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eReportsPortal: A New Enterprise Productivity Solution for Government Information Sharing and Distribution

Enabling More Productive e-Government through Advanced Portal Technology and an Improved Business Process



Section
1

Executive Summary

Achieving a More Cost-Effective Reporting Business Process

Overview

The Business Challenge: A Summary of Requirements

Many government agencies have invested significant financial resources and staff time developing application systems using client/server and database technologies. These technologies span multiple software environment generations and degrees of sophistication. The applications typically produce outputs using a wide range of formats and output types — which are printed, or are written to computer files. However, these reporting products are not necessarily well controlled and efficiently managed.



Users must deal with stacks of paper, delayed paper distribution, and difficulties in maintaining proper security over paper or non-protected computer files. Accessing print files remotely typically involves significant manual effort to download, view and print. Often, users must wade through voluminous reports to find the information they really need. In addition, finding specific older reports (such as from prior years), can be a nearly impossible task.

Many agencies are finding that in order to obtain acceptable system performance and to get better control over increasing hardware costs, often millions of records need to be deleted from online databases. However, agencies cannot safely delete transaction records without first ensuring that all necessary reports and variants of reports have been identified, run, approved by the necessary personnel, safely stored, and profiled/indexed for later search and retrieval. In addition, older technology-based reports that were designed for line printer output to paper need to be converted to a secure, protected format that is easy to browse online, and that also complies with Section 508 accessibility requirements.

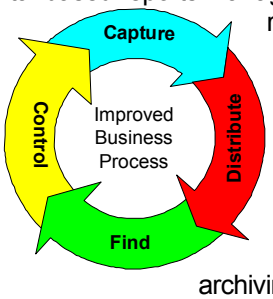
In addition, agencies typically do not maintain centralized schedules that control when repetitive or standardized reports are to be produced, who is responsible, and the run parameters necessary to properly generate reports. Often, no workflow management process is in place to route reports for approval prior to storage and distribution. Non-scheduled reports also suffer from a lack of control: while the outputs are important, they are often discarded rather than being saved in a centrally accessible repository for “audit trail” or future reference needs.

Finally, there is often no consistent and non-disruptive process in place to ensure that reports have been executed and approved according to plan, and that the necessary personnel (only those authorized) are provided with immediate electronic copies. In addition to human notification, often a capability is needed that will update control tables/files in, or perhaps execute, those external applications that depend on the reports production process.

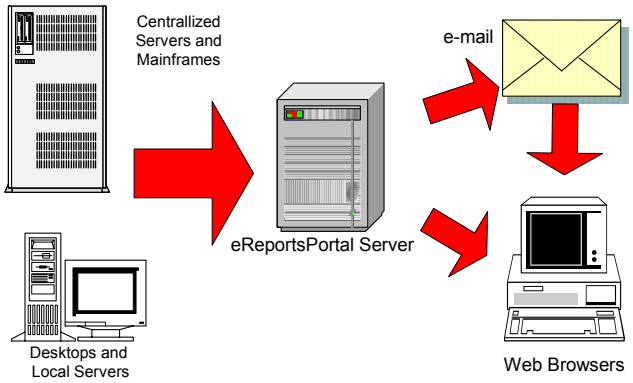
The SYSTALEX Solution

Federal agencies and other public sector organizations are finding that a Web-based reports management system, using a personalized information portal approach, provides the best way to achieve control over the reports production process and to quickly get the right information to the right people — wherever they are. In addition, organizations are discovering that a reports library maintained and accessed through a portal can provide a safe and controlled way to store and later find critical application generated information.... information when and where it is needed. A portal-based solution can place both new and archival information access right on the users' personalized Web home page — where employees can readily see and react to essential information. It is also desirable by users to automatically receive desired reports by e-mail, or requests to approve reports, with secure links to the actual report content right in the e-mail.

SYSTALEX designed and developed **eReportsPortal**, along with an effective set of business process improvements**,** to quickly and easily enhance existing application systems to incorporate a portal-based reports management and distribution control system — without the need for modifying or re-writing application programs or going through a costly system conversion.



Based on proven portal server technology and SYSTALEX's research into the most efficient organizational reporting life cycle practices, **eReportsPortal** is a cost-effective way to Web-enable agency reporting without a complex re-implementation effort. Importantly, **eReportsPortal** can integrate directly with virtually any existing application to ensure that all necessary reports have been run, approved and stored prior to taking further action, such as releasing records for archiving and database purging. **eReportsPortal** does not have to be implemented as a standalone application that users must access only for reports. Rather, it can be implemented as a part of a broader information management solution that can also deliver a wider range of organizational information to a user-personalized portal Web site.



SYSTALEX has developed a standards-based (XML) approach to connect existing automated applications to a comprehensive reports library and Web portal, and to help organizations to get better control over the reports that need to be run. SYSTALEX provides automated agents — to control and monitor application system report program execution, and to send report output to user Web pages and generate e-mail notifications. In addition, automated agents that are under user organization administrative control manage the report check-in, approval routing, e-mail transmission and Web publishing functions using pre-defined business rules. The SYSTALEX agents support both client and server SSL authentication and encryption, using standard certificate authorities such as VeriSign and Entrust.

The SYSTALEX solution simplifies what otherwise would be an expensive and disruptive reports re-development process, and makes it practical to apply the latest Web technology to today's reports management problems.

Solution Features

eReportsPortal is a unique add-on product that enables a Web-based production-level reports management system to be built on top of an organization's existing application software. It is delivered as a set of integrated components and related business process consulting assistance that:

- Provide for comprehensive setup and administration of the automated reports management process to help to get control over the reporting process agency-wide.
- Optionally define report version production schedules and execution control requirements in advance, and submit reports for execution via a Web portal page.
- Automatically monitor and capture the outputs of report production on any number of computers throughout the organization — without any additional action by a user.
- Enter reports into an indexed, retrievable reports library in an unattended mode. Included are the conversion of source report formats to Accessible Portable Document Format (PDF) files to help meet the requirements of Section 508. When required reports are approved (via approver e-mail notification and the Web) and published (distributed to subscribers), computer-to-computer notifications are optionally sent to external applications, such as an archiving system, for further action.
- Display either specific organization or agency-wide report production and report delivery activity in real time on a portal Web page.
- Display on a manager's Web portal page the summary status of scheduled reports — including reports that are due to be run, reports that have been run, and reports that are due but have not been run.

Implementation Approach

SYSTALEX provides implementation expertise and support as part of the license fee in order to install **eReportsPortal** and to set up initial reporting control information for an agency. Included are the initial reports library structure, a basic categorization structure, and related SharePoint Portal server installation items. The using agency must make sufficient time of a knowledgeable administrator available to work with SYSTALEX in defining operational policies and procedures for reports management. SYSTALEX will provide a customized library management module to correspond to the agency's most effective library structure, as well as a customized categorization scheme based on the agency's' expected retrieval usage. Additional support services are also available.

As a part of initial installation and setup, a training course in **eReportsPortal** administration will be provided for each agency's installation. An Administrator's User Manual copy will be provided for each student, and an electronic copy for the licensing organization.

Reasonable Help desk support will be available during normal business hours for a period of one year as part of the support fee. In addition, maintenance releases will be provided as a part of support.

Section

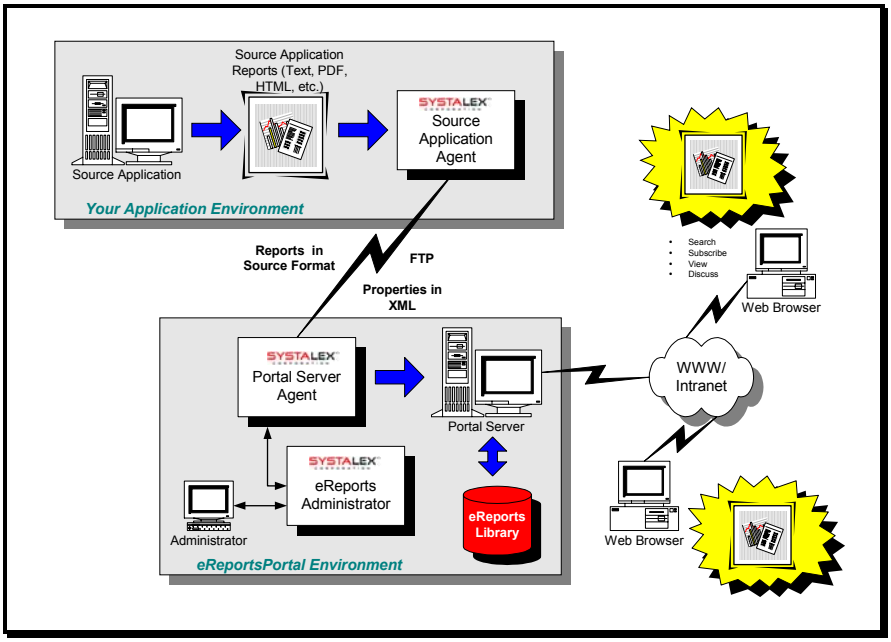
2

Solution Components and Functions

End to End Productivity Solution

eReportsPortal Description

eReportsPortal is a reports management solution that helps organizations to improve control over reports production and distribution/storage, and also helps to control other applications that rely on proper reports production, approval, user distribution and safe library storage. Both centralized and organizationally distributed reports management requirements are supported. The system is designed to enhance the productivity and ease-of-use of end users, as well as to manage the overall reporting process. It has been designed as a modular set of components that integrate seamlessly with and leverage the power of the Microsoft SharePoint Portal Server — the most cost-effective Web portal platform available for small, medium, and large enterprises.

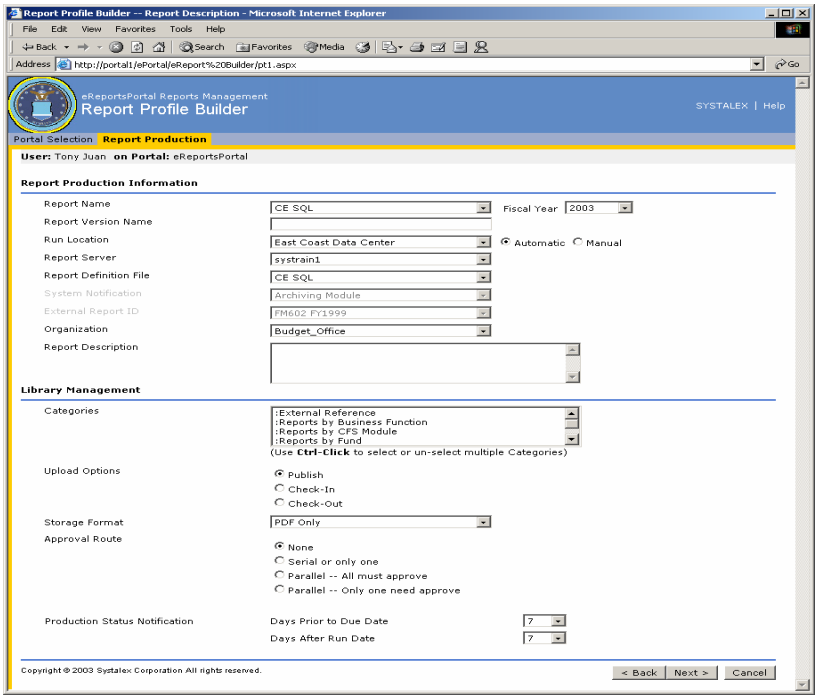


eReportsPortal is based on automated report management agents, and utilizes a modular, scalable enterprise architecture.

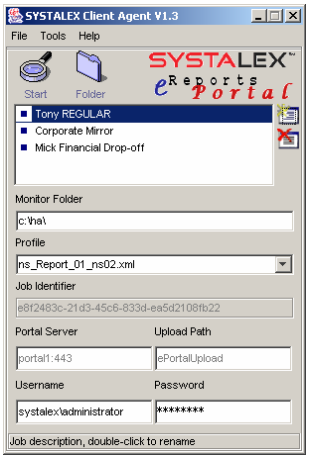
Getting Control of Repetitive Reports Through the eReportsAdministrator

The end-to-end reports management life cycle process begins with an organization determining the expected reporting schedule and the parameters necessary to run and otherwise handle its numerous versions of repetitive reports. SYSTALEX has recognized that improving the productivity and reducing

wasted activity associated with generating and distributing repetitive, or planned reports, can yield significant cost savings. **eReportsPortal** provides a unique Web-based administration facility, known as the SYSTALEX eReportsAdministrator, to define and describe the planned reporting needs of each organization — regardless of where and how the reports are to be executed. Reports can be described and scheduled hours, days, weeks or months in advance, with repetition (e.g., monthly) handled automatically for greater user efficiency. Common format scheduled report XML profiles are then generated, containing run parameters, categories, and storage and user subscription/notification data. A central Portal Server Agent stores these XML files, in preparation for the eventual execution of the defined reports. The XML files used to link to the reporting platforms for report production control via third party production control products, custom scripts, or manual execution. Full scheduling and report execution control is provided for Oracle Reports and Discoverer through the Oracle Reports Server. Also, full scheduling and execution control is available for users of Crystal Reports and Crystal Enterprise. Other report production and document authoring environments are also supported through similar interfaces.



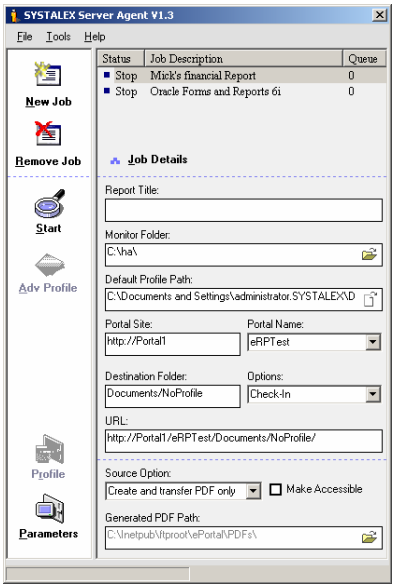
User-Transparent Report Capture via the Application Agent



Another component, known as the SYSTALEX Application Agent, may be installed on any number of agency report generation platforms. Its purpose is to monitor (while running transaparently in the background) the generation of pre-defined reports, or even ad hoc reports, that are desireable to store in the library and/or to distibute to all users that have subscribed to them. It does this by monitoring a special directory on the host for new output files written by reporting programs. This agent is written in Java, so that it runs on any platform that supports the Java Virtual Machine – including Unix, Linux, Windows, mainframes, etc. Each time a newer version of a report's output is written to the directory, the remote agent sends a copy of the report via Secure Socket Layer (SSL) HTTPS: protocol to the central Portal Server Agent to which the Application Agent is associated. Through a secure link and the use of a

client certificate from VeriSign (or equivalent certificate authority/security vendor), the Portal Server Agent will authenticate the client. Regardless of whether reports are created on large application servers, or on user desktops (PCs) located halfway around the world, report output will be captured and handled according to the pre-planned business rules.

The SYSTALEX Portal Server Agent Eliminates Tedious Administration Chores for Reports and Portal Management



Portal management software products are intended generally to provide Web access to organizational resources. While the SharePoint Portal Server provides powerful document management portal capabilities, it was not designed as a production-level application reports management tool. Rather, the manual SharePoint administrative process is oriented to lower volume collaborative document development, not high volume "hands-off" reports management. Document administration imposes significant administrative overhead on people in the organization. The SYSTALEX Portal Server Agent eliminates the need for production-time manual intervention by interoperating with both the portal software and the agency legacy applications completely in the background to automate what is normally a set of tedious manual steps to plan, execute, check-in/publish and profile report documents.

The Portal Server Agent running in the background continually monitors the production of controlled reports as detected by the remote Application Agents. When reports are received from the generating platforms via secure SSL transmission, they are handled according to the latest profile and business rule data that were previously entered through the eReportsAdministrator.

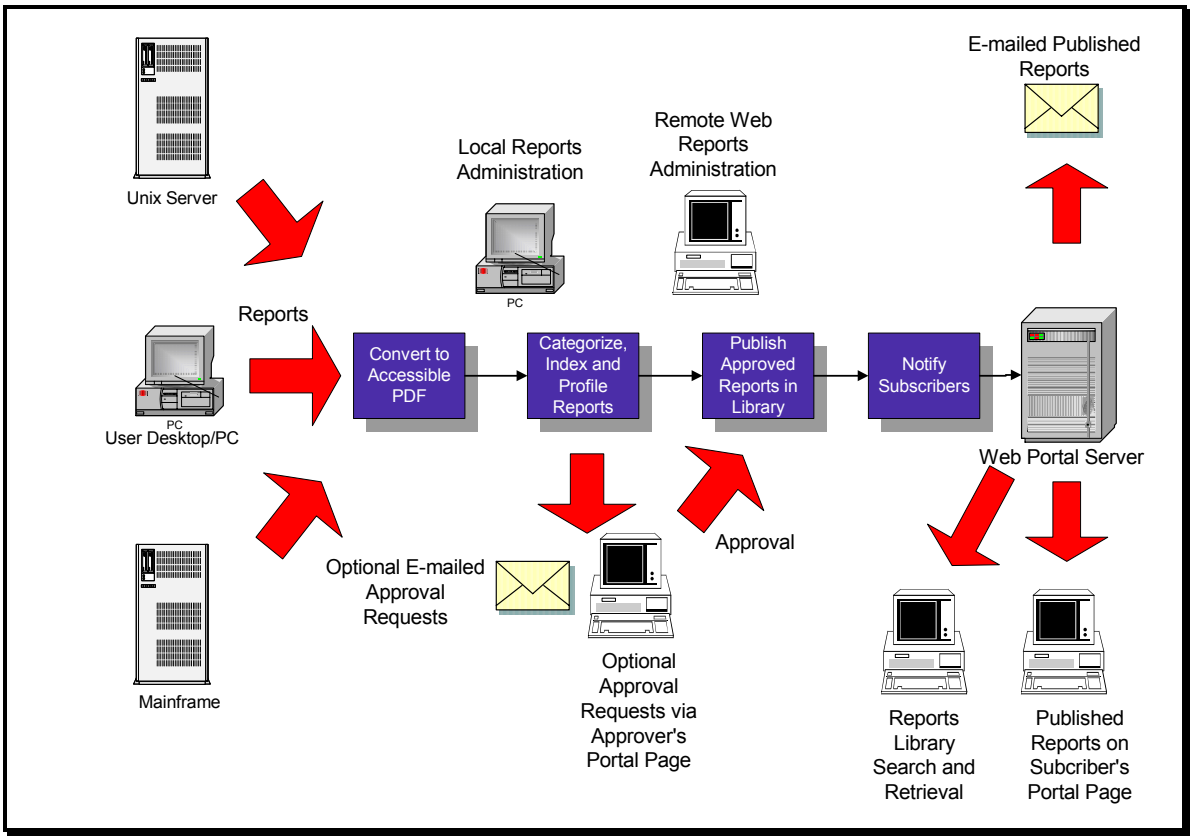
Reports sent to the Portal Server Agent are first converted to the Portable Document Format (PDF) (if conversion was previously specified), and then are entered into the Share Point library as an automatic function. **eReportsPortal** will convert source formats such as text, Oracle .lst, and other formats into PDF (or Accessible PDF for Section 508 compliance). Administrators can specify whether the original format only, PDF only, or both formats should be entered into the library.

As reports are entered into the library, the following major actions are performed:

- A profile with properties specific to each report and report version (i.e., different run parameters) is created for later use in performing searches.
- The library storage folder structure is automatically generated/extended to accommodate new reports, reporting periods, etc. — based on profile values.
- Reports are indexed for future content searches.
- Reports are categorized for rapid, direct user portal access in accordance with a previously developed categorization scheme.
- Report approvers are notified by e-mail whenever an approval is required. Approvals can be specified as having a serial or parallel workflow. Only approvers can see report contents at the time of initial check-in. Approvers can view report contents and take approval/disapproval actions directly through e-mail links (and automatically-initiated remote log-in).
- If a report is approved and published, all report subscribers are notified by e-mail if they or the administrator chooses, and at a frequency of mail receipt that they or the administrator chooses. Notifications with direct report access links are also updated on subscriber personal Web home pages.
- The status report display that appears on the home pages of agency management is updated with the report's run status.

- An optional feature sends an electronic notification to other application systems that confirm the production, approval, and safe storage of the report.

These steps are summarized in the graphic below:



With eReportsPortal, Reports Management is an automated end-to-end process.

The SYSTALEX Productivity-Improvement Web Portal Components Provide Control and Up-to-the-Minute Status on Report Management Schedules and Actions

The portal Home page accessed by each reports coordinator (administrator) provides a “web part” that allows full control over that responsible individuals’ report execution submissions, and the subsequent tracking of approval, notification, check-in and publication activities. Users can choose to see only the level of detail they need to see to perform their job.

Report Administration

Reports Coordinator: *Tony Juan*

New Report | Scheduled Queue

Report Name	Report Version	Due To Run Earliest	Due To Run Latest	Status	Run Location	Past Due	Required For	Submit
Organization: *Finance*								
GL109 Trial Balance	Enter report version name	9/30/2002	9/30/2002	Ready To Submit	Production Alpha	1	Archiving System	
GL109 Trial Balance	Fund 10 GL End Date	9/13/2002	9/13/2002	Scheduled	Production Alpha	0	eReports System	
GL109 Trial Balance	Fund 10 GL End Date 30-SEP-2002	9/12/2002	9/12/2002	Scheduled	Production Alpha	0	Archiving System	
GL109 Trial Balance - Fund 10 GL End Date 30-SEP-2002 ran at 09/20/2002 12:16:51					Checked Out			
GL109 Trial Balance - Fund 10 GL End Date 30-SEP-2002 ran at 09/20/2002 12:12:56					Published			
E-mail notification to tjuan		09/23/2002 16:53:01						
GL109 Trial Balance - Fund 10 GL End Date 30-SEP-2002 ran at 09/20/2002 12:16:51					Deleted			
GL109 Trial Balance	Fund 12 26-SEP-2002	9/26/2002	9/26/2002	Scheduled	Production Alpha	0	Monthly Closing	
GL109 Trial Balance - Fund 12 26-SEP-2002 ran at 09/26/2002 10:41:24					Checked In			
E-mail notification to tjuan		09/26/2002 10:53:01						
E-mail approval Request to radmin		09/26/2002 10:41:23						
GL109 Trial Balance	Fund 12 5-SEP-2002	9/17/2002	9/17/2002	Ready To Submit	Production Alpha	14	Archiving System	
GL109 Trial Balance	Fund 9 - 3-APR-2002	9/12/2002	9/12/2002	Scheduled	Production Alpha	0	eReports System	

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0 Reports now due | 0 Future reports

In addition, a summary status display is provided for organization management to view the status across all of the organizations' coordinators. At a glance, management can quickly determine the need for action if a coordinator's report production is behind schedule, for example.

Report Status Summary

Organization: *Finance*

Report Coordinator	Scheduled Reports Past Due	Now Due	Future	Submitted	Total
Eric Kestler	0	0	0	0	0
Paul Burger	0	0	0	0	0
Portal Author	0	0	0	0	0
Tony Juan	0	0	0	5	5
Ken Huang	0	0	0	0	0
Rajan Sharma	0	0	0	0	0
Dottie Emerson	0	0	0	0	0
Ken Huang	1	0	0	4	5
Chris Fang	0	0	0	2	2

Personalized Information Access Improves Productivity



The emphasis of the discussion above is on the more centralized administration aspects of reports management. However, reports management also needs to emphasize the end-user's point of view. As a user-focused portal product, SharePoint Portal Server incorporates capabilities designed to make a user's job easier. The simplest form of reports access for end users is to receive an e-mail containing a report production notification for a subscribed report. The user need only click on the link in his/her e-mail message to open the default browser and display the report. A login dialog box will prompt the user for login information (if not already logged in). The user will then enter a user ID and password to access the report via the personalized portal.

If agency policy permits, users may also choose to delete the subscription for this report type, or may choose to send an e-mail requesting assistance by clicking on links directly in the e-mail message. The user may also click on a link in the e-mail to go directly to his/her personal portal subscription page -- where a list of previous delivered reports is maintained. He may use this list to view previously received reports, or to clear older listings from this Web page. In effect, this capability maintains a personal reports library for each subscriber.

Of course, the full set of portal capabilities, such as access to the reports library and other important information through hierarchical category browsing or searching, are available to each user. In addition, both simple search and advanced search (by profile parameters) of the reports library are also fully supported. If a user chooses not to receive subscribed report notifications by e-mail, he/she may be notified of and view newly created reports on their personal Home page, or on a more detailed Subscriptions page.

Additional Vendor-Supplied Software Requirements

1. SharePoint Portal Server 2001must be installed on the same processor platform as the SYSTALEX Portal Agent. Windows 2000 Server or Advanced Server is the required operating system for this machine. In addition, each browser user must have a SharePoint account. A Microsoft CAL is required for each account.

2. Adobe Acrobat 5.0 is required on the portal server for report conversion to Accessible PDF.

3. A VeriSign Secure Server ID, or similar certificate, to authenticate the server and to enable SSL encryption is required for secure Application Agent to Portal Agent communication.

Section 508 Compliance

SYSTALEX"s goal is to ensure that products and services are accessible to the disabled community with good usability. Industry standards will continue to evolve over time and SYSTALEX is actively engaged, along with the market-leading technology vendors we utilize within our integrated solutions, in addressing apparent technical hurdles.

In order to address accessibility in the design of **eReportsPortal**, SYSTALEX has incorporated a feature to utilize the Adobe Acrobat accessibility option (available with Acrobat 5.0), and implemented by SYSTALEX through the Adobe SDK Application Programming Interface (API). As reports are entered into the Reports Management System, they are (optionally) converted to Accessible PDF. For example, .lst files created by legacy Oracle Reports 2.5 can be converted to Accessible PDF. As another example, legacy .pdf files created by Oracle GUI Reports 6i can be converted to Accessible PDF. Other file types, such as spreadsheets, may also be converted to accessible PDF files.

Adobe Section 508 compliance information is provided at http://www.adobe.com/products/acrobat/acrobat_508.html. Microsoft Section 508 accessibility information (as applied to the Share Point Portal Server) is described at: http://www.microsoft.com/usa/government/SharePointPortalServer2001_VPAT.doc. Additional information can be found at http://www.microsoft.com/enable/microsoft/section508.htm.

Implementation Approach

SYSTALEX will provide reasonable implementation expertise and support as part of the license fee in order to install **eReportsPortal** and to set up control information for the using organization. Included will be the setting up of the initial library structure, a basic categorization structure, and related SharePoint installation items. The using organization must agree to make sufficient time of a knowledgeable administrator available to work with SYSTALEX in defining basic operational policies and procedures for reports management. SYSTALEX will provide a customized library management interface module to correspond to the organization's intended SharePoint library structure.

As a part of initial installation and setup, one two-day training course in **eReportsPortal** administration will be provided for each agency's installation. Training will be provided at the SYSTALEX facility in Rockville, MD for up to 5 students. An Administrator's User Manual copy will be provided for each student, and an electronic copy for the licensing agency to reproduce additional copies.

Reasonable Help desk support will be available during normal business hours for a period of one year as part of the support fee. In addition, maintenance releases will be provided as a part of support.

The Agency Payoff

eReportsPortal can provide a significant payoff to the using agency, typically allowing rapid recovery of the investment through streamlined reporting control procedures, reduced time devoted to manual report production/handling activities, and the ease-of-use of Web-based automation. The most important benefits include.

- Enables improved information sharing by your staff, as well as across departments, agencies and programs;
- Cuts hardware and software acquisition costs by eliminating or reducing the tendency of multiple staff members to run the same or similar reports;
- Helps to solve your report management issues without a costly re-design of your legacy systems;
- Makes report production more controllable, and responsible individuals more accountable;
- Increases end-users' satisfaction and saves time through the delivery of information products through automatic distribution via e-mail and the Web; and
- Enables managers, business analysts, and auditors to quickly find archived reports when and where they are needed.

The bottom-line payoff can be higher employee productivity, more secure information, and improved data sharing throughout the agency.

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