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## Torn Between Paper And Digital? University of Louisville Hospital saved hundreds of thousands of dollars by replacing paper processes with document management and SAN (storage area network) solutions.

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What would happen if information about one of your customers got into the wrong hands? Is it possible that your customer's business could be compromised? Could you be sued for letting it happen? What should you do to make sure this doesn't happen? These are the kinds of questions businesses in just about every vertical market are asking themselves - and their attorneys. Some businesses have industry mandates, such as **HIPAA** (Health Insurance Portability and Accountability Act of 1996) or ISO (International Organization for Standardization), that force them to meet strict data security and records management requirements. But, even if your business doesn't have such mandates in place, it's wise to consider how the documents and data you capture are stored and retrieved, and by whom.

### Installation Profile

**Technology User:** University of Louisville (UofL) Hospital (Louisville, KY), which is part of the UofL Health Care network, is the primary adult teaching hospital for University of Louisville's Health Sciences Center.

**Problem:** To ensure compliance with HIPAA (Health Insurance Portability and Accountability Act of 1996), the hospital needed a better system for managing paper documents such as patient records, insurance information, and invoices.

**Solution:** With the help of integrator DigiStor (Phoenix), UofL Hospital deployed Information Management Research (IMR) Inc.'s (Englewood, CO) Alchemy Premium document management solution. Alchemy enables the hospital to scan documents such as drivers' licenses, insurance cards, patient records, and billing information and store the indexed information in a centralized database. With the assistance of Alchemy's built-in security features as well as the hospital's Novell Nsure network security solution, the hospital maintains the privacy and security of its patients' records. Additionally, UofL Hospital has saved hundreds of thousands of dollars in reduced clerical hours and storage space since rolling out the document management solution.

### Let Document Management Handle Your Filing

In 1999, University of Louisville (UofL) Hospital (Louisville, KY) stored patient data in a 30-foot by 20-foot room devoted to file storage. On any given day, someone from the admissions department would drop off 200 to 300 records that had to be filed, a task requiring several labor hours. With several departments reaching storage capacity, UofL Hospital had to store records at a secured campus facility, which was a 10-minute walk from UofL Hospital. Because of HIPAA regulations, which dictate how patient information is to be stored, protected, and retrieved, the hospital decided it was time to depart from its ever-growing paper trail and pursue an electronic document management system.

### Secure Your Digital Documents

UofL Hospital resembles other enterprises with its myriad of applications. "We have about 70 applications running in our healthcare network," says Robert Summers, systems analyst for UofL Hospital. "These applications cover departments and functions such as admissions, accounting, radiology,

digestive health, pharmaceuticals, and healthcare insurance." From a security perspective, disparate systems are a blessing in disguise because they help prevent unauthorized users having too much sensitive data available at their fingertips. From an efficiency perspective, however, disparate systems are an obstacle that must be overcome via integration.

So, when it came time to add document management to its repertoire, the hospital wanted the best of both worlds - the data protection associated with disparate point systems and the information sharing functionality of a totally integrated solution. Seeking the help of systems integrator DigiStor (Phoenix), UofL Hospital rolled out a document management solution from Information Management Research (IMR) Inc. (Englewood, CO) called Alchemy Premium. The solution, which replaced handling 200 to 300 new documents per day, offered immediate benefits such as reduced labor costs, reduced storage costs, and improved compliance with HIPAA.

Alchemy Premium's built-in security features, which enable UofL Hospital to limit user access, help meet its first requirement. "We divide users into three basic categories: those with read-only access, those with partial read-write access, and those with complete read-write access," says Summers. To get more specific with its security needs, UofL Hospital uses tools from Novell's Nsure suite. Using Nsure's ConsoleOne and ZenWorks modules, the hospital can define user authorization to the level of subsections of tables within its databases.

By integrating various applications via the Novell LDAP (lightweight directory access protocol), the hospital is able to fulfill its second requirement. Not only does the LDAP provide a common integration protocol, it also enables authorized users to access all the applications they need to work with via a single password.

Because UofL Hospital must share data with five other healthcare facilities at its Louisville campus, it needed to make sure data and images traveling over its Fibre Channel network were safe. With the help of Novell, data is protected and directed by ZenWorks through the network. "Data transmissions are encapsulated in a protected packet, which enables us to verify its safe travel from point to point over the network and to detect whether an unauthorized user tries to view or tamper with that data," says Summers. "While no network is 100% fail-safe, it would take someone way more skilled than the average script kiddie to get to our data."

### **Reduce Pencil Pushing, Increase Efficiency**

Moving toward a paperless work environment offers benefits such as reduced storage costs, reduced clerical costs, and improved clinician efficiency. For example, upon arrival at UofL Hospital or emergency room (ER), patients present a form of ID and, if they are insured, their insurance cards. Using Fujitsu fi-4220C and 4340C flatbed scanners and Alchemy Scan software, admissions personnel scan the documents. After the admissions forms are filled out and signed, the forms are scanned. Then, some information will be sent to the medical records repository, where the patients' medical records are stored. Other information, related to the services rendered to the patients and insurance information, is automatically routed to the billing department. After a patient receives the appropriate medical care and is released from the hospital, a release form is signed and scanned, and the patient's billing information is finalized. With the help of Alchemy Web, an electronic bill is sent to the appropriate service provider for payment. If there is ever a dispute about a bill or service rendered, all the signed and dated documents can be accessed and presented within a couple minutes, compared to several days previously. "Before our document management system was in place, we

would have to track down files from multiple locations," says Summers. "One or two people would have to sift through filing cabinets of information to find the appropriate information on paper or microfiche, make copies of the information, and then put the originals back in their proper location," he says. Since the document management rollout, clerks and clinicians can spend more time taking care of patients and less time filling out paperwork. UofL Hospital saves \$8,000 per month by not having to archive documents to microfiche and more than that in reduced labor costs and reduced storage space.

#### **After You Eliminate Paper, Reduce Scanning**

To further complement its document management success, UofL Hospital has other initiatives in the works. Presently, the hospital scans about 350 documents per day in its admissions area alone. The primary reason it still handles so much paper is that nearly every form it uses requires a signature. Because UofL Hospital's legacy systems comprise a variety of data formats such as ASCII (American Standard Code for Information Interchange), CSV (comma separated value), and raw data format, standardizing on a single electronic data capture solution is a challenge. After implementing the DataGrabber module, however, the hospital will be able to import patient information directly into Alchemy without having to print a paper document, scan it, and process it. Once this deployment goes live, sometime in 2004, UofL Hospital will be able to cut its scanning by more than half. Potentially, items such as drivers' licenses and insurance cards will be the only documents it will need to scan, and all other patient data will be generated digitally.

The hospital is also part of a beta test for the next generation of Alchemy that will allow it to track, audit, and route a complete patient file electronically. Presently, the hospital is also looking at an electronic sign-in solution for its employees to add further security features within its facilities. Summers estimates that within the next 12 to 24 months the hospital will have such a solution in place. "We are currently looking at various biometric-based access control systems," says Summers. "The system will incorporate either a retina scanner or fingerprint reader with a proximity ID card and will be used initially to regulate access to certain rooms within the facility." Sometime in 2004, after the first phase of the implementation is complete, Summers and the IS staff will incorporate the access control system to the hospital's 70-plus applications. "We have to look at all the different ways employees gain access to patient information and determine how we can secure that procedure," he says. Because HIPAA doesn't dictate exactly how authorized users should access healthcare information, any one or a combination of card swiping, PIN entering, and biometric reading may be used.

The quest to be digital drives another project the hospital plans to roll out in 2004 - a wireless network. Using a combination of Fujitsu wireless tablets and Dell PDAs (personal digital assistants), authorized users will no longer be tied to their workstations to search and enter information. Rather, clinicians will be able to access and input patient data at the point of need, such as at the patient's bedside.

If other businesses can learn one thing from UofL Hospital, it's that you don't have to be torn between paper and digital. Even though a 2002 HIMSS/AstraZeneca Clinician Wireless Survey revealed that 72% of all hospitals have no electronic medical records systems in place, there is plenty of evidence to support going digital. Basically, you have two choices: Look into document management now, or look into it after your next OSHA (Occupational Safety and Health Administration), EPA (Environmental Protection Agency), or HIPAA inspection. Only 28% of hospitals didn't want to learn a lesson the hard way. How about you?

### **Document Management Not A One-Size-Fits-All Solution**

When University of Louisville (UofL) Hospital (Louisville, KY) began looking for a document management solution, it realized how complicated the world of document management can be. After talking to an integrator with several years' experience in the healthcare industry, however, the hospital had an easier time choosing the right solution. Jesse Palmer, director of business development for DigiStor, played a key role in UofL Hospital's document management decisions. "First, we installed IMR's [Englewood, CO] Alchemy Premium document management solution at a workstation in the emergency room," says Palmer. "After the hospital had a few months to become familiar with the new solution and to see positive results handling subpoenas and insurance company disputes, UofL purchased the Alchemy DataGrabber module and added it to analysts' workstations in the IS departments."

#### **Tight Integration Isn't Always Preferable**

Presently, UofL has nearly 900 employees using its document management solution. The IMR application is integrated with the Siemens Medical System and some of the other hospital applications through a simple, loose integration. "We integrated the applications using minimal scripts," recalls Palmer. "This enables just enough information from one system to be pulled into the Alchemy repository via a COLD [computer output to laser disk] process." The COLD function enables the document management solution to capture data from scanned documents such as reports, patient ID, and insurance information, and transfer information directly to Alchemy. UofL Hospital's 70-plus applications comprise a myriad of data formats, which presents a potential challenge. COLD processing, however, takes advantage of the typical file format that documents are converted to when they are output to a printer - typically ASCII (American Standard Code for Information Interchange) format. Besides capturing data from a "print stream," COLD processing parses and stores the necessary information in the document management repository. The benefit is that information such as lab results, reports, and discharge summaries are indexed and searchable by patient name, diagnosis, or some other code and can be quickly accessed.

"UofL Hospital can find and send most information in under one minute," says Palmer. "Compare this to having to pay someone to search multiple filing cabinets, copy documents, send them out via regular mail, and then return the files to their original spots. It's a no-brainer which method is better."

#### **Digital Imaging Requires Proper Storage Support**

After implementing a document management solution, you may need to upgrade your storage from DAS (direct attached storage) to a SAN (storage area network). That's exactly what University of Louisville (UofL) Hospital (Louisville, KY) had to do after rolling out a document management solution in 1999. With dozens of forms and patient IDs to be digitized, the hospital began scanning 200 to 350 documents per day. Shortly after the first phase of its document management rollout, UofL Hospital migrated to a Dell SAN. "We set up a 4 TB Dell Optiplex SAN, which enables us to pool our storage resources and allocate storage on an as-needed basis," says Robert Summers, systems analyst for UofL Hospital. "In a DAS environment, you have to constantly monitor each storage device and try to balance adding too much storage with not having enough. With a SAN, you can see all your applications in one view, and you can set up rules that automatically assign more storage after certain thresholds are met."

#### **Tape Library Replaces Multiple Backup Units**

Besides pooling its online storage, UofL Hospital's SAN enabled the company to pool its backup resources. Attached to its SAN is a Dell PowerVault tape

backup library, which includes 60 DLT (digital linear tape) media, each with a capacity of 100 GB. Using VERITAS software, the hospital can automatically set tape backup rules. "We set up our system to back up in 500 MB increments," says Summers. "This makes the data easier to manage in the event of an emergency restore situation."

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