied to initiatives such as establishing best practices, or standards. The underlying rationale for these initiatives will be change management, and transformation – but establishing this intent can be challenging. Stakeholders will understand the benefits of standards and establishing best practices when they may not embrace outright transformation. This strategy then reiterates the tenability of an incremental delivery process. One step at a time, one department, one line of business, one agency at a time.

State CIO Calls to Action

State CIOs must see themselves as

change leaders. In developing the strategies, and the management initiatives and projects that deliver on those strategies, the CIO will provide many of the enabling capabilities to deliver the goals and objectives of the governor, the state legislature and the state judiciary. ■

This article was excerpted from NASCIO's April 2007 white paper entitled: "Transforming Government through Change Management: The Role of the State CIO." See www.NASCIO.org.

Calls to Action	
1.	Develop knowledge and skills in organizational transformation and change management in both self and staff. Maintain an enterprise perspective. Work toward a Change Competent Organization.
2.	Establish a process for managing transformation in incremental steps. Leverage program and project management discipline in planning and implementing change initiatives.
3.	Establish collaborative relationships. Internal relationships must include the director of human resources that will enable the ongoing development of associates. External relationships must include relevant expertise centers.
4.	Emphasize leadership knowledge, skills and behavior in self and associates.
5.	Create a "learning organization" that is continually adapting, learning from mistakes. Approach unforeseen events and even missteps like a High Reliability Organization – always seeing the learning value from such circumstances so the organization is always improving.
6.	Encourage innovation.
7.	Cultivate trust throughout the organization.
8.	Leverage enterprise architecture as the enabler of continual transformation. Maintain a perspective of enterprise architecture as a management discipline not simply a methodology for managing technology.
9.	Partner with the state legislature on transformation initiatives – share the credit with the legislature when progress is made and initiatives are successful.
10.	Stay in contact with peers within the NASCIO community to share ideas regarding what works and what doesn't. Be aware of what is happening in other states. Continually collaborate with other CIOs in order to test ideas.

The Role of Canada's CIO: Delivering Results for Canadians

By Ken Cochrane
Chief Information Officer, Treasury Board Secretariat
Government of Canada

Evolving technologies and a focus on sound management have increased Canadians' expectations of their government.

Canadians expect services that increasingly respond better to their needs. They want government to offer services in real time, and they expect to be able to contact and transact with their government from anywhere they want. They also expect that services are joined-up and effective across federal, regional, and local levels.

Canadians also expect better value-for-money for their tax dollar. They want to have access to more information and to be able to assess the government's effectiveness in managing and delivering programs and services. They want to take part in decision.

Yesterday, the Internet made information and services readily accessible. Today, the government of Canada is putting the plans in place to address Web 2.0. Tomorrow, the tools we develop will further help us contribute to Canadians' lives.

The Evolving Role of Canada's CIO

The role of the government of Canada's Chief Information Officer (CIO) has evolved significantly since the creation of the position in 1993. In the early days, the Chief Informatics Officer was mainly responsible for IT technology architecture, interoperability, and establishing associated internal policies.

Over the past 13 years, the scope of the CIO has expanded to include responsibilities such as information

management (IM), access to information, privacy, service delivery and security. Through the test of time and award-winning government-wide initiatives like the Government On-Line (GOL) and Service Improvement Initiatives, the Chief Information Officer's role has become one of leadership and stewardship, community enabler, and the sound management of human and financial resources in government.

Canada's CIO leads the government-wide pursuit of excellence in service delivery and in the management of information and technology and ensures

Tomorrow, the new role of the CIO for the government of Canada will be to look further into the future and to plan, develop, and implement the next generation of government—Government 3.0

a prominent role for the effective management of IM and IT resources across institutions within this mandate.

The federal CIO's horizontal perspective allows a holistic view of government operations and allows the CIO to identify, enable, and in some cases, lead transformative and management opportunities for the government as an enterprise.

The CIO contributes to the future vision, ensuring institutional readiness and implementing new organizational concepts across the Canadian federal government. As the largest organization in Canada, the government employs 470,000 people, operates 1,600 points of service across the country and abroad,



and serves Canadians through diplomatic and consular offices in 180 countries.

The CIO works with partners across Canada's jurisdictions, the private sector, and internationally in leading the way forward to make better use of information and communications technologies and to enhance service delivery to Canadians.

For example, Canada is currently looking at ways to develop common approaches to ensure the sound management of identity. The CIO is looking at the next wave of technological tools, namely through the next generation of the Internet—Web 2.0—where individuals are part of a broader community and are making use of innovative tools to communicate better.

By utilizing these new communications technologies in innovative ways, we can take advantage of opportunities to better serve Canadians, to be more proactive, and to communicate more effectively – at home and abroad.

One way we are innovating and refining the way we communicate with citi-

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zens and businesses is through the powerful online tools we are developing. For instance, government research allows us to better understand what Canadians think about our organization, what we do, and how we do it.

Through online public opinion research, we can now talk directly to thousands of people to learn what they think, where their priorities are, and what their needs and expectations for government of Canada programs and services are.

The government of Canada has achieved a lot, but whatever our past success, we cannot afford to become complacent about the future. We need to address the way forward and how to make use of innovation and technology to better serve Canadians in the 21st century.

The Next Phase - Government 2.0

With innovation and by making the best use of our resources and the tools we have—like information manage-

ment, information technologies, and our service delivery models—we can strengthen our relationship with Canadians, better understand, serve, and communicate with them. We can also better listen to them and give them a voice.

In turn, delivering on Canadians' expectations will result in increasing their trust and confidence in their government and the public service.

The government of Canada has been recognized many times for its citizen-centred approach to serving Canadians. The ultimate goal is not only for Canada to be a world leader in service delivery, but for Canada to build a strong relationship with its citizens.

The same concept applies to private sector institutions that adopt a client-centred approach to increase client satisfaction and strengthen client loyalty in order to increase their client base and profitability.

Tomorrow, the CIO will evolve in a new environment, where information and communications technologies are

increasingly available and heavily relied on by new and future generations of citizens.

Canada's CIO will work with community stakeholders, clients, and citizens and across institutions and jurisdictions to improve our policies, programs, and services.

The government will move away from a one-way, service-offering model, to an ongoing dialogue with our citizens. We will put the citizen at the centre of our decisions and better report on our actions. We will have better integrated systems and services and ensure better value-for-money. We will have Government 2.0.

This is not a vision for the future; it's something we absolutely must do. Tomorrow, the new role of the CIO for the government of Canada will be to look further into the future and to plan, develop, and implement the next generation of government—Government 3.0. ■

The Role of the CIO

By John Suffolk
Chief Information Officer, Cabinet Office
United Kingdom

Judging by the literature, there are at least as many ideas about the role of the CIO as there are CIOs. In some models, we are engineers, building reliable, complex, delivery processes. In others, we are bureaucrats, setting and enforcing rules on how people can and should use information. Or perhaps we are technologists, forever extolling the virtues of the latest gadget or IT fashion?

The key role of a CIO is to deliver solutions to business problems. The rise of technologies like Web 2.0 and social networking offers many opportunities to improve the communication between citizen and state, to develop new and responsive service offerings for those who often have no choice but to use our services, and to build new partnerships with intermediaries.... In short, I would say that the challenge for us is simple. We need to change CIO from a noun into a verb.

In reality, we are all a mixture of these roles and many more besides, depending on what we are working on and what we need to achieve. So, rather than roles these are really behaviours.

The challenge for us is to adopt the right persona at the right time. If the business or project needs us to behave like an engineer, then behaving like a technologist may be a sure route to failure.

Similarly, just because one project requires us to behave like engineers doesn't mean that all our projects need the same approach.

As government CIOs, we have a huge advantage over our private sector colleagues. We can readily share experience

and issues with colleagues in a way that is very hard for others to do. We can discuss common problems and issues with colleagues in a way that people in the private sector have difficulty doing because they might lose their competitive advantage. The only thing we have to lose is face.

In my role, it often seems that I am as much a deal broker and an entrepreneur as anything else but I know that I

can turn to colleagues for exemplars and guidance when I need to behave more like an engineer or a bureaucrat.

We are still building those relationships in UK government, but already there has been a change in how we operate. We have begun to work together to tackle common requirements and identify opportunities for building common infrastructure and shared services so that we can drive up quality and value for money. The work on Transformational Government, led by the CIO Council, is an example of how that new approach is very quickly bearing fruit and delivering visible improvement in how we deliver systems and services.



Understanding what behaviours and skills we need in a particular role is a core part of our emerging model of IT Leadership. Being a CIO is about being able to consistently deliver success in a rapidly changing environment. That means we need to be able to shift our behaviours to reflect the environment.

But roles are also about structures and organizations, and as CIOs we have some big advantages. We are able to look across our organizations in a way that few others can. And we are able to relate opportunities to solutions in a way that perhaps no one else can.

However, we can only do this if we are willing to look outside our own silos and challenge the mindset, often self-imposed, which says that "I am only here to deliver this system" or "I just manage this service."

The key role of a CIO is to deliver solutions to business problems. The rise of technologies like Web 2.0 and social networking offers many opportunities to improve the communication between citizen and state, to develop new and responsive service offerings for those who often have no choice but to use our services, and to build new partnerships with intermediaries.

But this will only happen if we can frame technological solutions in a way that makes sense to business and customers. Technology does not drive change; opportunities drive change.

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Technology can provide those opportunities, but someone has to be able to make that relationship explicit and that is the “role of the CIO.”

In order to do that, we need to:

- Work with colleagues from across the business to understand, listen to, and challenge their ideas, needs, and assumptions.
- Get out and talk to our service users to make sure that we understand what it is like to experience the systems and services we provide.
- Talk to suppliers and challenge them to deliver whilst being clear

about the outcome we want to achieve.

- Talk to our counterparts so we can learn what works, what the new opportunities might be, and how we can work together to deliver this.

In the UK, we are making progress in all these areas, though it is still early days. We have, for the first time:

- The Delivery Council, which brings together all the service delivery elements of government.
- The CIO Council, which brings government CIOs together as an executive body.
- An IT profession that is based on

industry standards and backed by a developing career path.

These are all successful developments, but we cannot stop there. We need to continue to build our professional capacity, engage with those who depend upon us, and demonstrate success.

In short, I would say that the challenge for us is simple. We need to change CIO from a noun into a verb. ■

Enabling Government 2.0: Providing Leadership for Government Transformation

By Anthony D. Williams
Co-author, *Wikinomics*, and
Vice President, Government 2.0, New Paradigm

In a recent conversation, John Suffolk, CIO of the United Kingdom, characterized the role of today's public sector CIOs by saying "the one common thread across all jurisdictions is that we all say, 'I have neither money, nor resources, nor power.' And I think that this is a perfect model."

Why would Suffolk champion a model where the CIO's apparent role is so constrained? "Because you make progress when you have a compelling

The new function-rich infrastructure of Web 2.0 provides public sector CIOs with significant opportunities to infuse innovation into the business of delivering services.

argument," he said. "In a loosely federated world, which governments are, you can't tell people what to do; you can't use traditional ways of running a private sector business. But when you create compelling visions and people are doing things because it's the right thing to do for citizens, you get automatic traction." In short, lack of resources needn't translate into lack of influence in government.

Two questions follow: What is the right thing to do for citizens, and where will CIOs get the automatic traction that Suffolk describes? The answer to both is nothing less than a wholesale transformation of government and governance, including the strategies for delivering services, the technology available to support public sector employees in their jobs, and the tools and processes for setting policy and engaging the citizenry in dialogue. The

role of the public sector CIO is to establish a compelling vision for these transformations and then provide the leadership for change.

Accelerating Service Transformation

After decades of effort and investment, governments that once supplied standard transactional services through a fragmented public bureaucracy are increasingly providing citizens

and other stakeholders with a single window to public services. But as new waves of innovation wash over the Internet, it is time for governments to move up the capability ladder yet again. Once the sine qua non of e-government, single window service offerings constitute one-way information flows to the citizen and are no longer sufficient in a world where customers are increasingly accustomed to participating in dynamic online communities.

The new function-rich infrastructure of Web 2.0 provides public sector CIOs with significant opportunities to infuse innovation into the business of delivering services. For example, the age-old question of "who does what" can now be answered more creatively than ever before. Public services need no longer be provided by government alone; they can be provided by any combination of



public agencies, the private sector, community groups, or citizens, using the Web as a mechanism for collaboration, innovation, and engagement.

Public service providers seeking to target young people can use Web services and widgets to syndicate the delivery of services and information through new venues such as Facebook and YouTube. New waves of mobile and pervasive computing will enable governments to deliver highly individualized "anytime, anywhere" services to a generation of young users who increasingly access the Web through cell phones and mobile computing devices.

Enabling a 21st Century Work Environment

A second challenge is to modernize the tools that government employees use to accomplish their jobs. Many employees, especially young people, arrive in the public sector workplace and are dismayed to discover that many of the applications and devices they are accustomed to using in their personal lives are not available for them to use professionally.

Drawing on their experience on sites such as Facebook and YouTube, young government professionals increasingly employ blogs, wikis, and social networking tools to form ad hoc communities that transcend departmental and organizational boundaries, only to have

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their enterprising efforts stamped out by senior managers. These new collaboration tools can enable greater innovation, collaboration, and agility in the public sector if they are properly supported and secured. It is largely up to CIOs to help overcome the technical, strategic, and cultural barriers inherent in this new way of working.

Preparing for Digital-Era Policymaking

In most countries, policymaking has always been a static, top-down process. Politicians study issues, seek counsel from a select group of advisors, deliberate, and enact laws on the population's behalf. Most citizens are on the periphery, playing no role other than casting a ballot every few years.

But times are changing. Emerging Web 2.0 technologies make the process of engaging citizens in policymaking easier and less costly than ever before by providing tools to support knowledge creation and community building—two core aspects of digital-era policymaking. For example, government agencies can post background information on the Web and use online videoconferencing to bring in expert testimony. Web-enabled forums can provoke discussion and debate among hundreds, thousands, and even millions of geographically dispersed participants. Wikis provide a platform for collaborative editing of policy documents, while social-networking technologies can connect citizens and organizations with common goals and interests.

The role of the CIO is to provide a digital infrastructure that ensures that governments can marshal the external sources of knowledge and expertise required to cope with an increasingly complex social, political, and economic environment.

Tackling Privacy and Security

The overarching priority at the top of every government CIO's 2.0 watch list is the twin challenge of privacy and data security. As already discussed, citizens

expect customized services and better integration across government agencies and levels of government. Employees need the ability to work remotely and to collaborate freely across departmental silos. Citizens demand greater transparency from government and a genuine role in democracy. All of this means increased data sharing, which raises enormous challenges in protecting the privacy of citizens and ensuring that sensitive data is properly secured. In today's loosely federated environment, this means establishing a minimum set of privacy and security standards that all participants in public-value-creation must adhere to, whether agencies and their employees, partners in the private and non-profit sectors, or citizens themselves.

Public sector CIOs will inevitably face opposition from citizens who want to play a more active role in managing their own data privacy, much the way savvy Web users are demanding control over the personal information private companies collect and how it is used. How much access should citizens get to their own data, and how much freedom will they have to say with who they want to share their data? These are tough questions.

There is already a sizeable movement in many countries that says, "I don't want my data shared with anybody." So governments must convince the citizenry of two things: 1) that data sharing is central to increasing service quality, maximizing speed and convenience, and lowering costs and redundancy; and 2) that agencies have iron-clad tools for protecting government networks and data centers against intrusion, as well as robust procedures to prevent stupefying data security bumbles—such as the recent disappearance of two discs containing the personal details of 25 million child benefit recipients in the United Kingdom.

Overcoming the Crisis of Leadership Transforming the structures of government from command-and-control hier-

archies to innovative and agile networks of public and private participants is proving to be a major challenge. Deep and resilient legacies combine to frustrate progress. Common obstacles to change include conflicting timeframes and motives, particularly between the public service and politicians; a lack of incentives to innovate; and the absence of urgency in many quarters.

Persuasion has long been one of government's most crucial powers, and CIOs will be called upon to master the art. Some early challenges will include:

- Persuading agencies to experiment with Web 2.0 technologies and new strategies for delivering services;
- Persuading managers that social networking technologies are not a distraction but an essential tool in today's workplace;
- Persuading customers that data sharing will result in greater convenience and higher quality services.

It is truly a time when government either plays an active and positive role in its own transformation or change will happen to it. The transformation process is at the same time exhilarating and painful, but the price of inaction is a lost opportunity for government to redefine its role in a new golden age of democracy. Public sector CIOs can and should be leaders in driving this change.

■
Anthony D. Williams is the coauthor of [Wikinomics: How Mass Collaboration Changes Everything \(Portfolio 2007\)](#) and is vice president, [Government 2.0](#), at [New Paradigm](#).

Governing in a Web 2.0 World: The Role of the CIO

By Morley Winograd
Executive Director, Institute for Communication and Technology Management
University of Southern California, Marshall

Despite the best efforts of both the Bush and Clinton Administrations to reinvent or reshape America's government, our governing institutions remain locked in institutional structures created during President Franklin Delano Roosevelt's New Deal. Advances in communication technologies, such as social networks, wikis, and virtual computing environments, will help break down those struc-

tures and enhance the performance and transparency of government at all levels. It is to this task that the next generation of government CIOs must direct their efforts.

constantly interact with each other and are most comfortable with peer-to-peer communication architectures. This behavior reflects a strong orientation toward the needs of their circle of friends as well as the larger community. Both of these characteristics will play a key role in producing a distinctive "millennialist" approach to government, which will be as different from today's federal government as FDR's

CIOs will have to be both teachers to their government bosses and enablers to their target service populations if the promise of improved performance is to be married to the increase in transparency that politicians will be promoting.... These new approaches to the design of government programs and their delivery will only happen if we have imaginative, innovative CIOs in place at every level of government, prodding and pushing their leaders to create a government equal to the task of governing in a Web 2.0 world.

tures and enhance the performance and transparency of government at all levels. It is to this task that the next generation of government CIOs must direct their efforts.

Millennialist Government

The demand for such reforms will be propelled by the rise of a new generation, "millennials," born between 1982 and 2003, who have lived their entire lives on the Net and communicate with their "friends" as easily in graphics and images as older generations use print and words. Millennials

centralized, progressive approach was from the laissez-faire, hands-off approach he inherited.

Millennials are likely to endorse an organizational approach that decentralizes the administration of government, even as government and its functions are expanded. In order to pull off this double play, CIOs will need to rethink the fundamental computing architectures of their agencies and introduce platforms more conducive to constant, two-way communications. Dispersed decision-making structures, modeled after the search algorithms of Google



and the group-editing concept of Wikipedia, will need to be introduced into the process by which agencies develop their policies, communicate them to the legislature and the public, and assure their successful implementation.

Web 2.0 Policy-Making

During its last legislative session, Utah launched a very successful pilot of an approach to policy-making that incorporates these ideas. Politicopia.com enabled increased citizen involvement and participation in policy-making, while preserving the constitutional role of representative legislative bodies. It was founded by a Republican Utah state legislator, Steve Urquhart, who wanted to create a place "where Utahans could debate issues coming before the legislature."

Technologically, Politicopia operates on a user-controlled wiki system that allows anyone to join the discussion. Andrew Rasiej, founder of the Personal Democracy Forum and a strong advocate for more openness in government, described Politicopia this way: It "is more of a repository of ideas and discussions where issues can be debated and information can be added over time." Voters leave behind "both a record and an aggregation of voices to define an issue." Its use in Utah changed the legislative outcome on

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two different proposals—in one case adopting the more conservative approach and in the other a more liberal perspective.

This approach meets all three of the conditions that John Surowiecki, author of *The Wisdom of Crowds*, suggests must be present for the judgment of a group to be better than a selected group of experts:

- The crowd or group must be diverse in its makeup and opinions.
- Each member of the group must be fairly independent of all other members in order not to be unduly swayed by the opinions of others.
- The group must be given a way to understand or know the aggregate of everyone else's ideas.

Improving Performance

Once informed legislatures have adopted legislation that incorporates the public's input, a new system for monitoring and measuring progress in the implementation of these laws will also have to be built, based on the technological competence and advice of the CIO in the agency responsible for administering the new legislation.

The front line implementation of these new policy ideas is likely to reside far from agency headquarters. Many

millennialist policies will call upon non-government groups, such as faith-based and/or community specific volunteer organizations, to be the primary contact for individual citizens and families seeking to take advantage of the new policy.

Capturing the work of these new players in the increasingly integrated world of public/private partnerships in ways that maintain the integrity of the government's accounting systems and the privacy of each individual will require CIOs to devise web-based tracking systems whose hierarchy of permissions and security protections will be more sophisticated than what most agencies are currently comfortable deploying. CIOs will have to be both teachers to their government bosses and enablers to their target service populations if the promise of improved performance is to be married to the increase in transparency that politicians will be promoting.

In 2000 the last year of the National Partnership for Reinventing Government, members of the task force created their own vision of a "Virtual Town Square." It was designed to enable citizens to monitor the performance of their government, as well as contribute to improving it. The vision was limited by

the technologies existing at the time. Now, with Web 2.0 technologies available to more and more citizens, there is no reason why such an approach could not be deployed in ways that enable citizens to not only find out what and how their government is doing, but work with each other to help achieve the outcomes that lawmakers and agencies envisioned when they created a given program.

These new approaches to the design of government programs and their delivery will only happen if we have imaginative, innovative CIOs in place at every level of government, prodding and pushing their leaders to create a government equal to the task of governing in a Web 2.0 world. Every current and aspiring CIO should begin to gain the skills and knowledge necessary to successfully execute this key role in the future of American democracy. ■

*Morley Winograd is the former Director of the National Partnership for Reinventing Government (NPR). He and Michael Hais are co-authors of *Millennial Makeover: MySpace, YouTube and the Future of American Politics*, published by Rutgers University Press.*

Bringing Innovation to Your Agency

By Douglas Merrill
Vice President, Engineering and Chief Information Officer
Google, Inc.

Today's government CIOs face an extraordinary challenge of keeping pace with the innovations in technology while helping their organizations accomplish their missions.

By remaining focused on their users, re-thinking some traditional models of security, and looking for new solutions, government CIOs can take advantage of the ever-changing world of technology and play a leadership role in helping their agencies achieve their goals.

Consumer technologies are advancing at a rapid rate. Taking the Internet as just one example, consider some facts:

- The web doubles in size every four months.
- Content appears on the web in 130 languages.
- Every minute of every day, more than six hours of video is uploaded to YouTube.

In addition to this astounding growth in content, consumers have access to all manner of useful applications on the Internet -- in many cases for free. Most of us experience the dramatic growth in computing power -- commonly known as Moore's Law -- in the technology we carry with us every day. A single device that fits in the palm of our hand can play music, give us directions, browse the Internet, take photographs, make phone calls, and more.

And yet, when our employees arrive at work, we expect them to give up the convenience and power of the technologies they're accustomed to using.

What does this pace of innovation mean for the government CIO? According to a Yankee Group study:

- 86% of employees use at least one unsanctioned consumer technology at work.
- 49% of employees say their personal technology is more advanced than that of their employers.
- 54% of employees claim they would be more productive at work if they had access to the same applications and devices they use at home.

When you look at that last statistic, what these employees may as well be saying is they'd be better off if the CIO didn't have a job. What is a CIO to do?

Focus on the User Experience

Today, *Google.com* handles millions of searches a day, while thousands of

A commitment to helping their users, a fresh approach to security, and a relentless pursuit of solutions to "solved" problems will all help to make government CIOs successful as they navigate the fast-changing world of technology.

organizations also use Google products to power search on their own websites or to find internal documents. One reason for the popularity of Google technologies is that, from its inception, Google has focused on providing the best user experience possible.

Focusing on users lets a CIO understand how to harness technological advances to the agency's advantage. Listen to your users. Follow your employees around, watch how they use the applications you've given them today. Learn what they like and, more importantly, what they don't. Observing those pain points can give CIOs many



ideas on how to help their users by offering technologies that will help make their users successful.

Re-think Security

A natural temptation in reaction to the trend towards consumer applications invading the workplace is to keep a closer watch and further lock down systems to prevent people from using unsanctioned technologies.

I would suggest that CIOs take a different approach to the mini-revolutions occurring within their organizations. The CIO's goal should be to control security, not users.

At Google, we don't believe we need to rigidly control what our users put on their PCs. Endpoint control is not the same as security. Consider that the number one security problem in the past five years has been laptop theft. Our users store their e-mail and other documents on our servers. If a computer goes missing, not only do the thieves find little, but our users can get back to work without missing a beat.

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Another pitfall to avoid is viewing security as an issue of "us against them." When security is done right, it's done best as a community. This includes everybody: the people who use Google services, the software developers who make our applications, and the external security enthusiasts who keep us on our toes. We believe in responsible disclosure of security vulnerabilities and publicly recognize hackers who bring security issues to our attention. In this way, we co-opt another group of users into helping us deliver a better product.

Look for New Solutions

CIOs must question technology assumptions in their organizations. The way something has always been done is probably no longer the best way today. Ten years ago, people thought that the problem of Internet search had been solved. They were wrong. Look for opportunities in your organization to approach old problems in new ways.

Today, for example, most organizations operate their own data centers, burning substantial resources in purchasing, maintaining, and patching servers -- and then adding new servers as data volume increases. In his book, *The Big Switch*, Nicholas Carr compares this paradigm to delivery of electricity in the last century.

A hundred years ago, companies operated their own power-generating facilities to run their factories. The early adopters of a shared power grid that brought electricity over power lines were seen as risk-takers. Over time, however, it became standard practice for companies to use the more cost-effective grid rather than produce their own electricity.

Companies like Google are now approaching the data center problem in a new way -- by allowing organizations to plug into cost-effective data centers to host their applications.

When facing this and other techno-

logical issues, CIOs must stay open to new approaches to old problems to ensure that their organizations benefit from a pace in technological change that will only increase. A commitment to helping their users, a fresh approach to security, and a relentless pursuit of solutions to "solved" problems will all help to make government CIOs successful as they navigate the fast-changing world of technology. ■

Douglas Merrill is the CIO for Google, Inc. which was recently featured by Fast Company Magazine as the World's most innovative company.

The Role of the CIO: From Technology-centric to Citizen-centric

By Gerry McGovern
Web Consultant and Author

The CIO of the future must be more than just a slightly repackaged IT manager. CIOs will need to think beyond their technology-centric comfort zones and focus much more on the information they are supposed to be officiating.

The great Peter Drucker once said that we've spent the last 50 years focusing on the "T" in IT, and we'll spend the next 50 years focusing on the "I."

The CIO of the future must be more than just a slightly repackaged IT manager. CIOs will need to think beyond their technology-centric comfort zones and focus much more on the information they are supposed to be officiating.

However, having been involved in the web since 1994, it is my experience that precious few IT professionals understand the true value of information/content.

The classic view of content from an IT perspective is that it is something that needs to be stored. It is, thus, a storage problem, and when storage is cheap then it's a "have gigabytes, must fill" sort of approach. The web becomes this endless attic where you can publish everything that moves and most of what doesn't move. Well, we see the mess that sort of thinking has led to.

Between August and October 2007, over 230 government web professionals in the United States, New Zealand, and Canada rated their websites based on a list of 22 phrases. Eleven were positive (customer-centric, participative,

etc.) and 11 were negative (organization-centric, full of jargon, etc.).

Participants were asked to choose the top three words/phrases that best described their experience of government websites. They were told to give a score of 3 to the one that best described their experience, 2 to the next best, and then 1.

There were 93 participants from Canada. The top three phrases, with 38%

of the vote, were: organization-centric; confusing; too many websites. The bottom three, with 0 percent of the vote, were: easy to search; fast in, fast out; participative.

There were 66 participants from New Zealand. The top three phrases, with 48% of the vote, were: organization-centric; complicated; comprehensive. The bottom three, with 0 percent of the vote, were: easy to use; simple to navigate; well-managed.

There were 74 participants from the United States. The top three phrases, with 46% percent of the vote, were: organization-centric; confusing; complicated. The bottom three, with 0 percent of the vote, were: simple to navigate; friendly; participative.

In Canada, New Zealand, and the United States, government web profes-



sionals think that their websites are organization-centric, confusing, and complicated.

UK government websites are "complex to understand and navigate and information useful to citizens is often hard to find amongst large amounts of policy material not relevant to them," according to a report published by the UK National Audit Office in July 2007.

In the UK, £208 million is spent every year managing UK government websites. The UK government is taking steps to ensure that this money is well spent. Government departments are being seriously questioned about why exactly they need a website. Ultimately, 1,000 government websites will be brought down to around 20.

Governments are addicted to proving they are doing their job properly. Many government websites are politics-centric. They talk about the 5-year plans they have just launched, rather than using the website to help implement the 5-year plan.

Too many government websites tell us about what their political masters did. With soft focus pictures, we are told that the minister has just arrived down for breakfast. Oh, look, he sat down and is reaching for the toast. I wonder will he have marmalade or honey this morning. (I really care about his diet.)

Too many government websites tell us about the legislation they are enact-

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ing. We are victims of a tsunami of policies, procedures, and publications in language that is often meaningless.

Government web professionals know this and are struggling to convince their senior managers that the web is not the nirvana of vanity publishing. Slowly but surely, they are succeeding. Government websites have definitely improved over the last five years. You will still come across embarrassing government websites that start with the mission statement and a picture of the minister, but they are in decline.

Technology scares many senior people in government. As one executive said to me: "Whenever we hear the words "technology" and "government" together, we want to hide under the table." Why? Because it's usually a story in the press about a late delivery of a

major project, some substantial cost overrun, or a service with appalling usability. Another reason senior managers are scared of technology is that they don't understand it. They feel ignorant and ill-informed.

Technology provides the arteries for a modern economy. It is absolutely essential. But technologists are often addicted to the technology itself and blinded to the actual purpose of the technology.

Someone once said to me. "I've never met a CIO who has a clue about information." The future is about getting a clue. It is about radically overhauling how government websites are managed. We must move away from a perspective that manages the technology and/or manages the content. We must get away from an organization-centric perspec-

tive that sees the web as a wonderful PR channel.

We must manage based on the tasks of our customers, our citizens, and businesspeople. What do they need to do on our websites? How can we help them do these tasks quickly and simply? And there will be one simple measure of success: Task completion. ■

Gerry McGovern is widely regarded as a worldwide authority on managing web content as a business asset, and has published four books on the subject.

The Role of the Government CIO? Good Question!

By Bill Vajda
Chief Information Officer
U.S. Department of Education

I'm pleased to have the opportunity to discuss my personal views on the role of CIO and what makes the job both challenging and satisfying. These views are molded by the company I keep and the wisdom and advice I've received from many people I deeply respect. So here is my view, in a nutshell: The CIO role in government is like standing on the shoulders of giants and enjoying the view. Respect your giants and make sure you don't spend too much time staring at your feet.

Standing on the Shoulders of Giants

The constitutional system of government we enjoy in the United States is probably humankind's most enduring and glorious achievement. Our American way of life is driven everyday by rules established over 200 years ago by a group of extraordinary individuals with long vision and focused determination. The basic framework they established has proven to be remarkably resilient, flexible, and adaptable to social and cultural changes and to have weathered well-organized and violent resistance. The founding fathers used all tools at their disposal to document decisions, collaborate on issues, share information with each other and their constituents, and otherwise widely publish their beliefs and goals for the world and posterity to uphold. The technical capabilities enabling these processes have certainly changed over time, but the fundamental business of our government remains the same.

The role of the CIO in that day could well have been "Chief Scribe," but in

the context of government would certainly have had to address information security, privacy, data sharing, and most of the same themes we focus on today. CIOs rely on the basic principles and capabilities enabled by earlier generations of leadership. As the business of government evolves to continually meet citizen expectations, the CIO works to make sure the tools keep pace.

How remarkable and important this distinction is for a "tools of government" discussion. Imagine the world to the contrary. What type of government

Where CIOs were once the folks who told business owners they couldn't have something because it was too expensive or technically impossible, now they are the ones expected to plot the strategy for implementing capabilities that won't exist until future inventors create them.

would we have if leadership had decided to implement technology that only enabled Republican word processing, or Democratic e-mail, or Libertarian Power Point presentations, or Bull-Moose spreadsheets? Imagine, for a moment, one administration striving for a goal of making information technology efficient and effective and another administration choosing to differentiate itself by seeking the contrary? Since we (thankfully) haven't observed these phenomena, it's probably safe to say that regardless of how the tools are used, all parties recognize the importance of having the best ones available for the work at hand—tools that deliver



the best value to the American people.

I've had the opportunity to chat with many learned folks who care deeply about the CIO role and what it can do for the business of government. I am not the sole source or thinker for any of the ideas I present here. It's been my good fortune to work with many giants,

and I commend their service and influence. They remain my personal heroes.

Enjoying the View

This is an exciting time to serve as a government CIO. The remarkable technical changes that we have enjoyed since the late 20th century continue to deliver technology that is ever more capable, open, affordable, and ubiquitous than anything preceding it. As a result, the mind-numbingly tedious and arcane processes that drove technology acquisition and operations have become less a focus of the job.

Once, the CIO's role was really to be the "head geek," responsible for infor-

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mation resources management and, literally, the person who got the 24/7 telephone calls when cosmic rays or mean-time-between-failure occurred. The proprietary systems, the long system lifecycles, the extraordinary expense of being “locked-in” to a single vendor, expensive modifications, ongoing support issues, etc. all required a constant focus on the tools, often to the detriment of business processes. Frequently, CIOs found themselves absorbed with walking a mile in their own shoes, rather than trying on the other person’s.

Now, however, the CIO’s job is really more about choosing the right tools for the job, anticipating and enabling the flexibility required of business processes to meet citizen expectations. It is becoming much more a position of strategist, advocate, and enabler for

desired business outcomes. That’s not to say that CIOs aren’t still getting a lot of calls in the middle of the night! Many of us still revel in the skills that gave us pride in our earlier careers and enjoy matching wits with the technical staff. But that really isn’t where the most value can be gained. Where CIOs were once the folks who told business owners they couldn’t have something because it was too expensive or technically impossible, now they are the ones expected to plot the strategy for implementing capabilities that won’t exist until future inventors create them.

Currently federal CIOs are focused on implementing contemporary social technologies to deliver better results or, in a word, “e-Government.” Many laudable accomplishments have been achieved in the areas of government-to-citizen service delivery, government-to-

government information sharing and collaboration, and government-to-business partnerships. All of these result from the foresight of our predecessors and the determination of our current leaders and peers, who support innovative adaptations of technology to deliver the business of government more effectively. As we revel in what we have accomplished so far, it only whets our appetite for where we know we can go from here. ■

The opinions and statements herein reflect the personal views of the author and in no manner represent the official positions or policies of the U.S. Government or the U.S. Department of Education.



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