

Enterprise Content and Document Management in Higher Education: Goals, Options and Best Practices

Executive Summary

Faced with the need to store ever increasing amounts and types of documents, institutions of higher education are examining means to store not only paper-based documents electronically, but also new media, such as web pages and audio and video clips. This trend, called enterprise content management, includes document management, document imaging, records management, workflow, web content management and collaboration. This white paper highlights the benefits and technologies that make up a comprehensive document and enterprise content management system.

I. Introduction

Universities and colleges are drowning in documents — from applications for enrollment, student records and human resources forms to new digital content, such as online videos and podcasts. For most staff, documents are hard to find, keep track of and manage. Paper is strewn across desks and stuffed in file cabinets, while electronic content is housed in staff members' hard drives, e-mail inboxes and network drives.

But there is a solution to the chaos: a document management system that can help departments organize their content and manage it throughout its lifecycle. Document management allows institutions to digitize their paper documents and organize them with their existing electronic documents into one central computerized system, so users can easily search and retrieve the documents. The technology allows users to manage document workflow and automatically route files to the appropriate places, making processes more efficient. Paper-based processes, such as approvals for purchase orders, can now be completed electronically.

Enterprise Content Management Sales Skyrocket

According to research firm Gartner, ECM software sales worldwide reached \$2.9 billion in 2007 and will grow at a compound annual rate of 12.9 percent through 2011. According to InfoTrends' initial estimates, the overall content and document management market worldwide in 2008 will reach \$7.5 billion in sales, which includes software licenses, professional services, maintenance and hosted offerings.

Colleges and universities can also develop business and security policies, allowing documents to be shared throughout a department or between departments, or made available only to high-level administrators. The software can integrate and work with existing applications that staff use, such as Microsoft Outlook e-mail, Enterprise Resource Planning (ERP) and student information systems.

The result is faster and easier access to data, faster processing time and reduced data entry, which improves worker productivity and customer service to the campus population. College staff no longer have the burden of filing paper documents and then trying to find them when they are requested. Administrative staffers can search and retrieve documents on their computers. The software also secures documents and helps higher education comply with regulations that deal with public records access, privacy and the retention and preservation of records. And because paper documents are now digitized, the technology can be easily backed up, bolstering continuity of operations efforts.

Analysts say adoption of document management systems is on the rise in all industries, and that higher education, in particular, is taking advantage of the technology. The technology can help university researchers share files and collaborate more easily and allow students access to their most important information immediately, such as transcripts.

"It's a fact that we are flooded with information, and we can do one of two things: We can be flooded over or we can try to get a grip on the situation and manage the documents with the right content management tools," says Alan Pelz-Sharpe, an author of the ECM Suites Report and principal of CMS Watch, an analyst firm in Olney, Md., that focuses on content technologies.

What is Document Management?

A document management system consists of four parts:

- Scanners or multifunction peripherals (MFPs) are used for scanning in paper documents.
- Software capture products are applications that use optical character recognition (OCR) technology, making the text of documents searchable and retrievable. The software also indexes or extracts "metadata" from

documents, allowing departments to determine what the documents are and where to send them for processing and storage.

- Document management or content management software acts as a central repository for storing, sharing and accessing documents. This allows organizations to manage document workflow, meet regulatory requirements and beef up security.
- Storage, such as storage area networks (SANs), are used to store the documents.

Analysts use different terms to describe the document management market. In recent years, analysts have coined the term, enterprise content management (ECM) as an umbrella term to not only include paper and electronic documents, but also digital content, such as web pages, audio and video.

Gartner, for example, defines ECM to include document management, document imaging, records management, workflow, web content management and collaboration. In Gartner's definition, document management is a key part of ECM and handles the accessing or checking in and out of documents, as well as version control and security. Records management is defined as long-term archiving and the automation of retention and compliance policies. At CDW•G, ECM and document management are interchangeable terms. In this whitepaper, when we refer to "document management," it encompasses all the features described as ECM by analyst firms.

In the next four sections, the white paper will highlight document management's many benefits, describe the different technologies that make up a complete solution, provide implementation strategies and detail key vendor offerings.

II. Benefits of Document Management

Document management provides five main benefits:

Improved worker productivity and better customer service. Staff can find documents, such as student records, on their computers much faster than having to rifle through file cabinets or review old microfiche. An electronic document workflow can replace slow,

Document Management in Demand

paper-based processes, where documents are shuffled from desk to desk or delivered from department to department. Now, if an invoice needs approval, document management software can alert supervisors to review and approve the invoice with a click of the button. Document management allows people to collaborate and share documents more effectively, and it also reduces errors. Paper can get misfiled or lost. But because the technology stores data centrally, no files are ever lost.

Cost savings. Universities can reduce spending because staff no longer have to hire couriers or pay postage to deliver documents to other departments. They can view the documents online. Colleges can also reduce or redeploy staffers because data entry employees are no longer needed to key in information from paper documents. By digitizing documents, colleges can also get rid of their file cabinets, which frees up office space.

"It's a measurable return on investment when you look at the productivity gains and the cost savings from no longer having to key in information, to the storage costs that exist with filing cabinets," explains Sean Baird, senior product marketing manager, EMC Content Management and Archiving Division.

Increased data security and compliance with regulations. The software allows higher education to comply with regulations, such as the Health Insurance Portability and Accountability Act (HIPAA), which addresses the security and privacy of health data, and the Family Educational Rights and Privacy Act (FERPA), which protects the rights of student records.

Document management systems are protected by passwords, making it harder for people to steal or access sensitive documents. IT departments can control user access to documents and prevent them from being altered or deleted. IT administrators can also set rules for data retention and maintain audit trails that show who accessed what documents and what they did to them.

Improved continuity of operations and disaster recovery. Paper documents can be destroyed in floods, fires, earthquakes and other disasters. By digitizing important documents, document management makes it easy for colleges to back up and archive the information

using disk-based storage or tape, which can be stored offsite.

More environmentally friendly. If implemented correctly, document management can result in less paperwork. For example, if documents for Board of Trustees or Academic Senate meetings are digitized, people can review the materials online, rather than needing documents copied and mailed to them beforehand. Manufacturers also offer software to create electronic forms to replace paper forms.

Ideal for Higher Education

Nearly every university or community college department can take advantage of document management. The financial aid office can store tax returns, bank statements and proof of full-time student status in one central location. The facilities department can better manage blueprints for new buildings and documents related to inspections, repairs and maintenance. Libraries can digitize their archives, such as fraying books or photographs, and make them available online. Other administrative departments that deal with high volumes of paperwork include the general counsel, the college's foundation, campus police and the finance and human resources departments.

From an enterprise point of view, institutions can create a single electronic file for students, from their freshman year to graduation. That would allow individual departments to share important student data more easily.

Deploying document management to speed up the student admissions process has become increasingly popular for colleges who wish to gain a competitive edge in recruiting new students. Colleges and universities are receiving more applications than ever, but they are also facing more competition from other institutions for enrollment. So the sooner schools complete their application review, the sooner they can send out acceptance letters. Beating other schools to the punch can aid in enrolling more students.

With document management, the admissions office can scan in all the applications, allowing evaluators to review the applications online. If applications are already submitted online in an electronic format, administrators can scan in other related paper documents, such as transcripts and letters of recommendation, and

Which types of enterprise content management software are you likely to invest in during 2008?

Document management:
74 percent

Content and e-mail archiving:
66 percent

Document imaging:
64 percent

Web content management:
62 percent

Enterprise content management platform:
60 percent

Records management:
51 percent

Digital asset management:
42 percent

SOURCE: Forrester Research survey of 214 software decision-makers in North America and Europe during the 2007 third quarter.

Business Drivers for Content Management

Enterprises picked these as their top five most important reasons for purchasing content management software:

1. Providing a repository of record, so nothing is lost
2. Securing intellectual property
3. Making it easy to reuse/repurpose content
4. Ensuring content is managed in accordance with retention policies for compliance
5. Facilitating collaboration

SOURCE: IDC, October 2007 survey

attach them to each student's electronic file. That way, evaluators can review everything online, which is more efficient and faster than in the past when every paper application form was copied multiple times and delivered to evaluators.

III. Implementation and Best Practices

Here's a more detailed look at the four parts that make up a document management solution:

Hardware capture. Scanners or MFPs that have the ability to scan are used to digitize paper documents. Paper documents in large organizations have historically been scanned in a centralized location, where staff members hired to handle scanning use high-volume scanners to capture an entire organization's documents as they arrive. More recently, however, scanning has become more distributed, where knowledge workers — not capture specialists — scan their own documents with smaller scanners, which are located on people's desks or shared throughout a department, says Anthony Macciola, chief technology officer of Kofax, a software capture company.

Tech manufacturers offer scanners for both uses, but in higher education, scanning is largely done in a distributed environment, where scanners are purchased for individual use or shared in departments.

Software capture. Software capture products are applications that perform the scanning function. The software cleans up documents by removing speckles and fixing text in flawed documents. The data is often scanned and stored as TIFF or PDF files, but it supports other file formats, such as XML.

Basic scanning software from some scanner and MFP manufacturers — including Visioneer and Fujitsu — simplify the scanning process, allowing users to scan items directly to e-mail, fax software and document management software with the single press of a button.

More feature-rich software capture products not only scan paper documents, but they gather all the scanned and existing electronic documents together, and read their data to determine what kind of documents they are and where to route them based on an organization's

business processes. Specifically, the software extracts "metadata," or key indexes or fields in a document, that allows the software to identify what it is. The metadata for an invoice, for example, would include the supplier's name and types of products and quantities purchased.

Capture software uses full-text OCR, allowing users to search the full text of documents. The software also performs barcode recognition and zonal OCR, which breaks down a piece of paper into several quadrants and is programmed to find metadata. Alternatively, users can manually key in the metadata themselves.

After indexing the metadata from the documents, software capture products can determine the next steps of a document workflow. For example, an invoice can be sent for processing, while a student transcript can be sent to storage. The software can integrate with third-party applications, so documents can be accessed seamlessly between applications. Software capture, for example, can scan e-mail servers for student applications sent to a specific e-mail address. When e-mails arrive, it strips out the attachment and sends it to the next step in the document workflow.

Some manufacturers make standalone software capture products, while others integrate software capture as part of its document management software.

Document management/content management software. This serves as the central repository, where staff can access, share and store documents. Organizations can set policies to manage document workflow, while IT administrators can set and enforce security policies that control document access and prevent documents from being altered or destroyed. IT administrators can specify rules to retain data or delete certain documents. The software can also maintain detailed audit reports that show all activity in the system.

The software can link up to other applications, so users in a student information system or financial application can pull up records stored on a document management system. That saves organizations the hassle of having to store multiple copies of the same documents.

Storage. The documents and content are stored on servers or networked storage solutions, such as SANs.

University deployments of document management range from single departments to full-fledged enterprise-wide projects. Colleges should take a phased approach and successfully deploy the technology in one department first before deploying it elsewhere, says Todd Johnson, manager of CDW's document management team. "As you roll out to each department, you will learn new things that you can use for each new deployment," he advises.

Some departments simply need an electronic repository to store data. In those situations, a low-end solution will work perfectly, Johnson says. Other departments may want to start with a repository first, then add workflow later. Some have grander visions and want to deploy a full document management solution throughout a university over time, he says.

"If you think you may increase adoption of the technology in the future, the best thing to do is buy a solution that works departmentally but can expand into a full enterprise solution later on," Johnson says.

Planning is critical. To ensure success, institutions need to map out all the documents a college needs to manage, where the content is located, the relationships between them and who needs access to it, Pelz-Sharpe says.

"What often happens is you build one system, and at a later date, you realize two different systems really need to talk to each other, and that's hard work," he says. "The earlier you map out the relationships between information sources, the better. You are thinking about relationships across the university, but also are thinking at a granular level where individual pieces of content might be cross-referenced."

That includes developing standards for indexing metadata, so content can be easily searched and retrieved from different applications, Johnson says.

Listen to users' needs. It's critical to listen to users and what they think are priorities for a document management system, Pelz-Sharpe; Otherwise users could revolt and not use the technology.

If staffers are used to certain applications for accessing documents, such as Microsoft Outlook or student information systems, then IT departments need to seriously consider integrating those applications as part of a

document management solution, says Omri Duek, senior research analyst at InfoTrends, in Weymouth, Mass. That would improve user adoption, he says.

Standardize on hardware. Universities should standardize on scanners and MFPs, if possible, because it will make support and user training much easier, Johnson says.

CDW•G is Here to Help

CDW•G offers a one-stop shop to help colleges take advantage of document management, from hardware and software to a team of account managers and certified document management specialists that will help IT administrators choose and design the best solution for their needs. The company offers pre-sales consultation, design and technical support.

"When customers call, we will discuss their objectives, requirements and budgets, and if necessary, we will do an onsite analysis to better understand their requirements," Johnson says.

CDW•G will schedule meetings with manufacturers, so customers can ask questions and see product demonstrations. The company will even install a test implementation for customers, so they can make sure they're making the right purchasing decision.

"We want customers to be comfortable with the products they're investing in, so if they're a bit gun-shy, we're willing to run a small pilot to prove that the technology works," Johnson says.

IV. Key Vendor Offerings

Universities that need to purchase scanners have numerous options: MFPs that also feature printing, copying and faxing features; and scanners for individuals, departments and large-scale enterprise use. While desktop or departmental scanners are more the norm in higher education, administrative departments, such as a student records office, may need high-volume production scanners if they plan a huge project, such as scanning decades of archived paper documents, says Rod Hughes, Kodak's director of marketing.

Hardware manufacturers continue to produce new advances in scanning technologies, including increasing scanning speeds, improving quality by increasing the dots per inch (dpi) in scans, and

building in sensors that prevent paper jams and double-feeding of paper, says Michael Sidejas, product manager in Fujitsu's imaging products group.

Visioneer, for example, developed OneTouch technology that reduces what is often a 14-step scanning process down to just pressing a button. Users or an IT department can pre-configure the settings, so users don't have to manually go in to PC or web-based software, find the scanner and select resolution and color depth. With OneTouch, users can press a button and send scanned documents directly to e-mail or to the next step of the document workflow process, says John Capurso, Visioneer's vice president of marketing.

Here's a closer look at the MFP and scanner offerings by the manufacturers.

Canon. Because of its low-cost and all-in-one form factor, MFPs are popular in higher education, says Justin Joseph, Canon's marketing program specialist. Canon has steadily improved the scanning technology in MFPs in recent years. In the past year, the company replaced the slow, scanning lamp in MFP devices that used to take minutes to warm up with new white LED technology that can scan documents much faster, he says.

"The multifunctions today can basically handle most things a person wants to do in a scanning environment," Joseph says.

One popular Canon MFP is the PIXMA MX850, an inkjet that can scan 15 black-and-white pages per minute (ppm) and features a flatbed and a 35-sheet automatic document feeder (ADF). Canon also offers standalone scanners. The CanonScan 8800F can scan a color page in 7 seconds, while the LiDE 90 model can scan a color page in 14 seconds.

Fujitsu. For desktop users, Fujitsu offers the ScanSnap S510 for PC users and S510M for Mac users. The scanners can scan up to 18 ppm, have up to a 50-sheet ADF and feature one-button scanning. With a one-button feature, professionals can scan a document to a networked folder for security and preservation needs, and the next moment, they can scan a document into e-mail for communication or collaboration purposes.

Fujitsu's higher-end models — including the fi-6130, which scans 40 ppm, and the fi-5530C2, which scans 50 ppm — are designed for staff

who need to scan hundreds or thousands of documents each day. One-button scanning is not necessarily required in this environment. Nevertheless, with Fujitsu's fi-series scanners, users can program buttons on the front-panel to perform a wide variety of automated tasks. So, by pressing a specific button, it can scan a batch of documents to a pre-defined location, such as a document management system. In this fashion, a single user or many different users can easily transition between different workflow tasks using the same scanner.

Kodak. Kodak offers a full line of desktop and production scanners. For university departments, Kodak recommends two desktop models: the Kodak SCANMATE i1220 can scan up to 30 ppm; or the SCANMATE i1320, which scans 60 ppm and can handle small documents such as student ID cards. Both feature a 50-sheet ADF.

For departments that want staff to share a scanner, Kodak sells the Scan Station 100 network scanner, which scans up to 25 ppm and can handle up to 1,000 scans per day. For higher volume needs, the company suggests its i600 series scanners. The i610, for example, is targeted at organizations that have scanning needs of up to 80,000 pages per day. It can scan 80 ppm and features a 500-sheet ADF.

To bolster its offerings, Kodak also offers capture software, called Kodak Capture Pro, which scans documents and features barcode recognition and OCR technology that allows users to index documents.

Visioneer. Visioneer, which develops and markets Visioneer- and Xerox-branded scanners, offers Visioneer Strobe mobile (USB-powered) scanners, the Xerox DocuMate 152, which can scan 18 ppm, and the DocuMate 262i, which can scan up to 38 ppm and can handle student ID cards. Both offer a 50-page ADF. For departmental scanning, the company sells the DocuMate 632, which scans 40 ppm and features both a flatbed and a 100-page ADF. For production scanning, Visioneer manufactures the DocuMate 752, which scans at 60 ppm and has a 120-sheet ADF. As previously mentioned, Visioneer provides OneTouch scanning to simplify the scanning process.

Now let's take a look at the software capture and content management products.

Kofax. Kofax Intelligent Capture & Exchange software offers numerous features, including

Individual Departments Spur Adoption

67 percent of organizations are using records management, but fewer than 20 percent of these are enterprise-wide deployments.

SOURCE: Gartner, May 2008.

software capture and the ability to integrate document capture into existing applications, so users can scan documents directly from applications they are using. Kofax's VirtualReScan (VRS) technology is an industry standard that fixes scanned paper documents by straightening text, filling punch holes and automatically rotating upside-down documents, so they're right-side up.

EMC. EMC offers a large Documentum family of content management products. But for many customers in higher education, EMC recommends ApplicationXtender, an all-in-one document management family of products that allows college departments to digitize their paper documents and manage all their existing electronic files, including images, audio and video files.

The family of six software products includes ApplicationXtender Workflow software, allowing users to build business processes and collaborate on projects; and Records Manager for ApplicationXtender software, which allows departments to set policies for archiving and destroying records to meet regulatory requirements.

EMC offers several options for image capture. EMC Captiva QuickScan Pro for ApplicationXtender is an out-of-the-box document scanner software and imaging solution that provides all the necessary capabilities for high-speed scanning, image enhancement, OCR, viewing, annotation, printing, and storing black-and-white and color page images. It transforms paper into useable document formats such as PDF, XML, Microsoft Word and HTML that can be indexed and stored for easy retrieval and management in ApplicationXtender.

For users, institutions and departments that need more advanced software capture features to support high capture volumes, EMC offers the higher-end Captiva product InputAccel, which features OCR and barcode recognition. The data is exported in a variety of formats, including XML, PDF, JPG, TIFF and ASCII.

For MFP users, the company offers eCopy, a device attached to an MFP that allows users to log in and scan documents into the ApplicationXtender content management system.

FileBound. FileBound, a complete document management solution, is affordable because it offers unlimited user licenses. Customers can

purchase the product two ways: as software they can install themselves or as a hosted service.

"Colleges can really think enterprise-wide without having to spend a lot of money upfront," says Brad Moncur, vice president of sales at the Marex Group, maker of FileBound. "They can start out with a department, and whenever they are ready, other departments can use the system without having to buy more user licenses."

The software package includes capture software; software to manage document workflow; software to build electronic forms; and integration tools allowing users to work with other applications. Colleges can integrate applications using application programming interface (API) calls or through a process called "screen scraping," which uses terminal emulation. So rather than having to store the same document in two locations, the integration allows a user using financial software to access a document in the FileBound repository with the press of a button, he says.

FileBound is web-based software and gives users a user-friendly, Windows look and feel. FileBound also includes an add-on module that allows colleges to archive e-mail, instant messaging chats and IP-based voice mail, Moncur says.

The software allows IT departments to generate audit trail reports as well as schedule the deletion of files. IT administrators can also set user rights to secure documents, from access to the ability to view, e-mail, edit or print a document.

Informa Software. Informa Software also offers a full content management solution. Its ImageQuest software includes IQ MFP capture software for Hewlett-Packard MFPs and IQ Scan, capture software for HP scanners. ImageQuest can be upgraded to extract data through barcode recognition and zonal OCR, says Rick Wheeler, Informa Software's director of sales and marketing.

ImageQuest also handles document storage and retrieval from a central repository. ImageQuest offers security policies and maintains an audit trail of all document-related activity as well as ad hoc workflow, Wheeler says. If a customer requires it, the company can integrate third-party workflow software from manufacturers such as Captaris or the open-source Windows Workflow Foundation.

“We give all the requisite functionality at half the cost of other systems,” Wheeler says. “Another major benefit is the system is designed to be easy to implement. We can do implementations between half-a-day to a day. We’ve made it simple without removing the functionality and power of document management.”

V. Conclusion

Four-year universities and community colleges today face a deluge of paper documents and digital content. As much as pundits have touted a paperless office, paper is never going away. But by deploying document management solutions, higher education can reduce the flood of paperwork to a trickle.

The technology improves services, speeds access to documents and increases productivity, while boosting security and aiding in disaster recovery and compliance with regulations.

Simply put, the ROI benefits are too hard to ignore. So if you’re tired of pushing papers, consider a document management solution today.

