

PUBLISHED BY PUBLIC TECHNOLOGY INSTITUTE

CIO Leadership for Cities and Counties

Emerging Trends and Practices

Revised/Second Edition

Executive Editor and Contributing Author

Dr. Alan R. Shark

Written by leading professionals and industry experts

CIO Leadership for Cities and Counties: *Emerging Trends and Practices*

SECOND EDITION

Dr. Alan R. Shark

Executive Editor and Contributing Author

Copyright © 2016 Public Technology Institute
All rights reserved
Printed in the United States of America

No part of this publication may be reproduced, stored in, or introduced into a retrieval system, or transmitted, in any form, or by any means (electronic, mechanical, photocopying, recording, or otherwise), without the prior permission of the publisher. Requests for permission should be directed to info@pti.org.

Limit of liability/Disclaimer of Warranty: While the publisher and author/editor have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. Any advice or strategies contained herein may not be suitable for your situation. You should consult with a professional where and when appropriate.

Library of Congress Cataloging-Publication-Data

Shark, Alan
CIO Leadership for Cities and Counties—Emerging Trends and Practices
p. cm.

ISBN-13: 978-1536891485
ISBN-10: 1536891487

1. Chief Information Officers. 2. Information technology-Management. 3. Leadership.
I.Title

Public Technology Institute
1420 Prince Street, Suite 200
Alexandria Virginia 22314
www.pti.org

Contents

Preface	viii
Acknowledgements.	ix

CIO/Leadership

Chapter 1: CIO Leadership for Cities and Counties—An Evolving Role	2
<i>Dr. Alan R. Shark</i>	
Chapter 2: A Wonderland—Local Government Leadership in the Age of Technology	16
<i>Dena Hurst Ph.D.</i>	
Chapter 3: Four Points to Ponder for IT Governance	25
<i>Mary J. Miller and Dawn Hilderbrand</i>	
Chapter 4: The Digital Shift and Digital Delusion Why digital leadership is mostly not about ‘IT’	30
<i>Jos Creese</i>	
Chapter 5: Transformation of the Local Government CTO/CIO	36
<i>Dr. Norman Jacknis</i>	

Security

Chapter 6: Cyber Security—What Everyone Must Know and Do	46
<i>Dr. Alan R. Shark</i>	
Chapter 7: Managing Technology Risks through Technological Proficiency Guidance for Local Governments—Challenge of Digital Technology in Local Government . . .	56
<i>Marc Pfeiffer</i>	
Chapter 8: Enabling Cybersecurity Solutions for Network Infrastructure	73
<i>Peter Romness</i>	
Chapter 9: How CIOs Can Protect Data While Enabling Innovation	86
<i>Dan Lohrmann</i>	

Organization/Management/Technology Practices

Chapter 10: Digital Ethics—Navigating the Gray Zone 99
Dr. Alan R. Shark

Chapter 11: Role of the CIO 108
Donald C. Dennis

Chapter 12: Government Helping Government—Shared technology solutions benefit governments of all sizes 116
Phil Bertolini and Rock Regan

Chapter 13: A CIO Perspective on Integrating Geo-Information Systems into IT. 125
Alan Leidner

Chapter 14: Change Management—Models and Approaches 140
Spencer Stern

Chapter 15: Cloudy with a Chance of Savings: Contracting for the Cloud in the Public Sector. 154
Dr. Shannon Howle Tufts and Dr. Meredith Leigh Weiss

Chapter 16: Social Media Considerations for the Chief Information Officer 175
Nicole Camarillo

Chapter 17: Public Enterprise Resource Planning—Getting It Right. 186
Scott Eiler

Chapter 18: Enterprise Resource Planning 206
Michael H. Johnson, Sr.

Chapter 19: Resiliency Planning and Continuity of Operations—Beyond Disaster Planning 215
Larry Chase

Chapter 20: IT Consolidation—Tearing Down the Silos. 229
Richard Mckinney

Chapter 21: Information Technology Governance. 245
Adam J. Rujan

Data and Performance

Chapter 22: Measuring the Performance of E-Governance—Recommendations for CIOs and IT Managers.	259
<i>Dr. Marc Holzer, Dr. Aroon Manoharan and Sean Mossey</i>	
Chapter 23: Making Data Work for Local Governments	273
<i>Richard Negrin, Rosetta Carrington Lue and Cory Fleming</i>	
Chapter 24: Becoming Data-Driven	289
<i>Adam P. Roy</i>	

Human Resources/Talent Management

Chapter 25: Solving the Dilemma—Hire for Attitude or Hire for Skills?	300
<i>Jason D. Patrick</i>	
Chapter 26: Managing Labor in a Union Environment—Butte County Automates Time and Attendance	308
<i>Tao Elson</i>	
Chapter 27: Workforce Strategies—Find, Hire and Keep Talent.	317
<i>Kelly Samson-Rickert and Jim Smith</i>	

Broadband

Chapter 28: The Strategic Imperative of Broadband.	340
<i>Mike Hernon</i>	
Chapter 29: Why Broadband Matters for Cities	352
<i>Julia Pulidindi and Nicole DuPuis</i>	
Chapter 30: Implementing ICT in the Public Safety Domain	364
<i>Scott Somers</i>	

Chapter 17: Public Enterprise Resource Planning—Getting It Right

Focus on people, processes, and technology to maximize opportunities for success

SCOTT EILER

In 2002, recognizing the need for a massive technological overhaul of the country's healthcare system, England's National Health Service (NHS) launched the National Programme for IT in the NHS (NPFIT), a centralized strategy to integrate electronic patient records of the country's 60 million residents, physician referrals, prescription system and online appointment-setting capabilities.

In developing the projected £6 billion (roughly \$8.8 billion) plan the U.K. government sought “to take greater control over the specification, procurement, resource management, performance management and delivery of the information and IT agenda. We will improve the leadership and direction given to IT, and combine it with national and local implementation that are based on ruthless standardization.”¹

The ambitious plan was forward thinking, proactive and seemingly comprehensive. But more than nine years later, on September 22, 2011, it all came to a crashing halt.

“The government today announced an acceleration of the dismantling of the National Programme for IT, following the conclusions of a new review by the Cabinet Office's Major Projects Authority (MPA) ... [that] has concluded that it is not fit to provide the modern IT services that the NHS needs.”²

After incurring cost overruns estimated at more than £12 billion (\$18.7 billion)—enough to pay 60,000 nurses' salaries for a decade³—government officials terminated what some referenced as “the largest public IT project of all time,”⁴ with the MPA spelling out a long list of the plan's shortcomings:

“It has also not delivered in line with the original intent as targets on dates, functionality, usage and levels of benefit...”⁵

NPFIT is just one in a seemingly endless line of public enterprise resource planning (ERP) projects that have fallen dramatically short of achieving their goals.

Despite the best intentions, even when supported by a deep pool of resources, public ERP initiatives are difficult to implement successfully, incurring a host of challenges that, even when ultimately implemented, may be met with significant resistance to use, or worse, as with the NPFIT project, implode as epic failures.

It is little wonder that those public administrators and Chief Information Officers (CIOs) who have endured an ERP initiative acknowledge the process by its alternate acronym—Enhanced Retirement Plan⁶—tacking on “Career Is Over” for CIO.⁷

Despite these ominous characterizations, inaction is hardly preferable, especially when job security is tied to performance. Indeed, citizens expect—rather, demand—efficiencies at all levels of government, looking to productivity that is powered by integrated, advanced technologies, not inefficiencies that stem from antiquated, disconnected systems.

As a result, the need to get things right—to successfully deploy an ERP solution that “justif[ies] [its] contribution to productivity, quality and competitiveness”⁸ is a paramount concern. With so much tied up in ERP projects—money that is often difficult to extract from carefully scrutinized budgets—there is a tremendous amount at stake, with public officials loathing to have their administrations tied to failures that impact their constituencies or simply associate themselves with public failings. Consider:

- Following the French government’s migration to a new accounting system in 2009, cash flow became strained, and bills were left unpaid. Defense companies were owed more than €1.8 billion (\$2.2 billion), forcing companies to take out loans to avoid insolvency.⁹
- Classes were half-empty at the University of Massachusetts-Amherst during the first few days of the fall 2004 semester, as the school’s new online registration system crashed the day before classes began, preventing students from registering for classes and accessing timetables.¹⁰
- In May 2012, California’s Judicial Council stopped the deployment of a case management system that was commissioned for the state’s trial courts. “Unfortunately, we don’t have the resources to deploy it,” said Chief Justice Tani G. Cantil-Sakauye, after the state had already spent more than \$333 million on the software product.¹¹
- After spending more than \$1 billion over seven years to develop a software product aimed at saving the U.S. Air Force both time and money, the project was scrapped, with officials concluding that the cost to finish the Expeditionary Combat Support System would exceed its projected benefits.¹²

A dispiriting track record of defeats (perform an Internet search for “government ERP failures” to gain a full appreciation of the magnitude) is supported by a 2014 report¹³ assessing recent ERP implementations that revealed that the process is fraught with uncertainties:

- 54% of projects incurred cost overruns
- 72% experienced duration overruns
- Nearly two-thirds reported receiving 50% or less of their expected benefits

But all is not lost. ERP successes are significant, real and even calculable. But even for the most experienced administrator and CIO, the process cannot be left to chance. Maximizing opportunities for ERP success requires careful planning, an engaged team of executives acting on behalf of a committed administration, and a thorough understanding as to the risks involved and strategies to address them.

What Is an ERP?

Consider a municipal government. It has departments for finance, human resources, purchasing and information technology as well as other departments that operate like their counterparts in private organizations, providing internal services to the rest of the organization. Other departments exist that oversee essential services that are provided to the community they serve to include utilities, public works, parks, engineering, building, and public safety (police and fire) to name a few.

Each department performs a series of common, repetitive tasks: issuing permits, performing inspections, making zoning determinations, among many others. And, of course, there are ongoing, administrative responsibilities: writing checks, accepting and processing payments, processing payroll, hiring staff, and others.

The management of the business functions and processes within these departments requires software that serves their unique needs: financial software for accounting purposes, HR software for personnel management, and police software for coordinating dispatch and records. However, when organizations operate with a “silo” mentality, not sharing information across departments, the amount of complexities and inefficiencies increases. Redundancies become commonplace through the proliferation of “shadow systems” (i.e., offline spreadsheets and databases separate from the primary system), with data entry duplicated, and then synchronized across multiple departments to ensure accuracy.

An ERP initiative for public sector organizations attempts to address these inefficiencies, through the procurement and implementation of an integrated system that is intended to provide a single source of information for the enterprise with information shared across all departments. For larger communities, the initiative is typically more narrowly focused to include financial, supply chain, and human resources software, for instance. In these situations, other departments may look for standalone or “best of breed” solutions that are more robust than what might be found in a single integrated ERP solution. However, even with the purchase of “best of breed” solutions, the desire is still there to streamline business processes through the sharing of information via interfaces between these systems.

While the end result of an ERP project is an integrated software solution that consists of one or more software products, the process to make this happen generally involves a number of phases to include the procurement and deployment of such a system—each phase carrying a significant number of risks. As a result, every public ERP project therefore becomes formidable:

“Public sector organizations ... are faced with multiple ERP providers that, on the surface, are difficult to discern. In addition, adjudicating between competing ERP solutions on their functional merit is not only difficult because of the complexity of ERP systems, but it is further complicated by the intricacy of the government acquisition process... What’s more, the level of detailed analysis required to map functional requirements to ERP solutions is an arduous task that, even if done thoroughly, hasn’t always delivered a successful implementation.”¹⁴

Furthermore, the great majority of “ERP software is standardized for universal best practices, [which makes it] sometimes difficult for public-sector organizations... to implement.”¹⁵ Add to that often complex government regulations, policies, and restraints that accompany the need for public accountability, and it’s little wonder that the process proceeds precariously as these complexities become requirements that governments seek to support in their software solutions.

The underlying goal for executing an ERP project should be to mitigate risk in every phase, thereby optimizing opportunities for long-term success, and to achieve the overall goals of the project that generally focus on improving overall organizational efficiency and effectiveness.

People, Processes, and Technology

Were it just about selecting a robust software platform, public ERPs would be straightforward and predictable. But while software drives the engine of an ERP system, its success depends more on people and processes than technology—that is, people willing to adapt their processes to align with the changes that accompany every new ERP software solution.

Fundamentally, an ERP is accompanied by change, which can be difficult to integrate in the public sector where processes are long established and job responsibilities clearly defined. “It is particularly important that the business value be sold at the executive and political levels of government, and, to be successful, that government embeds the ERP solution within its culture and processes.”¹⁶

While leveraging the capabilities of advanced software offers tangible opportunities for improvement, the technology itself is becoming increasingly commoditized. As a result, the more important area of focus and the one which is by far the most common cause of ERP implementation challenges is ineffective vendor staff and lack of committed and knowledgeable client staff who are willing to embrace the change. There are numerous situations that have been documented in which the same ERP software system was a dismal failure in one community and an outstanding success in another community with the difference due

entirely to ineffective management of the people and process components of the change. A Chief Accounting Officer may be nearing retirement and resistant to change, which creates risk; alternatively, that same executive may create issues for the transition team—demeaning them or failing to oversee deadlines.

Commensurate with implementation must be a willingness to adapt processes to the new technology versus customizing the software to mimic current business processes. No matter how powerful the ERP software, performing tasks in the same, pre-ERP manner will simply camouflage inefficiencies—the proverbial “putting lipstick on a bulldog” or “paving the cowpath.”

The commitment to change must begin early in the process with a visible and committed business sponsor and executive steering committee firming up guiding principles. The CIO needs to focus on educating executive leadership that ownership of the change is the responsibility of the business, not IT. IT is an enabler, and will be supportive of the change but the ultimate decision on what will be implemented, by whom and how rests with the business. Executive management must understand that it will have to train and encourage its staff to operate differently, the most challenging aspect of the ERP process.

Another critical success factor tied to the people side of the equation is the proper management of staff expectations at all levels as nearly all public sector ERP projects face one or more of the following staffing-related challenges:

1. Getting the right staff involved with the project during implementation to fulfill all of the required roles that will enhance project success;
2. Educating department directors as to the importance of giving up their best staff to the project;
3. Communicating to staff when they will be needed, their role and how much time they will be expected to commit to the process;
4. Educating staff as to what to expect during system implementation and beyond so they can prepare accordingly;
5. Addressing the FUD (fear, uncertainty, doubt) factor that many staff will likely feel as they are uncertain as to their future job role and responsibilities after system implementation is completed.

The CIO can play an important role with assisting executive management in addressing these staff-related issues as staff within the CIO’s own department will likely have similar concerns.

Goals of an ERP Initiative

There are a few common scenarios that result in the need to initiate an ERP initiative: The first is a situation in which a community may have purchased and implemented a solution that was

overly complex (i.e., over-bought) and seeks to acquire and implement a solution that is more appropriately sized for their community (i.e., downgrade from a Tier 1 to Tier 2 solution). In a second scenario, a community may be using software that has run its lifecycle and is no longer supported or is unable to meet the needs of the community.

Regardless of the driver for change, every public ERP project should include a statement of project goals and objectives in a project charter that is drafted prior to commencement. Additionally, while governments may talk about achieving measurable improvements with an ERP project, politics often dictates a more practical approach. Applying metrics to processes before and after implementation carries with it performance risks that do not always demonstrate success. For instance, while it may take a department one minute to enter an invoice pre-ERP, it may take them two minutes after the ERP is complete—a measurable loss in performance. However, that measurement fails to take into account that their previous process was not integrated with an activity upstream or downstream, whose collective actions to reconcile the activity may indeed exceed the time to perform the activity with the revised approach. This is one example where proper upfront planning and clarity on the reason for performing an ERP project is critical to obtain buy-in from the organization.

A note about software solutions

All ERP solutions are not created alike,¹⁷ which has resulted in classifications by Tier. The classifications do not reflect quality but rather functionality and other factors.

TIER 1: These include the major vendors (Oracle, PeopleSoft, SAP, CGI) that are aimed at larger and more complex municipal governments. They offer greater customization than software from Tier 2 and Tier 3 software vendors. As a result, they are more complex requiring a longer implementation time period. Historically, they lacked certain public sector specific features but those gaps are quickly diminishing.

TIER 2: These solutions are more prescriptive, and integrate best practices for governments, without the customization options of Tier 1 software. There are a number of Tier 2 software vendors that provide solutions spanning most municipal business functions to include New World Systems, SunGard, SpringBrook Systems, Tyler Technologies, Infor and others. They typically offer less robust functionality (than their Tier 1 counterparts) for core components and leverage third-party tools, as necessary.

TIER 3: These are solutions that cater to smaller communities to meet their basic needs.

Over the past several years in an effort to increase client opportunities, tier levels among ERP vendors have blurred, as Tier 2 vendors are looking to move up while Tier 1 vendors are looking to move down. Likewise, there are a significant number of best-of-breed vendors that satisfy various lines of business needs within a municipal government.

Furthermore, staff should be educated that implementation of the system in a production state will not result in instantaneous achievement of the project goals as, with any new tool, there is a learning curve with the ultimate goal—achieved a year or two after deployment—in reaching a higher, more efficient plateau, one that encounters fewer and less impactful valleys along the way.

The Current State of ERPs in the Public Sector

The various cost components to acquire and implement a new ERP system to include vendor costs (i.e., hardware, software, services), internal staffing costs, external assistance from consultants and other cost components requires a significant up-front investment with the goal of obtaining a return on that investment over time through improvements in the efficiency and effectiveness of business processes. The recent economic malaise caused governmental revenues to drop significantly resulting in a significant reduction in both operational and capital expenditures as well as staffing levels. Only after an economic upturn is well underway, and governments are feeling more confident in their financial situation does capital investment return which is a lagging indicator.

The decision to allocate revenues once they are available is often political: Does a community put the money into public infrastructure, distribute it to residents in the form of lower property taxes, or spend it on an ERP initiative to improve their business processes or to replace their technology infrastructure that may be out of date? It can be difficult to convince a constituency whose daily commute traverses pothole-marked roads that the city's new budget prioritized overhauling its accounting software over road improvements.

But system upgrades or overhauls are eventually mandatory. Every ERP system has a useful lifecycle—about 10-20 years—after which it either becomes unreliable or inefficient. For instance, prior to the turn of the century (2000), and fearing compatibility issues, many governments changed their ERP systems.¹⁸ The economic malaise that started in 2007 significantly restricted the ability for governments to invest in their infrastructure to include their business systems. However, the recent upturn in economic conditions has resulted in significant investments in technology by government due to pent-up demand and aging systems, many that were implemented in the late 1990's to fend off Year 2000 date issues. This increase in volume has strained many software companies in their ability to effectively implement systems that has been compounded by governments still being reluctant to increase staffing to levels prior to the economic downturn. Additionally, consolidation of ERP vendors in the governmental space has reduced the number of viable options created added pressure for software vendors to meet the high level of demand. CIOs need to understand these conditions, and prepare their organizations accordingly.

So Why Go Through an ERP Replacement Project

Irrespective of whether budgets will allow for the investment, there are a number of factors that precipitate the need to upgrade ERP software:

1. **Legacy products:** In an industry where vendors can control sizable market share, if it withdraws a product from its active portfolio, relegating it to legacy status, support may wane. This will result in a lack of new functionality and technologies that are required to meet changing marketplace demands. Therefore, a client must either migrate its existing product to the vendor's new product, or select and implement a new solution. In many situations, the vendor's new product will require a re-implementation process imposing a need of changes in both technology and business processes.
2. **Retiring support:** If ERP software has been customized, and those involved with its development and support are nearing retirement, a client may be forced to implement a new solution. Although technology discussions focus on web-based solutions when talking about business software, there are a significant number of clients who have developed custom solutions on AS/400, Mainframe and other environments where support and development resources are waning.
3. **Rightsizing existing software:** Sometimes, a community can outgrow the capabilities of its ERP software, requiring a more robust solution. In other situations, a community may have significantly "overbought" in purchasing a software solution that had too much functionality and complexity than what could be used.
4. **Going vanilla:** Historically, many clients would buy new business software, and customize the software to replicate legacy business processes versus taking advantage of the inherent capabilities in the software, and, instead, modifying their business processes. As a result, the benefits of a packaged solution quickly became negatives as clients would need to apply their local customizations when new releases of the vendor's software were installed. The model that is increasingly gaining acceptance, in large part due to the advances that business software has made over the last several years, is to modify business processes versus modifying the software.
5. **Call Yelp:** It is imperative that a public ERP operate efficiently with minimal disruptions. If the software vendor is unable to provide the support and maintenance to ensure a reliable user experience, the client may need to look elsewhere for more enhanced support.

Frequently, it is the City Official such as the city manager, finance director, IT director, or council member who identifies the shortcoming and initiates the need for upgrading or replacing legacy software. It is imperative that the CIO understand the discussions being held and properly set expectations as to what is necessary to make the project successful.

Tools and Technologies

Over the past few decades, there has been a fundamental shift in how ERPs are managed. Up until the late 1970s and early 1980s, business systems were primarily mainframe-based, with communities developing their own custom systems, or using an external service provider as options for buying software and running locally were limited and expensive.

Mid-range solutions became popular in the mid-1980s to early 2000s that frequently operated on an AS/400 or other mid-range solution becoming more affordable for government to implement locally to include an increasing number of packaged vendor solutions. However, the “openness” of these products was generally restricted to the specific platform in which these systems operated. In the 1990s, the concept of client-server technology became popular in which packaged systems provided an enhanced user interface. In many cases, vendors were applying graphical front-tools to their solutions but frequently the back-end technology was still the same. Even during this period of time, the AS/400 and other midrange solutions still dominated the local government business application marketplace. In the mid-2000s, the development of web-based solutions started entering the marketplace. These solutions resulted in a full circle that harkened back to the mainframe days in the 1970s and 1980s where governments had their applications running anywhere, on-premise or vendor hosted, but had the added benefit of a user-friendly experience versus the legacy “green screen systems”. As of 2015, there are a very small number of legacy AS/400 ERP solutions being marketed but there is a significant volume of activity in which clients are migrating from these legacy solutions to more current web-based products. In addition to the user interface benefits, these current solutions offer robust reporting and openness to interface with other solutions.

Over the last few years, cloud-based ERP solutions have emerged, a centralized system of management, where applications and data are accessed via the Internet. Vendors will tout this model as a seamless process that eliminates the need for individual computers to become bogged down with expensive software and documents while delivering:¹⁹

- **Quicker, more efficient deployments:** Tapping resources remotely speeds time-to-market, and reduces the costs associated with implementations that are performed on-site. Additionally, cloud service vendors are committed to security, lessening government IT burdens and providing other cost savings.
- **Enhanced innovation:** With software stored in the cloud, product enhancements can be shared across a user group, leveraging the capabilities of advanced technologies quickly and at minimal cost.
- **Scalability:** Cloud-based ERP software enables governments to add or subtract components as needed, customizing functionality (within the constraints of the software package) to suit current needs.

One model of cloud-based computing, Software as a Service (SaaS), is a subscription model whereby applications do not reside on end user computers but rather “in the cloud,” whereby the same instance of that software is shared with all of the other entities using that software.

Within the governmental setting, there has been some level of resistance in adopting this model as concerns related to security, ownership of data, ability for unique local customizations, disentanglement of services and others have resulted in a slow adoption of this computing model. CIOs will need to read through the rhetoric when conversing with providers of cloud-based ERP solutions and understand the trade-offs and benefits when considering such a solution as compared to more traditional software models.

Pitfalls and Best Practices by ERP Phase

Public sector organizations can expect to encounter challenges during every phase of an ERP deployment. The underlying goal in order for a project to be successful is to identify, understand and mitigate risks while looking to maximize opportunities for success. Since most governmental entities go through such a project once every 15 or 20 years, careful consideration should be given to determining whether external assistance will be required or to take a “go it alone” approach. Considering that such a project will cost significant dollars and impact people, process and technology across the organization many governmental entities opt to leverage external assistance, in some manner, to mitigate their risk.

Assessing the Need and Impact of an ERP Project

As a first step, organizations should develop a business case to clearly articulate why such a project is needed to include the tangible benefits that are hoped to be accomplished. This could include improving business process efficiency and effectiveness, obtaining improved access to information, providing increased transparency to governmental operations, allowing for enhanced citizen access and interaction and others. In some cases, organizations will use ERP as a lever in accomplishing business goals such as centralization / decentralization of business functions, breaking down silos of information and processing between departments and redesigning of the organization itself. In certain situations, it is not so much the benefits but the growing risks that are incumbent on the need for a new ERP as previously mentioned. As part of this exercise, the costs and impacts of an ERP need to be properly reviewed and assessed to ensure that the organization is prepared financially and organizationally to undertake such an initiative. CIOs can be of great assistance during this process to educate the organization that this project will need to be business-driven, not technology-driven and to leverage their network of peers to ensure that management goes into such a project with eyes wide open.

Governance Development

As part of the planning process, organizations need to develop a governance structure that details and assigns roles and responsibilities and decision-making as part of the project.

The management component of an ERP project frequently consists of executive sponsors, a Steering Committee and project managers. Leadership is further broken down into functional area leads and leads for communications and change management. Key roles and responsibilities of each during the procurement process are as follows:

- **Executive sponsor:** maintains the project vision; motivates the project leadership and teams; provides a strategic perspective when defining the need for a future ERP; secures alignment across departments.
- **Steering Committee:** provides incentives to government-wide executives to view the project as a top priority; is generally comprised of senior-level managers who are empowered to make decisions regarding changes in organizational policy and procedures.
- **Software Selection Committee:** works with government departments to ensure that all software functional needs are identified and prioritized; develops vendor selection criteria and weightings; reviews and approves release of the ERP Request for Proposals documents; reviews and provides feedback of vendor proposals; recommends preferred vendor solution.
- **Project manager(s):** manage project milestones and activities; manages the project budget, schedule and task completion; identifies and logs changes to the project; manages and directs project resources; ensures that project deliverables are reviewed by appropriate government staff.
- **Project administrator:** schedules meetings; maintains project calendar; ensures availability of appropriate resources to support meetings; takes meeting minutes; ensures project communications are distributed.
- **Functional leads (and backups):** works with the project manager to drive the process; provides information on current government processes, systems and shadow systems used; participates in initial on-site and cross-functional interview sessions; develops an understanding of how a future ERP and associated processes might operate; conducts due diligence on software vendors with peer organizations.
- **Technical team:** provides information on the government entity's current IT infrastructure; defines technical requirements for a new ERP; conducts due diligence on technical aspects of the ERP solution.
- **Change management team:** assesses the readiness of the organization with respect to change that will occur post-implementation; develops change management strategies and practices to enhance project success; develops, implements and monitors change management action plans; identifies training and education requirements related to change management needs associated with people, processes and technology; works with the communications team to provide content related to the external facing project website that is viewable by government staff.
- **Communications team:** develops a communications management plan that identifies how communications will be addressed for various project stakeholders; acts as the point

of contact for project communications that are directed toward stakeholders external to the project team; manages the structure and content of the government's intranet project site, which is visible to all government staff.

- **Training team:** defines training requirements for the project; formulates a training strategy to be used during the project implementation phase.
- **Human resources department:** acts as the initial point of contact for issues related to changes to job roles and responsibilities.
- **Procurement office/legal counsel:** provides terms and conditions to be used in during the procurement process.
- **Negotiating team:** negotiates vendor contracts.

Guiding Principles

To minimize project risks and disruptions, a public sector organization should develop a list of guiding principles that are closely followed during planning, design and implementation. Common principles to adopt are as follows:

- Establish common processes and practices across the organization.
- Focus on process and transaction quality.
- Provide relevant, timely and consistent management information.
- Embrace process improvement strategies, and encourage the implementation of out-of-the box functionality (in most cases, an organization should expect to use software with minimal customization).
- Embrace financial accounting best practices.
- Decisions related to project activities and system implementation should go toward the betterment of the organization.
- Minimize system interfaces, prioritizing integration over best-of-breed solutions.
- Whenever possible, transition displaced personnel into other government jobs.
- Commit to providing adequate staffing and financial resources to ensure the success of the project, during and after its completion.
- Ensure that adequate training is available to project team staff and system users during the implementation, prior to placing the system into production and after the system is in production.
- Strive to decentralize operational responsibilities and approvals.
- Follow the organization's IT architecture and standards.
- Integrate mainstream security practices and functionality into the system.

Change Management

The need to anticipate and prepare for change during an ERP deployment cannot be understated. "Organizations with strong third-party guidance understand that a significant amount of their implementation budgets should be allocated toward organizational change management,

business process management and all project activities that can help maximize benefits realization.”²⁰ Some example of change management activities to consider on a project include:

- Forming a readiness team;
- Naming the project;
- Establishing a project and staff-facing collaboration site;
- Obtaining executive level sponsorship of the project;
- Developing an organizational change management plan;
- Developing an “elevator speech” to build enthusiasm and support;
- Developing a communications plan;
- Engaging process-owners and process end-users throughout the procurement process;
- Ensuring transparency in the procurement process;
- Keeping stakeholders apprised of current project progress.

These activities are executed among distinct phases, which include:

- **Awareness building:** ERP awareness, project awareness (including governance, process and decision criteria);
- **Defining:** Needs assessment, specification development, process issues and opportunities, solution design process;
- **Communicating:** Progress updates, policy/process changes, organizational changes, technology changes;
- **Implementing:** Redesigned processes (policy, process, organizational), technology skill development, testing, user training, metrics;
- **Monitoring:** Performance metrics, policy enforcement, coaching/mentoring, perpetuating change.

Needs Assessment

The importance of a thorough needs assessment cannot be understated. It provides an understanding of the current environment from which the entity can move forward while identifying:

- Operational and system issues that may not have been discussed until late in the selection process or during the implementation;
- Critical system interfaces that will need to exist within the new system;
- Identifying entity-wide needs that a new system will address;
- Operational and system issues;
- Expectations of what end-users are hoping to achieve with a new system;
- System and process changes that will be required;
- Barriers and supports that will impact implementation;

- Specific issues and opportunities within each of the business areas;
- Specific technologies that are of interest or may be of benefit with respect to implementation of the new system.

Any needs assessment should assess people, processes and technology, with key elements to include:

- **Assessing the current IT infrastructure:** Review systems and technologies and functions performed in department-specific systems; assess which systems are effective for meeting current needs; decide what data should be converted with the new system; assessing whether the existing infrastructure will support a new ERP; identifying technical requirements for a new ERP.
- **Conducting stakeholder interviews:** Speak with owners and consumers of the various business processes to explore areas for improvement.
- **Developing critical and unique system requirements:** Identify functionality expected to be delivered in a new ERP. Caution should be taken in focusing on the “what” versus the “how” as stakeholders will generally describe how they do what they do versus what the desired outcome of what they are doing is.

There are a variety of needs assessments that can take place during a public ERP project. In many instances, a public sector organization may be uncertain whether to upgrade an existing system or install a new one, necessitating an options analysis. One municipality was spending more than \$200,000 annually to maintain its existing system; an option analysis revealed that it was more cost effective to select new software while retaining certain items in its legacy system.

Request for Proposal (RFP) Development

To be effective, the initial goal of an RFP must maximize the number of responsive vendor responses. This is often accomplished through precision, completeness and clarity to ensure that vendors understand how to respond.

A typical RFP includes the following components

1. Introduction
 - a. Organization background
 - b. Current business application environment
 - c. Current technical environment
 - d. Future vision and project objectives
 - e. Expected scope of ERP solution
 - f. Evaluation process
 - g. Summary of key transaction volumes
 - h. Evaluation criteria

2. Vendor proposal guidelines
3. Proposal response format
4. General system requirements specifications
5. Terms
6. Proposal forms (vendor questionnaire, pricing forms, references)

Depending on the procurement policies within the organization and common practices followed, there may be a pre-proposal meeting, the opportunity for vendors to submit questions and the issuance of addenda in response to vendor questions to aid vendors in completing a response that closely matches the need of the organization.

Solution Selection

In an effort to provide full transparency, the public ERP process must include the drafting of solution selection criteria while defining the decision-making process.

The decision-making process should address what to do when proposals are received. In most instances, this will include a scoring process. For instance, software might be weighted 30 percent, pricing 50 percent, etc.

It is also important to include an opportunity for vendors to demonstrate their products, implementation services and technical components. This will ensure that when the process is complete, the organization “owns” the solution through a process that has been fully vetted. A typical solution selection process unfolds as follows once the vendor proposals have been received and qualified as being responsive:

- Analyze proposals and select semi-finalists;
- Develop vendor demonstration scripts (performed prior to proposals being returned);
- Additional due diligence activities to include site visits and reference checking;
- Selection of preferred vendor.

Contract Negotiations/Statement of Work

After selecting the ERP solution, it is common to feel as if the major challenges have been addressed; however, the contract stage, which includes the drafting of a statement of work and contract, is perhaps the most important step in preparation for implementation.

Without a solid contract and thorough statement of work, there exist too many opportunities for post-deployment issues to arise. Irrespective of your confidence in the preferred vendor, you must have adequate legal protections to mitigate your risk.

Generally, ERP contracts for public sector organizations are complex, as they may include a software vendor, third-party software vendors, a hosting vendor, and a third-party software reseller, among other parties. Many organizations choose to work with an external consultant to ensure that their interests are adequately protected.

Implementation Management

The procurement phase of the project is a “dress rehearsal” for the time and effort that will be required for system implementation. Implementation of a full ERP is most commonly implemented in phases in which logical modules are implemented together versus a “big-bang” approach in which all modules are implemented simultaneously. These decisions are determined the contracting process as part of the Statement of Work.

System implementation will include a number of activities associated with each module roll-out to include planning, analysis, design, build, test, train, go-live and post go-live support. A number of activities are performed within each of these roll-outs that requires diligence on the part of the project management function to ensure that activities stay on track and within budget. The complexities and risks of a system implementation are too numerous to list but need to be documented, tracked and mitigated throughout the course of the project.

Final Thoughts

At a time of ubiquitous connectivity, where citizens, not public officials, control the conversation via a robust arsenal of social media platforms, the ability for public sector organizations to deliver a seamless user experience is paramount.

Whether it is replacing a legacy system whose support is ending or updating an existing system to provide the functionality that constituents demand, managing enterprise technology systems in the public sector *effectively* and *efficiently* is an operational imperative whose success depends on painstaking review and assessment.

Improving ROI and productivity while simplifying the user experience are realistic goals, but they are elusive without mitigating the risks that accompany the daunting ERP process.

Simply allocating the resources to fund an ERP is a prerequisite but hardly a guarantor of success; one must be prepared to navigate the unwieldy process of planning, selection, implementation and optimization.

Only then can you fully leverage the capabilities of your system to best meet the needs of those you serve.

DISCUSSION QUESTIONS

1. What critical success factors would make an ERP project successful in your organization?
2. What role should the CIO take in determining whether an ERP project is appropriate for the organization?
3. Should ownership of an ERP initiative be driven by the business, technical or both and why?
4. What role should IT play in the procurement phase of an ERP project?
5. What role should IT play in the implementation phase of an ERP project?
6. As the CIO, how will you organizationally transition your department staff once the new ERP system is in place?

ENDNOTES

1. Department of Health, *Delivering 21st Century IT Support for the NHS: National Strategic Programme* (London, UK: Department of Health, 2002) Retrieved from http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4067112.pdf.

2. Department of Health, *Dismantling the NHS National Programme for IT*, (London, UK: Department of Health, 2002). Retrieved from <https://www.gov.uk/government/news/dismantling-the-nhs-national-programme-for-it>.

3. Martin, Daniel, “£12bn NHS computer system is scrapped... and it’s all YOUR money that Labour poured down the drain”, *The Daily Mail*, September 22, 2011. Retrieved from <http://www.dailymail.co.uk/news/article-2040259/NHS-IT-project-failure-Labours-12bn-scheme-scrapped.html>.

4. Kanaracus, Chris, “10 Biggest ERP Software Failures of 2011”, PC World UK, December 20, 2011. Retrieved from http://www.pcworld.com/article/246647/10_biggest_erp_software_failures_of_2011.html.

5. Major Projects Authority, *Programme Assessment Review of the National Programme for IT*, Report (London, UK: MPA, 2011) Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/62256/mpa-review-nhs-it.pdf.

6. Shark, Alan, *Seven Trends That Will Transform Local Government Through Technology* (Create Space Independent Publishing Platform, 2012).

7. Ibid.

8. Sedera, Darshana; Guy Gable, Taizan Chan, *Survey Design: Insights from a public sector-ERP success study*, PACIS 2003 Proceedings. Paper 41 (2003). Retrieved from <http://aisel.aisnet.org/pacis2003/41>.

9. Tran, Pierre, "France Late on \$2.2B in Payments to Companies", *Defense News*, June 10, 2010. Retrieved from <http://archive.defensenews.com/article/20100601/DEFSECT04/6010303/France-Late-on-2-2B-in-Payments-to-Companies>.
10. Wailgum, Thomas, "University ERP: Big Mess on Campus", CIO.com. Retrieved from <http://www.cio.com/article/2439102/enterprise-resource-planning/university-erp—big-mess-on-campus.html>.
11. Carrizosa, Philip, "Judicial Council Votes to Stop Deployment of Statewide Case Management System", Press release, (The Judicial Branch of California, 2012). Retrieved from <http://www.courts.ca.gov/17397.htm>.
12. Kanaracus, Chris, "Air Force Scraps Massive ERP Project After \$1 Billion in Costs", CIO.com. (November 14, 2012). Retrieved from <http://www.cio.com/article/2390341/cio-role/air-force-scraps-massive-erp-project-after-racking-up—1-billion-in-costs.html>.
13. Panorama Consulting Solutions, *2014 ERP Report: A Panorama Consulting Solutions Research Report* (Denver, CO: Panorama Consulting Solutions, 2014). Retrieved from <http://goo.gl/EeWC0w>.
14. Hurbean, Luminita. *Issues With Implementing ERP in the Public Administration*, MPRA Paper No. 14160 (West University of Timisoara, Romania, 2008). Retrieved from <http://mpa.ub.uni-muenchen.de/14160/>.
15. Harrison, Joycelyn L., *Motivations for Enterprise Resource Planning (ERP) System Implementation in Public Versus Private Sector Organizations* (Orlando, FL: College of Education, University of Central Florida, 2004). Retrieved from http://etd.fcla.edu/CF/CFE0000093/Harrison_Joycelyn_L_200407_EdD.pdf.
16. Hurbean, Luminita. *Issues With Implementing ERP in the Public Administration*, MPRA Paper No. 14160 (Timisoara: West University of Timisoara, Romania, 2008), Retrieved from <http://mpa.ub.uni-muenchen.de/14160/>.
17. Computdata. "The Difference Between ERP Tier 1, ERP Tier 2, and ERP Tier 3." (CompuData, 2013). Retrieved from <http://www.computdata.com/difference-between-erp-tier-1-erp-tier-2-erp-tier-3/>
18. Cooke, Lynn, "360 Visibility. ERP: Time 2 Recover from Y2K." (2011). Retrieved from <http://www.innovaspace.com/360visibility/erp-time-2-recover-from-y2k/>.
19. Han, Shaun, "The Benefits of ERP in the Cloud", Enterprise Innovation, May 23, 2016. Retrieved from <http://enterpriseinnovation.net/article/benefits-erp-cloud-1621934651>.
20. Panorama Consulting Solutions, *2014 ERP Report: A Panorama Consulting Solutions Research Report*, cit. Retrieved from <http://goo.gl/EeWC0w>.

REFERENCES

- Carrizosa, Philip, "Judicial Council Votes to Stop Deployment of Statewide Case Management System", Press release, (The Judicial Branch of California, 2012). Retrieved from <http://www.courts.ca.gov/17397.htm>.

CompuData. "The Difference Between ERP Tier 1, ERP Tier 2, and ERP Tier 3." (CompuData, 2013). Retrieved from <http://www.compudata.com/difference-between-erp-tier-1-erp-tier-2-erp-tier-3/>.

Cooke, Lynn, "360 Visibility. ERP: Time 2 Recover from Y2K." (2011). Retrieved from <http://www.innovaspace.com/360visibility/erp-time-2-recover-from-y2k/>.

Department of Health, *Delivering 21st Century IT Support for the NHS: National Strategic Programme* (London, UK: Department of Health, 2002) Retrieved from http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4067112.pdf.

Department of Health, *Dismantling the NHS National Programme for IT*, (London, UK: Department of Health, 2002). Retrieved from <https://www.gov.uk/government/news/dismantling-the-nhs-national-programme-for-it>.

Han, Shaun, "The Benefits of ERP in the Cloud", *Enterprise Innovation*, May 23, 2016. Retrieved from <http://enterpriseinnovation.net/article/benefits-erp-cloud-1621934651>.

Harrison, Joycelyn L., *Motivations for Enterprise Resource Planning (ERP) System Implementation in Public Versus Private Sector Organizations* (Orlando, FL: College of Education, University of Central Florida, 2004). Retrieved from http://etd.fcla.edu/CF/CFE0000093/Harrison_Joycelyn_L_200407_EdD.pdf

Hurban, Luminita. *Issues With Implementing ERP in the Public Administration*, MPRA Paper No. 14160 (Timisoara: West University of Timisoara, Romania, 2008), Retrieved from <http://mpra.ub.uni-muenchen.de/14160/>.

Kanaracus, Chris, "10 Biggest ERP Software Failures of 2011", *PC World UK*, December 20, 2011. Retrieved from http://www.pcworld.com/article/246647/10_biggest_erp_software_failures_of_2011.html.

Kanaracus, Chris, "Air Force Scraps Massive ERP Project After \$1 Billion in Costs", *CIO.com*. (November 14, 2012). Retrieved from <http://www.cio.com/article/2390341/cio-role/air-force-scraps-massive-erp-project-after-racking-up-1-billion-in-costs.html>.

Major Projects Authority, *Programme Assessment Review of the National Programme for IT*, Report (London, UK: MPA, 2011) Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/62256/mpa-review-nhs-it.pdf.

Martin, Daniel, “£12bn NHS computer system is scrapped... and it’s all YOUR money that Labour poured down the drain”, *The Daily Mail*, September 22, 2011. Retrieved from <http://www.dailymail.co.uk/news/article-2040259/NHS-IT-project-failure-Labours-12bn-scheme-scrapped.html>.

Panorama Consulting Solutions, *2014 ERP Report: A Panorama Consulting Solutions Research Report* (Denver, CO: Panorama Consulting Solutions, 2014). Retrieved from <http://goo.gl/EeWC0w>.

Sedera, Darshana; Guy Gable, Taizan Chan, *Survey Design: Insights from a public sector-ERP success study*, PACIS 2003 Proceedings. Paper 41 (2003). Retrieved from <http://aisel.aisnet.org/pacis2003/41>.

Shark, Alan, *Seven Trends That Will Transform Local Government Through Technology* (Create Space Independent Publishing Platform, 2012).

Tran, Pierre, “France Late on \$2.2B in Payments to Companies”, *Defense News*, June 10, 2010. Retrieved from <http://archive.defensenews.com/article/20100601/DEFSECT04/6010303/France-Late-on-2-2B-in-Payments-to-Companies>.

Wailgum, Thomas, “University ERP: Big Mess on Campus”, CIO.com. Retrieved from <http://www.cio.com/article/2439102/enterprise-resource-planning/university-erp—big-mess-on-campus.html>.

SCOTT EILER is a partner with Plante Moran’s national governmental IT consulting practice, Scott counsels and provides risk mitigation services to governmental entities considering significant technology expenditures. He is known as one of the firm’s premier IT experts, and his clients appreciate his commitment to providing outstanding client service to ensure they’re achieving the most value from their technology spends.

Eiler has been providing ERP lifecycle, IT strategic planning, IT assessment, IT sourcing assistance and a variety of other strategic IT services to governmental clients for more than 18 years at the local, county, and state levels. Most recently, his focus has been on advising and assisting large governmental entities with the entire life cycle of major ERP initiatives to ensure that they obtain the most value from that significant investment in people, process, and technology.

Eiler is a project management professional (PMP), ITIL V3 Foundation-certified, and Prosci Change Management-certified. He has a B.S. in general engineering from the University of Illinois and an M.B.A. from The University of Michigan.