Preface

I was at the Conference of the American Society for Public Administration in Portland, Oregon in 2004, at a panel concerning the teaching of information management in Master of Public Administration programs. This particular session was attended by a host of professors engaged in teaching information technology. The one point of consensus of all of the panel members and the audience was the need for a book of case studies of information management in government. There exist many case study books concerning private sector management of technology but none dedicated to case studies of public sector information management. It was agreed that students need richly-detailed case studies to convey to them the complexities of management of technology and to allow them to see how proposed prescriptions and theories apply in real life. This book is intended to fill this gap.

I knew that it would not be easy to put together such a book. A good, richly-detailed case study is difficult to write. It requires deep knowledge of the organization involved. Such knowledge requires a basis of long-term participation observation and/or extensive interviews with organizational staff. It requires that the organization give access if such a case study is to be done by outsiders such as academic researchers. Such access can be difficult to obtain and necessitates a long-term commitment on the part of the researcher. As a consequence, I have found few richly-detailed case studies done by academics in the literature. From an academic perspective, it is much easier to develop research projects that do not require intensive qualitative information gathering and difficult access issues. For example, it is much easier to do research based on surveys or analyses of governmental Web sites. Likewise, practitioners have virtually no incentive to publish. Most IT managers that I know are overwhelmed with work because they are faced with new technologies and new demands on their time on an almost continuous basis. As a result, few practitioners take the time to write about their experiences. As a result, up until now, there exist few good case studies of public sector information management. Consequently, I owe a debt of gratitude to the practitioners and academics who contributed the case studies in this volume. For many of the practitioner contributors, this is their first formal publication, and I know that you will appreciate their efforts.

Focus on Processes and Issues Makes Cases of Enduring Value

The cases cover a broad variety of specific issues such as the digital divide, the development of Web portals and internal systems such as enterprise resource planning (ERP) systems, inventory control applications, online payment systems, and many other specific applications and issues. Thus the book provides a good sampling of emerging technologies for students. As is common knowledge, the specific information technologies described in this book will become "old hat" in not too long a time. However, these cases provide rich details on how managers and staff handled processes and issues that will reoccur regardless of the specific technologies involved and thus these case studies will remain valuable to students for their study long after the specific technologies have become antiquated. In particular, although these cases cover a wide variety of technologies, most deal with certain key processes such as how to organize and govern IT, the purchasing process and relationships with vendors, training and other human resource issues related to technology, business process re-engineering and the organizational obstacles to it, among others.

Capsule Descriptions of Cases

Most of these cases discuss a wide variety of issues and processes so the following summaries just give a glimpse of what is in each case study and this preface is aimed at whetting the appetites of readers. Three of the case studies provide detailed examples of what happens when new administrations take over local governments and reform and restructure information management. Matt Miszewski, the CIO of the State of Wisconsin, took over a system that was decentralized. Systems had grown piecemeal over the year and each system had customized support but a 40 million dollar cut in the state's budget forced action to make the system more efficient. Miszewski tackled this problem by constructing an enterprise-wide approach with a single architecture, emphasizing a common infrastructure, an integrated financial and management system, and evaluation metrics system. The case discusses the details of how to construct an enterprise structure. The task of building such a system required great attention to IT governance issues and several committees were formed. These committees were intergovernmental in nature including some of the major local governments. The case discusses how a vendor was hired to help the state develop its own solution and how service delivery coordinator positions were created to enhance horizontal communication. The need to have excellent communication between the technical and IT staff is one of the themes of this case. The state employs a customer evaluation form to obtain feedback on their performance.

Norm Jacknis, the CIO of Westchester County, made dramatic changes in the county's IT system. The previous administration had outsourced the IT system to IBM and Jacknis implemented a reversal of this policy, bringing IT back in-house, and the case discusses how this turnaround was accomplished including reorganization of the IT system toward a functional system. The new county executive had first-hand experience with IT, and the themes of paperless and more efficient government due to effective use of IT played a significant role in his administration. The county executive required that the heads of the

departments (commissioners) attend an "IT boot camp". This case emphasizes the importance of planning and use of IT as an economic development tool. Westchester County used their IT resources to promote and develop a strong network of businesses using virtual cooperation and "coopetition".

Glenn Trommels discusses the revamping of the City of Rockford's information technology department. He describes how many of the systems were broken and the steps that he took to deal with the problems. Basic security issues needed to be fixed, and the department needed to reorganize in order to get away from a stovepipe mentality and move to a more integrated system. Despite the importance of the technical issues, he found the most basic need to create a team spirit. Problematic relationships with information technology's customer departments were addressed by the adoption of a request tracking system in which regular feedback on the progress of projects was provided as well as assessment of customer satisfaction with project outcomes. Communication and marketing play a significant role in this and other case studies, and the cases emphasize the importance of soft, non-technical skills in IT management.

All three of the previously-mentioned case studies emphasize the importance of leadership by political executives and generalist managers in providing the impetus and authority to achieve reform and integration. In most cases, technology heads do not have the authority to force change themselves, and consequently, they must depend for support from top executives to implement changes that cut across line departments.

Dave Bloch provides a case study that focuses on one method for integrating technology across departments in the County of Nevada (California): communities of interest. This case shows the importance of planning, stimulated in part by the Year 2000 crisis. The county's leadership searched for examples of other fast-growing counties and studied how they achieved better integration of their IT efforts. Nevada County's approach was to form six different "communities of interest" in which departments with related needs were grouped together into a community (of related departments) that had the authority to approve or reject major IT infrastructure projects. Leadership by the Chief Administrative Office, Ted Gaebler, was important to the success of the project. Also, important was the fact that the new structure had teeth and a substantial pot of funds associated with it. Bloch describes the application of the new approach to several different projects in order to provide lessons in how to manage with this new IT governance model.

Don Carlsen provides a tool kit to do IT governance. Carlsen identifies governance issues that most organizations share such as the lack of a process for linking individual projects with organizational strategy, the lack of capacity analysis to determine the capability of the organization to deal with new technologies, and the lack of adequate project management skills among staff. One tool is a good strategic technology plan. The process of developing Naperville's initial plan led to the discovery of a solution of a problem that end users had experienced with the organization's financial system. The organization's HR department developed a training program to enhance project management skills since so much of the staff's time was engaged in managing projects. Carlsen describes how the organization developed a more realistic assessment of capability. He then proceeds to discuss how employee teams were used in the budgeting and capital improvement plan processes to provide an in-depth assessment of proposed technology projects. Carlsen also discusses their usage of the balanced scorecard system which is an increasingly popular tool for ensuring that information technology projects are aligned with the organization's strategic objectives.

Louis Boglioli shows how even a small community can achieve innovative technologies. He also demonstrates that major productivity improvements can be achieved by more efficiently using the existing system rather than purchasing a new one. He estimates that Stuart (Florida) was only making use of about 10% of the capability of their financial system prior to his reforms. His case study demonstrates that small communities, even if they are wealthy, often have to subsist on limited funding for IT projects so making more effective use of an existing system is a necessity. He discusses how they conducted an analysis of business processes in order to show that the existing IT system could accommodate the organization's procedures. Training was essential to improve usage of the existing system, but Boglioli shows the limitations of one commonly used method, the "train the trainer" approach.

Larry Gunderson provides an in-depth discussion of the project management complexities of developing an application (computerized maintenance management system) that attempts to employ data from Naperville's GIS system for use in other application systems. As with many major applications, the system required work by several departments (public works, water, transportation-engineering, and information technology, in this case) to be successful and the degree of support varied among the departments. Also, the existing workflows of the departments conflicted with those required by the new system. His case shows the risks associated with being one of the first governments to implement a system—the project advanced as the vendors acquired more experience. Eventually, the implementation was assisted by a consultant who carefully mapped business processes of the work order flow using a business mapping software package. The case also illustrates the importance of project management (e.g., Gantt and work breakdown structure techniques were employed), leadership, and champions.

A majority of case studies concern successes, but we often learn more from case studies of failures about what not to do. Kimberly Furumo provides a detailed case study of the failed implementation of an ERP system in a university. Her case emphasizes the importance of sectors and how the differences between public and private sectors contributed to the ERP failure. Furumo's case points out that the CIO position in public organizations is usually at a much lower level of hierarchy than in private businesses and that public unions and longevity of civil service employees make the implementation of business process changes necessary for ERP systems much more difficult in the public sector. Furumo describes how the IT department refused to provide support requested by the implementing line agencies, and the project management also suffered from the fact that team members had to continue to perform their current jobs while at the same time devoting large amounts of time to the new system. The ineffective relationship between IT and end-user departments was the key element that led to the failure of the new system.

By way of contrast, Paul Taylor portrays a very successful implementation of an inventory control system in Los Angeles. Taylor shows how vendor relationships are numerous and complex in large cities—the city had over 2,000 contracts with vendors. Spending on inventories was often a method adopted to hide end of the year balances with wasteful spending. Payment was slow and thus vendors were frustrated with the city. One of the pre-requisites that the city established for the new system was that no additional funds were to be allocated for it—that the new system must fund itself. Taylor argues that this requirement actually assisted implementation by enforcing discipline on the effort. Taylor describes how the project team had to build internal and external support for the new system. Women and minority firms feared that the new system would undercut their gains in obtaining contracts. Vendors played a key role in implementing the Peoplesoft system with one contractor performing

the implementation function and another to do quality assurance. As with most purchases these days, their goal was for a "vanilla implementation" and, in this case, the project was successful resulting in large savings due to slashed city inventories and winning discounts from contractors due to early payments.

Milton Petersen draws upon a wealth of experiences with software purchases to provide insights into legal aspects of purchases. Petersen emphasizes sector differences due to public organizations' risk aversion, the fishbowl openness of public purchases, and the complexity of governmental goals. Still many of the steps to a successful purchase revolve around sensible actions similar to those of the private sector such as gathering the requirements for the new system, but Petersen emphasizes the need for political will and organizational champions for implementing complex new systems.

Much has been made in the past of the importance of writing a good "scope of work" in developing RFPs, but Petersen points out that there are actually three scopes that organizations must pay heed to: functional, process, and data scopes. Petersen argues that it is crucial to pay attention to the initial staff recruited for a project because those in it from the beginning tend to take ownership of it and be more committed to its successful completion. He describes how parts of an RFP can be written as a series of questions for vendors that make it easier to make valid comparisons among the vendor submissions. Governments need to pay attention to the management of RFPs, using this as the opportunity to take charge of the process or vendors may take over. Relationships with vendors are crucial, and Petersen points out that the contract should be mutually beneficial and that "squeezing too hard" can harm the long-term relationship. Part of the project management process is to record and report to the vendor any and all problems encountered during the project. Managing RFPs and subsequent contracts is a major part of the jobs of governmental staff, and Petersen's case provides several good practices to be followed.

Several of the chapters detail innovative uses of Web portals and related Internet applications. Curtis Turner of the Department of Labor provides a detailed case study of the conception, implementation, and operation of the department's GovBenefits.gov Web portal. This portal serves as the major gateway for citizens to search for governmental benefits. The Department of Labor is the leading partner in this effort that has 16 federal partners, making this an excellent example of how to go about constructing an interagency e-government project. As might be expected, IT governance issues were major for this project, and six different project teams were established: project management/controls that focused on procurement, scheduling, budgetary, and reporting; product management focusing on site content; Web site update to manage workflow to update the Web site; technical development for software and hardware technical issues; change management for managing relationships with partners, marketing, and outreach; and verification and validation that focused on security and operational issues. A key issue in these intergovernmental benefits is to obtain buy-in from partners. However, in order to do this, you have to be able to answer the question, "What's in it for me?" The partners have to agree on a funding formula that is satisfactory to all—in this case, they used a formula based on the number of programs represented on the site and the dollar value of those programs on the GovBenefits.gov Web site. Labor's plan tried to establish as many strategies as possible to get buy-in, trying to institutionalize the interagency nature of the system. There was relatively little money available for marketing, and the case describes how they made good use of these limited funds, detailing which marketing strategies were most successful.

Steve Cantler describes how the City of Tampa created an online customer service center using organizational sources without the assistance of a vendor. Customer service systems are crucial because they affect how citizens view the efficiency and effectiveness of the government. Cantler describes the three prime requisites of customer service systems: (1) They must not assume that citizens know which agency is most appropriate for dealing with the citizen's question; (2) Access must be on a 24/7 basis; and (3) Citizens must be informed of what is happening to their request. Although the system was aimed at making government more responsive, it also assisted government's employees in managing their jobs by allowing them to search through and manage their service requests in a flexible manner. The project had an interdepartmental advisory committee set up to monitor the project. The agency still maintains traditional service request mechanisms such as the telephone but even if the citizen submits requests through these traditional methods, they can still search for the status on the computerized system. Although the system was developed by the City of Tampa, it requires intergovernmental cooperation and coordination in order to deal with the fact that citizens do not know and should not need to know which actions are in the province of the city versus other governmental organizations. In short, citizen-oriented e-government requirements force organizations to be intergovernmental in the design of their systems.

Reinke and Johnson's case study reveals a county's considerations in deciding whether to continue or drop convenience fees in order to increase use of their online tax payment system. The case illustrates the complex calculations involved in some e-government applications. Convenience fees also have ethical implications because those most likely to use it may be wealthier people. Many small and large jurisdictions do not have the IT resources to implement the systems themselves so IT vendors are involved. Governments may have to risk eating costs during the short term by eliminating convenience fees in order to spur increased use and thus obtain longer-term benefits when a sizeable portion of the community switches to online payments.

Bogdan Hoanca provides a case study of the use of telemedicine to improve medical care in Alaska. It is difficult, costly, and often impossible for residents in outlying areas to be transported to the few regional medical centers in Alaska. The Alaska Federal Health Care Access Network (AFHCAN) represents another example of complex interorganizational project resulting from the collaborative efforts of the Department of Veteran's Affairs, Department of Defense, the U.S. Coast Guard, the Indian Health Service, and the Alaska Native Tribal Health Consortium. As with all complex systems, the IT governance system was complex including a steering committee and six different committees to handle business, legal, informatics, technology, and training issues. The system allows health providers in local village clinics to gather patient information into an electronic case and to transmit the case to a medical specialist at a remote location via a secure network. Ease of use is a necessity for such a system because the system tends to be used on a sporadic basis and many of the users have less than a high school education. The system has been judged a success on the basis of usage figures, costs saved due to the avoidance of flights, and anecdotes of successes. Hoanca points out that this is a system that could only be developed and supported by the public sector and that AFHCAN is now looking to cut their costs by selling the system to other organizations.

Mete Yildiz describes how Turkey implemented a Web portal-based communication system with the goal of providing citizens with information so they could participate more adequately in the political process. The system also provided job training to elected and appointed government officials. This case shows that Web applications in other countries face many

of the same challenges as in the U.S. and that many similar strategies are adopted. Their approach to project management was to integrate the vendor into the management team. They also chose to use open source software in order to contain the costs of the project. Another cost-saving measure was to adopt a distributed system in which local officials entered their own data into the system. Yildiz outlines the serious challenges facing the system including "fights" that developed from online forums and sometimes threatened to escalate.

J. Ramon Gil-Garcia and Sharon Dawes provide in-depth analysis of how New York State developed a coordinated Web portal in the context of a decentralized IT system involving some 60 state agencies. They detail some of the forces that encouraged a movement toward coordination including the Y2K threat, the election of an administration concerned with efficiency and business-like methods, and laws that forced policies such as accessibility standards and privacy policies. Faced with competing demands for integration and decentralization, the solution adopted was to employ categories and common headers and footers on all Web sites but to allow agencies to employ their own designs for other aspects of their Web sites. This mixed approach allowed them to build the Web portal with limited central staff and funding and no single leadership authority. Communication issues proved to be important due to difficulties of exchanging information among program people, Web staff, and IT people. There are several ongoing challenges associated with this decentralized approach. One concerns content ownership and another concerns training and related human resource issues. There are differences in the Web skills present among the agencies, and civil service laws make it difficult to attract and retain qualified staff. One of the points that this case brings out is the tremendous impact that national rankings have on Web sites. It is clear that leadership of organizations pay close attention to these rankings and thus the criteria used to judge Web sites by these national ranking systems are likely to get wide dissemination and influence the structures of Web portals as states and local governments voluntarily seek to improve their results.

Intergovernmental and interorganizational issues are discussed in many of these cases. The Bureau of Housing Services case study by Luna-Reyes, Pardo, Ochoátegui, and Sanabria depicts an especially challenging case. Several governmental organizations had to work together to construct a new information system to improve services for the homeless funded by these governmental agencies and the private sector organizations that delivered most of the direct services. This case illustrates that in the human services sector, the end users of many "governmental systems" are actually employees of private sector organizations. The Bureau of Housing Services had previously tried to mandate a new system, but this effort failed due mostly to resistance on the part of the private service providers. The case shows how the governments and private providers went about constructing a solution to a difficult dilemma. The system needed to meet different needs of the partners and also integrate different databases in order to be effective. The governmental organizations were especially interested in obtaining valid and reliable accountability information. The private providers were concerned with obtaining information that would help them provide better services. Especially sensitive issues concerned the definition and measurement of outcomes that affected the evaluation and reimbursement for services provided by the private agencies. The solution was to develop system prototypes that organizations could check out prior to making final decisions about adoption.

Schulz and Tuma's case study demonstrates how county and municipal governments successfully coordinated to construct a collaborative communications center. The case shows how Waukesha County became the lead agency in the cooperative effort. It requires a complex

IT governance system with five different committees set up to handle the effort including a "Partners Committee". As with other interorganizational efforts, the lead organization (Waukesha County) had to deal with the concerns of their partners including fears about greater costs to municipalities, concerns that the system might give preference to county police operations, and worries about what would happen to existing municipal employees under an integrated system. A funding formula agreeable to all was developed. The case also illustrates the tensions between having a "best of breed" versus a single integrated system. The collaboration presented significant human resources issues. One issue concerned how to transfer employees from other municipalities into the new department. A second concerned the fact that extensive training was required to operate the system. Evaluation of such systems is also complex. Response time is one of the major measures used, but the case discusses why response time is not a very good, stand-alone outcome measure. Inevitably, the system's role in dealing with major criminal justice incidents becomes part of the public's perception of system efficacy.

Thurmaier and Chen's case study illustrates another interorganzational effort. This one concerns the attempt to build a knowledge management system through the collaboration of Iowa's CIO, the Iowa Department of Management, and a local government association. The case shows how cultural differences among the three major organizations involved heavily-affected crucial issues such as the form of payments employed. Issues of control over the Web site also needed to be worked out. The Iowa Secretary of State preferred to have an independent system which they controlled while the (Iowa) Information Technology Enterprise in the Department of Administrative Services preferred an enterprise-wide approach that emphasized shared resources and services. The case also emphasizes the crucial element of information stewardship and how difficult it is to achieve and ensure the integrity of data.

Jim Landers presents a detailed account of the development of a GIS application aimed at helping Indiana develop policies for their enterprise zones. The effort leads to the creation of maps useful for analyzing alternative policies for the zones but also shows how difficult it can be to gather certain critical data and that some key variables must be based on estimates. Also, the case study emphasizes that making better data and GIS applications available does not necessarily lead directly to policy changes because general budgetary issues and pressures overwhelm other factors.

Many of the case studies touch on the importance of accessibility of digital government systems. Alex Pettit and Anthony Caranna's case study depicts what they call the "Techonomic Divide". Their point is that it is not just computers that separate users from non-users of a digital system but non-users lack other pre-requisites to participate in the digital economy such as credit cards, checking accounts, and cell phones. They detail the efforts of Denton County (Texas) to develop kiosks that would alleviate this techonomic divide. They employed a kiosk that would accept money as well as credit cards. Still, many did not use the electronic system until faced with the threat of disconnection. Pettit and Caranna's case illustrates the challenge of online payment systems such as whether the government wants to emphasize cost savings or better service as their primary goal.
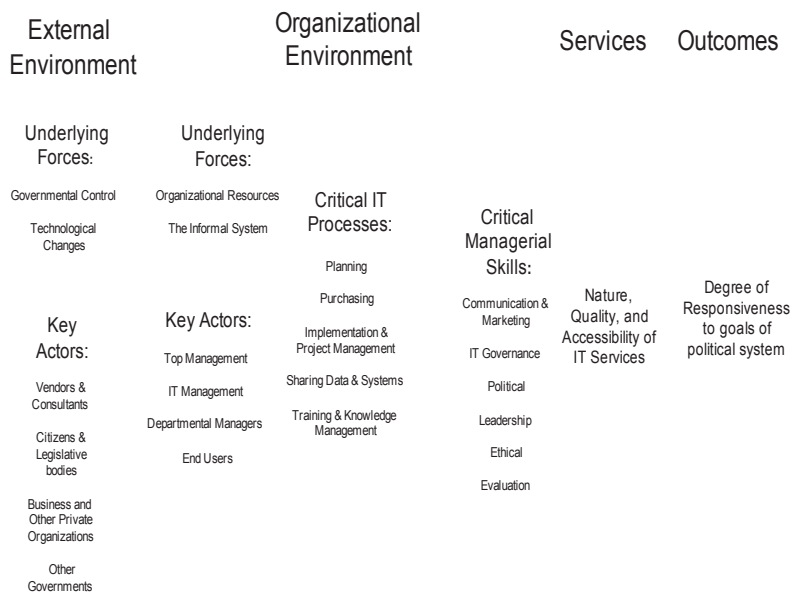
Cross-Cutting Themes of the Case Studies

Taken together, these 21 case studies provide deep insights into the challenges and successes of digital government. Although the cases cover a multitude of specific technologies and some idiosyncratic aspects, readers will find many common themes in the case studies. In particular, you will discover that the same processes and issues are discussed in several different case studies. These processes and issues will remain important even while the specific technologies change. In Figure 1 (adapted from Rocheleau, 2006), I outline key forces and actors that are important to public management information systems that I employed in my recent book, *Public Management Information Systems*.

Next, I outline the most important common processes and issues that appear in the cases but readers will find many other themes in the cases.

IT Governance

Virtually all of the cases discuss IT governance issues. This is not surprising given the fact that one of the major goals of digital government is to serve citizens and other customers in an integrated manner. Consequently, most major projects cut across departmental and organizational boundaries necessitating often complex forms of IT governance. For example, Cantler's study of Tampa's customer service center and Turner's account of the development of the Federal Department of Labor's GovBenefits.gov Web site both required that these applications be constructed so that citizens could use them without any specific knowledge of the particular agencies that were actually responsible for dealing with their problems. IT governance issues are especially complex when they involve independent agencies and

Figure 1. A framework for understanding governmental information management

External Environment	Organizational Environment		Services	Outcomes
Underlying Forces:	**Underlying Forces:**			
Governmental Control	Organizational Resources	**Critical IT Processes:**	**Critical Managerial Skills:**	
Technological Changes	The Informal System			Degree of Responsiveness to goals of political system
		Planning		
		Purchasing	Communication & Marketing	Nature, Quality, and Accessibility of IT Services
Key Actors:	**Key Actors:**	Implementation & Project Management	IT Governance	
Vendors & Consultants	Top Management	Sharing Data & Systems	Political	
	IT Management	Training & Knowledge Management	Leadership	
Citizens & Legislative bodies	Departmental Managers		Ethical	
Business and Other Private Organizations	End Users		Evaluation	
Other Governments				

they must be solved in order for the application to have any chance of success. There are several different skills required to solve governance dilemmas as Carlsen points out in his discussion of tools that can be used to achieve IT governance. These skills are not generally taught in computer science-oriented programs. Even if the system is developed and run by a single unit of government such as Tampa's customer service request application, IT governance issues are important in regulating interdepartmental issues, and the Web site had to integrate with other agencies in order to meet citizen needs in a comprehensive manner so interorganizational coordination was required too. In short, skills concerning IT governance are essential to managing information technology in government.

Sharing

Formal sharing of IT sources among governments is not as common as it should be, but it does take place and the case study by Schulz shows the steps that are likely to be needed in order to achieve such sharing. Most governments tend to want to go it alone in major IT projects, but there are significant cases of sharing, especially concerning smaller organizations with limited resources who band together to share potentially-expensive applications such as GIS (Rocheleau, 2005), ERP (Hall, 2001), and other systems. It is my belief that there exist tremendous unexplored possibilities for the development of shared applications among governments.

Leadership and the Role of Political and Generalist Managers

Many of the practitioner case studies in this volume have been written by IT leaders and experts in their respective organizations, but as one reads through this volume, you find that there is a great need for leadership that can only be provided by political and generalist managers, not the heads of IT. Since most major new systems cut across departmental if not organizational boundaries, it is impossible for the IT department and its staff to force change. As is described in many case studies, attempts to change IT systems often result in resistance and, as Furumo documents in her case study, failure. As Petersen says, there has to be a political will to persist in difficult major system purchases and success stories such as the Westchester County (Jacknis & Fernqvist) where the chief executive officer took a personal interest in IT projects and spurred commissioners to learn more about IT. In the Wisconsin (Miszewski) case study, the CIO emphasized the need to emphasize horizontal communication and coordination more which was achieved by employing service delivery coordinators to perform these functions. However, it is possible to achieve change without strong central leadership as Gil-Garcia and Dawes show in the New York State Web portal case.

Politics and IT

A related lesson is that politics plays an integral role in stimulating change in digital government. Information technology used to be a back office issue. The invisibility of IT was

symbolized by the fact that IT departments were often located in the basements of buildings. Now IT has become a front office concern and is viewed by many executives as an essential tool to achieve positive results so their administration will be viewed as successful. The politics of information technology are not always easy—for example, should governments eat convenience fees in order to spur usage of online systems? This is an issue posed by Reinke and Johnson in their case study of an online payment system. Most IT professionals I know prefer to avoid politics and look to their political or generalist leadership to handle political issues but that is not always possible.

Planning

Although planning is not the central focus of any of the individual case study, it is clear that many of these case studies required extensive planning, especially those that are intergovernmental and interorganizational in nature. Carlsen includes planning as one of the key IT governance tools, and he illustrates how the communication evolving out of their development of a comprehensive IT plan led the solution of a problem with their finance application. Jacknis and Westchester County integrated economic development efforts into their IT planning.

Ethical and Legal Issues

Legal issues play a huge role in any purchase of a complex system. Petersen's chapter details a myriad of possible legal problems that can occur and provides suggestions on how to avoid these problems. Ethical concerns play a significant role in the Bureau of Housing case where privacy issues such as for abused women conflicted to some extent with the desire for accountability to measure outcomes of the service. Taylor's study of the reform of the purchasing system for Los Angeles led to concerns on the part of minority and female firms. Pettit and Caranna's study suggests that the move to digital government may be ignoring the most vulnerable part of the population who have no capacity to take advantage of digital government. Gil-Garcia and Dawson's study relates how states adopt federal (Section 508) standards for accessibility of their Web sites.

Evaluation, Accountability, and Data Stewardship

In a majority of cases, there are data and other sources of information used to assess the success of the IT applications and innovations. The difficulties of evaluation are discussed in several cases. Carlsen discusses their application of the balanced scorecard system which has become a popular method used by governments to ensure alignment as well as accountability though he notes that such systems consume quite a bit of staff time. For some new applications such as the inventory control system described by Taylor, there are some obvious and easy to measure outcomes such as reduced inventory levels and cuts in purchasing costs. But Jacknis points out that for some applications, even if money is saved on a per unit basis, success engenders higher usage and thus total costs may be higher so there is a

potential conflict between cost-cutting and service goals. An essential aspect of any evaluation system is that the data must be valid and reliable. Gunderson's study of Naperville's computerized maintenance management system and Chen and Thurmaier's account of the development of a knowledge management system both document the difficulties of achieving data integrity.

Project Management, Business Process Re-Engineering, and Human Resource Issues

The cases are replete with project management issues and business process re-engineering issues. It is now customary for organizations and vendors to encourage a "vanilla" implementation of systems but even if the organization is able to achieve such an approach, complex problems remain. As Gunderson's case shows, many line departments may be unwilling to devote the staff and other resources to implement the project, and he discusses how project management techniques such as Gantt charts can be used to delay the most difficult tasks until the end. Several of the cases discuss problems with trying to get the new system to mesh with existing processes and the problems that occur when re-engineering of processes is required. The Chen and Thurmaier and Gunderson cases reveal that turnover in key staff can hurt or help projects. Carlsen describes how Naperville sponsored training in project management. The complexity of interorganizational and interdepartmental projects makes project management all the more difficult.

Human resource issues such as training are closely related to project management concerns. In virtually every case, the importance of training is emphasized. Other human resource issues concerning lack of flexibility in civil service rules and dealings with unions also play a significant role in some cases. The inclusion of IT skills in position descriptions can be important. In order to deal with these dilemmas, the IT and human resource staff will have to cooperate.

Vendors and the Procurement Process

Except for a few projects such as Tampa's, vendors play a key role in the case studies. Most applications are purchased rather than developed in-house, though the IT staff often has to adapt and tweak the systems to meet organizational needs. The Westchester County study (Jacknis & Fernqvist) tells how the county implemented an anti-outsourcing initiative to bring IT back into the governmental fold. Nevertheless, in most cases, successful projects result from good working relationships between governments and vendors. Thus the development of an effective relationship is a necessary and challenging task. As Petersen relates, it is good to have competition for RFPs continue on as late as possible in the purchasing process so that governments can achieve the best value for their expenditures. On the other hand, for the relationship to work for the long haul, the vendor must feel that the contract is favorable to them too and, if the government pushes too hard, this relationship can be harmed resulting in problems and possible vendor turnover. Vendors can play different roles in organizations. In many cases, governments hire them to do jobs they lack the skills for, and this task may be performed on an ongoing basis. In other cases, organizations hire vendors

to teach them how to do the jobs themselves. Thus managing contracts and vendors is a key part of the job of IT staff, though in some complex projects such as the GovBenefits.gov case, vendors are hired to implement the program and another vendor is hired to monitor these other contractors.

Communication and Marketing

One point that is common throughout all of these case studies is that non-technical issues are the cause of the most frequent problems. Successes are most common when communication is good. Several of the cases emphasize that need to take actions to improve communication between technical IT staff and others. For example, in Wisconsin, an IT catalog was developed to make line agencies aware of their services. Gil-Garcia and Dawes cite communication between technical and program staff as an obstacle to the development of the New York State Web portal. Likewise, communicating with citizens can be important and difficult as Pettit and Caranna show in their analysis of what they refer to as the "techonomic divide". Marketing has become an essential aspect of IT management, especially for those aimed at external constituencies. The Federal Department of Labor GovBenefits.gov Web site got a major boost in usage after it was mentioned in a Dear Abby column so unconventional marketing can be most effective.

Implications for IT and Generalist Managers

As information management has become more strategic and interorganizational, the jobs of IT managers have become more complex. Soft knowledge and skills such as politics, communication, project management, and knowledge of ethical and legal issues have become much more important. Most IT managers did not receive training in these issues during their formal education and training in information technology. They must learn these if they are to succeed. Most learn them quickly on the job if they are successful, but reading these case studies will provide insights on how to deal with many of these challenges.

Generalist managers cannot afford to ignore the importance of information and communication technologies. IT issues such as municipal broadband and wireless systems can become key issues of public debate that generalist managers cannot avoid. Likewise, the employment of more effective uses of information technologies is a way to deal with cutbacks in budgets and to communicate with citizens. The case studies reveal that leadership from these generalist managers is a critical success factor. This book provides a roadmap to such leaders on the important processes and forces that they need to deal with.

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