

white paper

## Nine Document Management Risks

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Document management, while offering numerous benefits for today's public sector organization, is rife with risks — risks that must be managed to ensure a successful project. In addition to the usual software engineering and project management challenges that are common to all new implementations, there are also issues peculiar to document management.

This paper describes the nine most prevalent document management risks, based on Unisys public sector clients that have undergone document management projects — along with proven methods for mitigating or avoiding these risks.

### Risk 1: Implementing Custom Software Instead of a COTS Solution

Unisys has extensive experience working with large organizations requesting custom-developed document management solutions. The rationale these clients have given for choosing custom-developed solutions instead of commercially available off-the-shelf (COTS) solutions includes the following:

- Existing legacy systems already provided most of the functionality and simply required modernization and the addition of business logic to accommodate new departments.
- Requirements were too complex for a COTS package.
- The expense of a COTS solution far outweighed the cost of a custom solution.
- The client's understanding of their own business led them to believe they could quickly develop a custom solution.

However, COTS solutions are often the most logical choice. For example, after evaluating the requirements for a client's unemployment compensation process, Unisys determined that a COTS workflow and imaging product could accommodate all the requirements — including providing out-of-the-box (OOTB) functionality for more than 80% of them. The question was not whether a COTS system would work, but which of several was the best fit.

Furthermore, the IT staff was looking for a mainframe-based workflow. This preference seemed to be based on their comfort and familiarity with operating systems, programming languages and support, rather than on any economic rationale. With the majority of that staff close to retirement, a custom-developed system would be difficult for incoming employees to support.

COTS document management solutions offer mature, proven product technologies. Vendors focused on workflow and document technologies have continuously improved their product technologies. Many products provide numerous OOTB features and functions and can be configured (versus customized) to simplify implementation and support.

### Risk 2: Undervaluing Document Preparation

One of the most important steps in the digitization of paper is document preparation. The mundane tasks of opening mail, unfolding paper, removing staples and paper clips, and ordering and aligning the paper are major contributors to a successful document management operation. Many organizations implementing document imaging fail to consider document preparation, and by doing so fail to realize the benefits of the implementation.

A recent experience with a large state's Department of Revenue (DOR) provides an example of this risk. The Department's process for receiving tax return forms consists of several steps that occur after a taxpayer mails a return to a post office box. Upon receipt, the DOR:

1. Opens the return, unfolds the pages, flattens them to simplify the process of feeding them into a scanner, and removes all staples and paper clips.
2. Fans the pages to avoid double page feed.
3. Scans the return to ensure that it is of the right type and that it has been mailed to the proper post office box (depending on whether the taxpayer is making an additional payment or claiming a refund).
4. Places a header sheet with a patch code for recognition by the scanner in front of the document.

5. Places the W2s after the header sheet.
6. Inserts the actual tax return after the W2s, with a preprinted barcode on top that identifies the form type and tax year. The W2s can be automatically identified because they are sequenced between the header page and the tax return.
7. Places all other pages after the return.
8. Places the document in an outbox, aligning the leading and right edges.
9. Batches documents when they have prepared a stack of 50. Subsequently places the batch in a folder and secures it with horizontal and vertical rubber bands. The folder color indicates the type of batch: payment, refund, amendment, etc. The number of documents in the batch is noted on the folder and the preparation person initials it.

This process avoids the need for a person later examining images to determine how the pages combine into the tax return. Implementing this process for the state requires a seasonal temporary work force of 30 employees from February through June.

During a presentation of a new feature-rich, high-speed scanner, the Deputy Commissioner of the state heard that documents could be placed on the scanner without sorting. He jumped to the conclusion that this new scanner could eliminate the document preparation process entirely.

After several sessions, Unisys convinced the Deputy Commissioner that reducing the document preparation staff would lower productivity and greatly increase the cost of processing a return. The discussions pointed out the low labor cost of the document prep personnel versus the higher cost of the scan operators — and the even higher cost of the knowledge workers who would have to page through images to find the appropriate return or document, causing additional hold time with the customer.

### **Risk 3: Replication Architecture Gone Awry**

Document management often occurs at multiple processing centers. It is natural to support multiple centers with a replicated architecture, so each center has its own scanners, image capture servers, image file servers, image workstations and databases. These centers are then tied together over a proprietary wide area network (WAN) or via a virtual private network (VPN) across the Internet, giving each center the freedom of working independently using its own hardware without waiting for network bandwidth for each step of the process. At the same time, the centers are tied together so the documents are available throughout the organization. Replication also provides fail over: in the event of failure in one center, processing can be directed to another.

But replicated architectures are not easy to design. At one organization, processes were replicated across four sites without mirroring structures and environments. As each site had unique attributes, technical administration of the system required detailed knowledge of each operating center. The differences were so vast that the organization decided to assign an administrator to each site, dramatically increasing support costs.

There is also an example from another state's Department of Revenue. While this DOR had four separate tax processing systems located at four separate sites, each with its own unique attributes, they were all based on the same three COTS packages. Users were confused as to which system they were required to log into, while administrators had to keep up with the locations of each operating system and COTS version.

In this case, Unisys worked with the client to consolidate the environments into a single operational center, eliminating two redundant sites. Users had a single sign on, and based on their role, received access to the appropriate environment. The state saved both on administration and on hardware.

Another example involves a recent project for a federal agency. Unisys designed a replicated architecture to support the agency's remittance process, in which individual taxpayers and businesses submit checks and vouchers to one of 10 service centers. Up to 300,000 images are archived daily at each center. Optical platters

are accessed to reconcile deposits for federal repositories and commercial banks, answer questions from customer service representatives, and provide images of checks and vouchers for audit personnel.

The Remittance Processing System (RPS) includes both the 10 production sites and two test sites. These 12 sites are maintained to an identical architecture including all programs and operating modules. This architecture supports new and continued development, test, installation, implementation and maintenance of RPS subsystems. Subsystems developed and supported include:

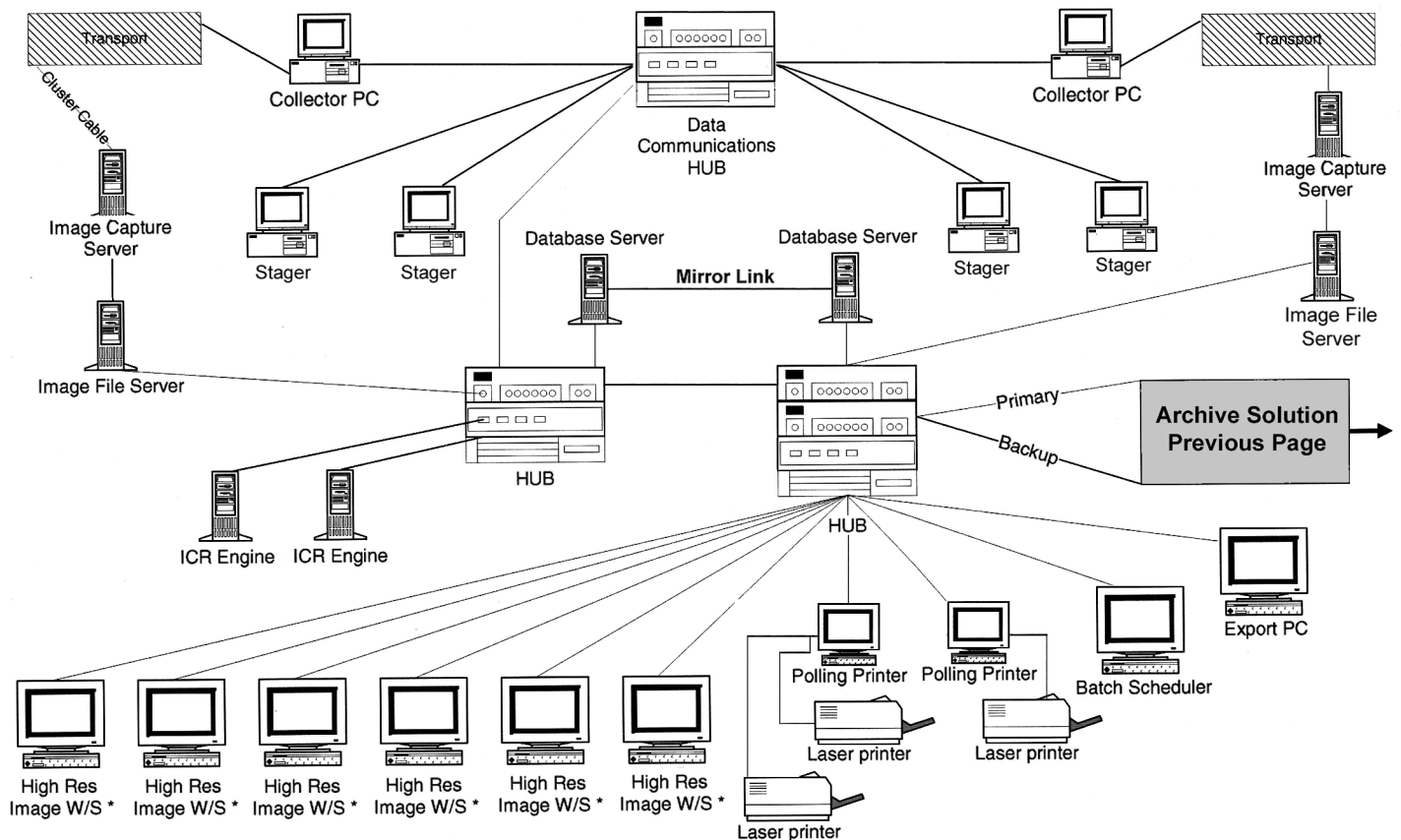
- A document imaging and workflow system
- A transaction management system using a customized COTS product
- A network payment processing system for the Unisys check sorting hardware

Each RPS component is built to share hardware, COTS software, common data processes, and procedures and support structure. RPS provides each Service Center with a standard and common set of operational systems that include:

- Common data model for operational databases and archival storage
- Common processes and tools to audit, cleanse, update and load or transfer data to the archive
- Integrated processes to move data through the operational check processing platform to archival storage
- Single plans and processes for transitioning to the RPS data architecture
- A common repository of data for RPS

Creating a replicated architecture requires both experience and an understanding of available technologies — including the wide array of available operating systems, database management systems (DBMSs), COTS packages, specialized hardware and network products.

### RPS Remittance Configuration



\* TMS and Infolmage may be run on these Workstations

## Risk 4: Over-Engineering Electronic Forms

There is widespread confusion about electronic forms, with six types currently in use:

- Images of forms on Web sites that can be printed for hardcopy completion and transmitted via mail or fax
- PDFs that can be downloaded, filled out online, and then either printed and mailed, or emailed
- PDFs that can be filled out and submitted online, with the entire PDF form captured
- XML, HTML or PDF forms that can be filled out and submitted online, with only the data captured in a database
- XML, HTML or PDF forms that can be filled out and submitted online, with the data captured in a database and routed via workflow to individuals who need to review it
- XML, HTML or PDF forms that can be filled out and submitted online, with data captured in a database and routed via workflow, and with digital signatures captured

Each of these types of e-forms is useful, depending on the circumstances. Printing and faxing might be perfect for low-volume processing but unmanageable in a high-volume environment.

However, many organizations are over-engineering e-forms. Rather than building the right e-form for the problem, we see clients assuming that only the most sophisticated e-form implementation is acceptable.

To help these clients, Unisys has identified critical success factors (CSFs) for a typical e-forms implementation. These CSFs enable a department and a vendor to identify areas that are crucial to successful technology implementation. Business CSFs may include:

- Improved service
- Ability to track and monitor work activities
- Centralized historical information among departments
- Increased efficiency of available resources
- Compliance with government regulations on document retention
- Decreased storage costs

- Decreased costs for manual document management
- Simplified user access to application, work-order and other data

Technical CSFs may include:

- Scalability
- A migration path
- Modularity
- Web accessibility
- Use of standards-based technologies

## Risk 5: Pitfalls of Outsourcing

Many paper-intensive organizations outsource their document capture in order to save money. However, outsourcing document capture has its pitfalls, which may cause an organization to lose money and/or injure its reputation — far outweighing the advantages of outsourcing. Typical outsourcing pitfalls include:

- **Mismanagement of spikes in volume** — Does the outsourcing vendor make the spikes visible or do they silently fall behind? Does the vendor bear any risks or penalties for falling behind during a spike? Are extra shifts added, at potentially much greater cost?
- **Unforeseen expenses related to location of vendor** — Outsourcing vendors often locate near their clients to minimize paper movement, sometimes resulting in relocation and/or training delays and other startup problems. If the vendor uses an existing, more distant capture location, paper must be moved there and back, incurring both time and monetary expenses as well as the requirement to audit the transport.
- **Security breaches** — People are often the weakest security link. Who is actually performing the document preparation? Have personnel checks been performed? What is the staff turnover and does that turnover impact the security?
- **Data privacy breaches** — In addition to data privacy regulations, data privacy is so important to some organizations that privacy breaches can lead to newspaper headlines. How does the vendor handle data privacy?

- **Problems with information quality** — How does the vendor maintain information quality? When a problem is discovered, does the vendor just fix the symptom or do they fix the underlying process problem as well to prevent reoccurrences?
- **Inability to take advantage of innovative technology** — Outsourcing vendors with long-term contracts are often averse to investing in infrastructure to modernize their technology, preventing the customer from implementing technology enhancements for the duration of the contract. Five years is a long time to wait for new technology.
- **Inability to terminate contract** — Suppose unforeseen circumstances necessitate bringing document preparation back in-house. What if the customer wants to switch to a different vendor? Once a process has been outsourced, it is difficult and costly to terminate the contract.
- **Legal risks** — If the vendor fails to perform in accordance with the contract, where will the suit be heard? Will the client have access to arbitration? Organizations that work with offshore vendors are particularly vulnerable to risks around legal standing.

### Risk 6: Failing To Outsource: Leaving Money On The Table

If managed properly, outsourcing document capture can result in significant savings. Failure to outsource and take advantage of these savings is a risk in itself.

In addition to providing economies of scale resulting from vendors having a much larger operation than any single one of their clients need, outsourcing also offers “economies of averaging” as a result of vendors combining multiple disparate contracts. For example, vendors can assign people and system capacity to clients that are experiencing processing peaks and away from clients that are experiencing a lull. Rather than having to staff to each client’s peak volume, vendors can staff to the total peak, which is always much less.

Vendors can also use less expensive labor, either by locating in lower cost regions in the United States, or by offshoring the work to India or South America. (Puerto Rico is

sometimes used for documents containing sensitive information and precluded by regulations from leaving the United States.) It is difficult for a client to offshore a 15-person staff to India: the setup and ongoing management costs will consume any labor savings. But vendors can combine the work of many clients and offshore hundreds of staff members.

Offshore document indexing operations are very sensitive to security issues, providing guarantees such as staff background checks, minimum standards of education and data encryption.

### Risk 7: Implementing The Wrong Type Of System

There are four types of document-oriented systems, which often leads to confusion regarding which one is the most appropriate for an organization. By understanding the capabilities of each type of system, organizations can mitigate the risk of implementing the “wrong” one.

- **Image Archival Systems** are used to save unchanging images of paper documents for long periods of time. Because these systems are primarily for archiving documents that may be needed in the future, they are not designed to enable instant access.
- **Document Management (DM) Systems** are used for capturing, preserving, managing, storing and delivering electronic objects. These objects can include images, word processing documents, voice and photos. Often DM systems encompass workflow, which includes revision control: check-in, check-out and versioning. Some systems also provide search capabilities.
- **Content Management (CM) Systems** are used to manage the content of a Web site. Typically, a CM system consists of two elements: the content management application (CMA) and the content delivery application (CDA). The CMA allows the content manager or author, who may not know HTML, to manage the creation, modification and removal of content from a Web site. The CDA element uses and compiles that information to update the Web site. Most CM systems provide Web-based publishing, format management, revision control, indexing, search and retrieval.

- **Records Management (RM) Systems** are used for the “systematic control of the creation, maintenance, use and disposition of records.” (A Glossary for Archivists, Manuscript Curators, and Records Managers, Society of American Archivists: Chicago, 1992 p. 29.) Disposition — the deleting of records at the appropriate time — is a key feature of RM systems.

### **Risk 8: Near-Term Focus On Cost Reduction**

Traditional paper processes are labor intensive and expensive, leading to implementation of document management systems. But implementing such a system and focusing solely on near-term cost reduction is a mistake. The enhanced process quality and performance provide more valuable opportunities for improvement.

For example, one Unisys client responsible for the administration of a state’s unemployment and disability insurance programs realized significant benefits by re-engineering its business processes and designing a workflow solution to help improve the process of business payroll tax processing. With the previous system, it took up to 60 days to process remittance documents and post them to the mainframe, causing a long lag in customer service response. The new Unisys system allows documents to be posted within two or three days by automating the processing, data capture, storage and retrieval of more than 20 million tax forms annually.

### **Risk 9: Implementing A System That Is Difficult To Change**

All document management systems must be adaptable to workflow changes. Any system that is difficult to change risks becoming increasingly out of synch with the changing world that it supports.

Recently Unisys worked with a client that highlights this risk. The client, a Northeastern state, ran its Medicaid Management Information System with a legacy system custom-developed for the task many years ago, outsourcing the operation, management and maintenance of the system. The business processes were hard-coded in the system, and were optimized for the way this state worked at the time of initial implementation.

However, in recent years, the state wanted to make several changes to its business processes:

- The state wanted to reduce its reliance on data entry personnel. For many years, the department had employed traditional data entry clerks to capture data from a somewhat structured form environment. These clerks knew exactly what information was required to be captured from each of the 30 forms, what edits needed to be invoked on which fields, and when those edits were required. Capturing all this latent knowledge would take months, so there was a reluctance to make any change. Every change considered was tabled for further investigation.
- The state wanted to automate the capture process. Traditionally, the forms were first data entered and then validated by a knowledge worker, who often performed several table look-ups to further validate claims dollars, codes, etc. There was an uncertainty about the exact steps it took to result in a fully validated claim. Capturing this knowledge would also take months. Again, any change considered was tabled until the client could better understand what was needed, why it was needed and where it was needed.
- The state also wanted to do better reporting and use the data in a meaningful manner. An enormous amount of data was being captured, but no one could provide statistical reports or drill down to look for fraud or validate dollar values of claims. Not knowing what data was available, where the data resided, and what information could be extracted made the state reluctant to attempt to improve reporting.

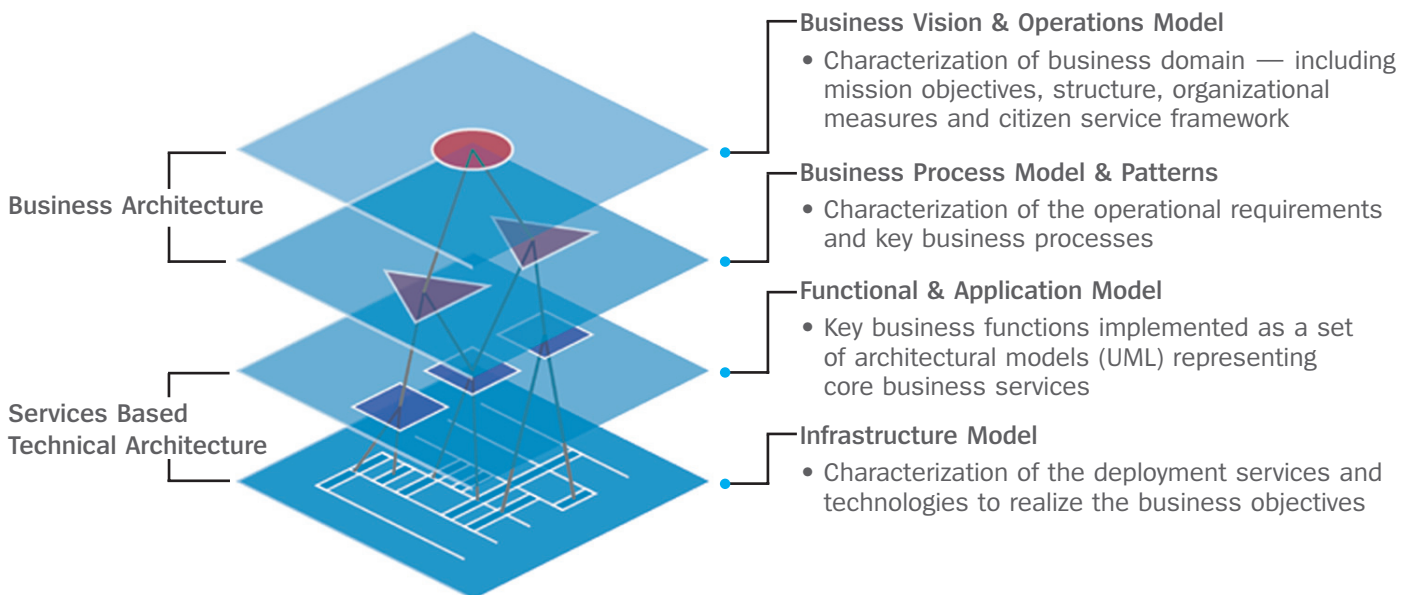
All the desired changes were difficult and expensive to implement, with each one requiring the ability to identify and alter the custom code related to that piece of the business process. Each change became a significant exercise in “systems archaeology,” requiring reconstruction of the intellectual property of the working system. The state discovered that it had a system that was once suitable for its needs, but was not built to change.

## Unisys 3D Visible Enterprise

At Unisys we understand our client's need for greater agility. To address this problem, we have introduced 3D Visible Enterprise (3D-VE) — technology focused squarely on change, both building systems to accommodate change and making it easier to change existing systems.

3D-VE is accomplished using models: models of the system, models of the problem the system addresses, models of the workflow that the system facilitates, models of the organization and its goals and vision, and models of the trends related to the industry or environment in which the organization operates. These models are packaged with the system itself, so the intellectual property behind the system is maintained with the code.

The models are not isolated from each other. Instead, the power of 3D-VE comes from linking the models together, particularly from linking the business models to the systems models. For example, by linking an individual task in a workflow to the use cases that the system needs to support at that point in the workflow, we can answer questions such as, “Which use cases may be impacted if we change this business process?” and, “Which classes may need to be changed if we change this business process?”



In some cases Unisys employs a model-driven architecture that automatically drives system changes from business process changes. While this is not feasible for most kinds of changes today, Unisys envisions the increasing power of model-driven architecture tools, enabling process-driven changes more and more in the years to come.

3D-VE provides a common language across the business-technology divide. Today, business people and technology people speak different languages. Often analysis done by business people must be interpreted and reworked before it is useful to technologists. Information is lost in the interpretation and mistakes are made during the reworking. 3D-VE offers an alternative bridge across that divide.

3D-VE addresses all nine document management risks:

1. **Implementing custom software instead of a COTS solution** — Most COTS implementations require changing the business processes to fit the package. 3D-VE supports the modeling of the business processes, enabling a demonstration of how the processes can be changed and an investigation of the costs and benefits to the organization. For those rare situations where a custom software development does make sense, 3D-VE can support the implementation.

2. **Undervaluing document preparation** — Document preparation is important, but how can the value of document preparation be communicated to all stakeholders? Simulations are useful here. 3D-VE process simulations can contrast the costs and time of poor document preparation with the costs and time of good document preparation.
3. **Replication architecture gone awry** — Layer 4 of 3D-VE focuses squarely on infrastructure. By modeling alternatives, we help clients craft their infrastructure environments so that they can realize the standardization advantages of replication without duplicating administration and other services.
4. **Over-engineering electronic forms** — Each electronic form alternative results in a different business process. 3D-VE supports comparison of these different business processes, using simulation to measure differences in cost and time. We use the results of these simulations to help our clients choose the most appropriate forms for what they are trying to do.
5. **Pitfalls of outsourcing** — Each document-capture outsourcing alternative enables a different business process. 3D-VE can provide objective comparisons of these processes, using simulation to compare costs, times, error rates and security issue densities.
6. **Failing to outsource** — Failure to outsource is usually a stakeholder problem: a stakeholder is not convinced that the savings from outsourcing are significant enough to warrant the time and trouble. Business process simulations can provide help to build the business case for outsourcing.
7. **Implementing the wrong type of system** — Modeling business processes enables a “try before you buy” approach to systems implementation. Before building a system, project stakeholders can see the redesigned process and understand the extent to which this system will help them or not.
8. **Near-term focus on cost reduction** — Cost is important, but quality is even more important. By simulating the before and after processes, project stakeholders can see the implications of a proposed quality increase and make the right decisions about document management implementation.
9. **Implementing a document management system that is difficult to change** — Agility is the *raison d'être* of 3D-VE. Using 3D-VE, organizations can easily identify the impacts of a requirements change.

For more information, please visit our Website at:  
[www.unisys.com/public\\_sector](http://www.unisys.com/public_sector)

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