

## **ITMF Integrated Document Management and Workflow Committee Business Case for the UGA IT Master Plan**

### **I. Executive Summary**

Our assessment of integrated document management and workflow needs on campus indicates that significant cost savings and gains in efficiency can be achieved through the implementation of a campus-wide document management and workflow system. The Nolij system which was implemented last year by the offices of Undergraduate Admissions, Financial Aid, and the Registrar, has enabled a staff reduction of seven full-time-equivalent positions and two part-time positions for an estimated salary savings of over \$200,000 per year, as well as an estimated savings on paper and other materials of more than \$10,000. Digitization of student records has enabled further savings by reducing the time for semesterly transfers of documents from Admissions to Registrar, saving 300 person-hours with an estimated total value of \$4,500. Surveys of departments on campus indicate an initial demand for 946 user licenses for the digital management of student records, administrative records, grant applications, and other documents.

The total initial cost for a campus deployment of NolijWeb, including an enterprise license allowing unlimited users and server hardware, would be approximately \$250,000, and 3 full-time-equivalent staff members would be required to administrate the system and develop departmental workflows upon request. Annual cost to the University would total around \$120,000 for two of the full-time-equivalent positions. User licenses for the system and developments services could be offered on a cost-recovery basis to fund the third staff position, software license costs, hardware upgrades, and other expenses.

### **II. Situation Assessment**

The implementation of a campus-wide document management system will have a number of positive effects in the areas of security, cost savings, interdepartmental communication, and disaster recovery. Based on campus demand and observed benefits to offices such as Undergraduate Admissions and Financial Aid, the system has the potential to bring about significant savings in person hours, generating salary savings through attrition, and reducing materials cost as well for items such as paper, printer supplies, and filing cabinets. The document management system also provides a greater range of options for security controls and disaster recovery, by virtue of storing documents in digital form on servers that can be firewalled and password-protected to prevent unauthorized file access, and duplicated off-campus to ensure continued operation in the event of disruptive occurrences such as building fires or catastrophic weather events.

#### **A. Observed Cost Reductions from Use of Document Management System**

The Office of Student Financial Aid has seen the number of financial aid applications increase tremendously over the past year with the economic downturn across the country. For Academic Year 2009-2010, OSFA has processed an increase of 1,421 Awards and \$72,108,716 over AY 2008-09 (note the 2009-10 AY ends with the Summer 2010 term with final award numbers available in October 2010). OSFA estimates that, without Nolij in place, they would have needed to hire at least two additional counselors and one support staff to handle the increased volume. In addition, one staff member retired during this period, and there are currently no plans to fill the position, creating a total salary savings for OSFA of over \$100,000 annually.

Additionally, Nolij has reduced toner and paper costs for OSFA in two ways. First, prior to Nolij OSFA's awarding process produced approximately 120,000 pieces of paper each academic year. About 35,000 sheets of that paper output was printed on hard card stock which cost UGA \$100 per 1,000 sheets. All of this paper and printing expense was eliminated by Nolij with the first OSFA packaging run of AY 2009-10 in June 2009. OSFA estimates materials savings of \$4,200 annually per academic year. These savings do not include the mainframe printer, bursting machine, and toner costs that were eliminated from EITS' budget.

The Office of Undergraduate Admissions processes nearly 30,000 applications per year, with approximately 10 pages per application, as well as over 75,000 supplementary documents for first year, transfer, and former UGA undergraduate applications. This amounts to nearly 400,000 pages, which prior to the implementation of the Nolij document management system had to be printed, sorted, and filed by hand. The use of digital document storage and automated workflows for filing and evaluating applications has greatly decreased the time required for application processing, enabling faster turnaround on admissions decisions, scholarship offers, and other actions that contribute to the successful recruitment and enrollment of quality applicants. The time savings and efficiency gains provided by the system have enabled the Admissions Office to leave open three full-time positions and two part-time positions, for a total salary savings of approximately \$105,000 annually. In addition, the Undergraduate Admissions office has saved over \$3,000 in paper costs, and has been able to avoid having to replace a heavy-duty application printer, saving approximately \$2,000.

## B. Disaster Recovery and Business Continuity

The storage of student records and administrative documents in paper form represents a significant liability from a disaster recovery perspective. Paper records cannot be recovered if lost to fire or water damage, and the handling of paper records by multiple staff members subjects the records to the possibility of loss or unintentional physical destruction. One of the primary business drivers for the Nolij document imaging system was the need for archiving the hundreds of thousands of student folders stored on paper in the Holmes-Hunter Academic Building, where they are particularly susceptible to fire and flood.

The Noli document management system has allowed the Enrollment Services offices to begin the task of transferring operational and archived documents from paper storage to digital storage. Storing documents digitally allows multiple secure repositories to be created, ensuring that no one catastrophic event can compromise document archives. A document management system can also augment the business continuity planning of the university, as redundant servers can be placed in off-campus datacenters to enable business processes to continue even in the event of a Katrina-level weather disaster or pandemic flu outbreak.

### C. Increasing Document Security

Documents and records can be secured to an extent by the use of locked storage areas and careful key management, but they typically must be removed from secure storage in order to be processed or referenced, and central management of physical document security in distributed locations is problematic at best. A document management system would provide a secure central repository for documents, allowing materials to be accessed or processed from any approved network connection without leaving the encrypted data channel that governs interaction between the document management server and the designated users. A central digital repository would also place security management and monitoring easily within the purview of the UGA Office of Information Security, ensuring that the top security specialists on campus would have the ability to safeguard the systems housing the stored documents. Additionally, while paper files may be viewed or altered by anyone once they are removed from secure physical storage, a document management system allows viewing and processing privileges to be managed on the basis of roles, groups, and document types, providing a granular need-to-know level of security that can be customized as needed to balance privacy and data sensitivity with business process efficiency and document accessibility.

### D. Campus Demand for Document Management and Workflow Services

A recent survey of the IT leadership for all areas of campus indicated a strong interest on the part of several offices, departments, and colleges for a centrally available document management and workflow system. The following data from a recent survey indicates a high initial level of demand, both from areas with existing document management solutions and from those with no solution currently in place:

Department/Unit	O/PR/Contracts & Grants	COE	Terry College	Grady College	Law School	CAES	Franklin College	Grad School	Enrollment Services
How many Users?	55	150	10-20	10	3	100-250	91	230	137
Types of Documents:									
Student records		YES	YES	YES	NO	YES	YES	YES	YES
Personnel Records		YES	YES	YES	YES	YES	YES	TBD	YES
Grant Paperwork	YES	YES	YES	YES	YES	YES	YES	TBD	NO
Administrative forms		YES	YES	YES	NO	YES	YES	TBD	YES
Other		YES	YES	YES	NO	YES	YES	TBD	YES
How many pages per year?		1K+	100K+	TBD	~200	TBD	100K	325K	600K
Document Mgt Services Desired									
Viewing Docs from other units	YES	YES	YES	YES	NO	YES	YES	YES	YES
Scanning docs into imaging system	YES	YES	YES	YES	YES	YES	YES	YES	YES
Automatic bulk importing of docs	NO	YES	YES	YES	NO	YES	YES	YES	YES
Automated Workflow queues	YES	YES	TBD	YES	NO	YES	TBD	YES	YES
Transfer of doc ownership to other units	NO	YES	YES	YES	YES		TBD	NO	YES
Current Doc Mgt system in place?	OnBase	NO	XEROX (not robust)	NO	Copier/Scanner	NO	Yes (Treeno)	NO	Nolij Web

The survey results demonstrate that there is an identified need for a document management and workflow system, and also that a number of units have implemented or are pursuing document

management solutions on an individual level. Providing a central document management and storage solution would greatly reduce cost through avoiding installation fees and duplication of effort, and would also facilitate document sharing, viewing, and transferring ownership of documents between campus units.

#### E. Document Management System as a Business Process Data Source

The implementation of automated workflows for document management systems such as Noli involves translating business processes and business rules into database language, as well as storing the results of evaluations, approvals, and other multi-step workflows in database structures. This process creates a repository of business process structural information, accountability records, and quantitative data on tasks accomplished and completion times that can be used to generate reports, graphs, and other analyses that can be extremely beneficial to the institution. This data can be used to generate efficiency metrics, and to suggest what processes are in need of improvement. Database records can also be queried in order to establish "paper trails" in the event of disputes or inquiries, and can also serve as a storehouse of institutional knowledge that can be used to reconstruct crucial business flows in the event that key staff resources are no longer available. The use of integrated document management and automated workflow systems, in addition to increasing institutional effectiveness and decreasing waste and expense, results in the creation of a wealth of data that can be extracted and analyzed for a wide variety of potential institutional efficiency applications.

### III. Risk and Impact

An operational paradigm shift as significant as the change from paper document handling to digital document management introduces a new set of risks, which must be acknowledged so that they can be effectively mitigated. The following brief summary identifies high-level risk categories associated with digital document storage and management, and recommends mitigation strategies for each category.

#### **Risk Category: Unauthorized Access to Documents**

Description: Digitally stored files, like all digitally stored information, may be subject to unauthorized access attempts by internal or external parties.

Probability of Attempt: High

Worst-case Impact: Severe. Unauthorized access to sensitive identity data or medical records could result in loss of privacy or financial loss for the victim, creating financial liability and negative public perception for the University.

Mitigation Strategies: Firewalls and other security devices to protect servers, limiting access to documents based on role responsibilities, regular Information Security audits and vulnerability scans.

**Risk Category: Excessive downtime**

Description: If a campus-wide document management system suffers extended periods of downtime, defined here as more than one hour, business processes may be disrupted or delayed.

Probability of occurrence: Medium

Worst-case impact: Moderate. Loss of qualified applicants to UGA due to decision delays, damage to morale due to processing backlogs, delays in awarding financial aid resulting in enrollment reduction, increase in processing errors due to stress and heavier workloads.

Mitigation Strategies: A clustered server environment can provide a redundant means of access to the system, allowing users to continue working with reduced system performance in the event that one server crashes. Housing the system in a datacenter with backup power, fire suppression, and restricted physical access greatly reduces the probability that the system as a whole will suffer downtime. An additional redundant server instance housed in an off-campus datacenter can provide still more failover capacity in the event of catastrophic power loss or other unforeseen circumstances affecting the entire residential campus.

**Risk Category: Data Loss**

Description: As digital storage of documents replaces traditional storage of paper documents, and backup paper archives are no longer maintained, possible loss of data due to hard drive failure, fire damage, water damage, or other factors must be considered.

Probability of data loss on single system: Low

Worst-case impact: Severe. Loss of digital archives, if backups are not maintained, would be equivalent to a fire in an archival storage space, leaving the University without copies of critical files and records.

Mitigation Strategies: Use redundant hard drive configurations such as RAID5 or RAID10 to ensure that a single hard disk failure does not impact data integrity or availability. Maintain backup copies of files and databases in the Boyd Datacenter and in a secure off-campus location. A redundant off-campus fail-over server, which could be provisioned to ensure uptime, also functions as an additional backup mechanism to ensure that no one catastrophic event can compromise all copies of the document repository.

**IV. Recommendations**

Two potential options have been identified for the implementation of an integrated document management and automated workflow system for the University of Georgia. While a number of document imaging and management systems have been purchased by different units on campus, the Noli system implemented by the offices of Undergraduate Admissions, Financial Aid, and the Registrar has proven to be the most robust and scalable. Because the system is successfully running in production, and because the initial investment in software and hardware has already been completed, this system is recommended as potential starting point for a campus-wide installation. An additional option, the release of a new Request For Proposals based on an

extensive survey of business requirements for all units of campus wishing to participate, is recommended as an alternative potential choice should the existing Nolij implementation be found to be lacking in desired features.

### **Option 1: New RFP Based on Campus-Wide Requirement Discovery Process**

In the event that the existing Nolij document management system is found to be unsuitable for campus, a new Request For Proposals may be issued in order to find a new vendor. If chosen, this option should be preceded by an extensive survey of campus offices, schools, and departments interested in document management services, to develop a comprehensive inventory of desired features and capabilities. This option would have the advantage of initiating a requirement discovery process from a campus-wide perspective, enabling all participating units to contribute to the vendor selection process. However, the costs to the institution for a system of equivalent or superior capability to existing systems would probably be significantly greater, since a separate server instance purchased from a new vendor would preclude leveraging existing software purchases and custom configurations already completed by previous vendors.

### **Option 2: NolijWeb Enterprise Installation**

Nolij, Inc is a company with eleven years of experience in the delivery of document management, integration, and workflow solutions to higher education institutions. Other Nolij clients include institutions such as Kennesaw State, Georgia Tech, the University of Tennessee, the University of Oklahoma, and the University of North Carolina at Greensboro. The Nolij server software runs on a variety of common server platforms without a significant amount of customization, and uses several common database platforms for scripting and automation, allowing institutions to leverage existing skill sets for the local management and customization of the product.

The current production installation is in use by the offices of Undergraduate Admissions, Financial Aid, and the Registrar, as well as the Honors Department, the Athletic Association, and the Office of the President in view-only capacities. The product has been found to be robust, easy for end-users to learn, and sufficiently flexible to allow significant customization without the need for hiring additional staff or purchasing additional training. The Nolij server has completely replaced the use of paper-based student folders in the offices of Undergraduate Admissions and Financial Aid, and will over the next several years replace the paper archives maintained by the Office of the Registrar.

In order to make document management and workflow services available to all interested campus units, while allowing flexibility of funding availability based on usage of the system, a hybrid approach is recommended that combines centrally funded and cost-recovery elements. The enterprise-level Nolij license agreement, allowing unlimited user licenses to be issued,

would require a one-time purchase in the amount of \$137,000, and upgraded infrastructure necessary to guarantee 99.99% uptime would require a one-time investment of \$103,000, for a total initial set-up cost of approximately \$250,000. Additionally, two centrally-funded positions would be needed, including one database developer/business analyst, a half-time systems administrator, and a half-time database administrator, for a total salary cost of around \$120,000. Other reoccurring annual expenses, including the \$42,000 annual license renewal, \$20,000 for hardware upgrades, and \$60,000 for a second database developer/business analyst to address anticipated demand and redundancy concerns, can be funded on a cost-recovery basis by charging \$100 for each user license and \$120 per hour for custom configurations and automated workflow development.

#### TCO Summary:

Initial centrally-funded investment: \$250,000

Reoccurring annual centrally-funded salary cost: \$120,000

Reoccurring annual expenses funded via cost-recovery: \$122,600

## **V. Solutions in Use by Peer and Aspirant Institutions**

Document management and workflow solutions have been implemented by a number of comparator peer institutions and aspirational peer institutions of the University of Georgia, enabling significant efficiency gains and savings in both time and materials:

**The University of North Carolina** has implemented the NoliWeb product (currently in use by the UGA enrollment services units), and has been able to reduce daily admissions application processing from twelve person-hours to ten minutes of work by one individual. This institution also reports significant paper savings and reclamation of two offices worth of space by converting archive documents to digital formats.

**The University of Missouri System**, which includes the University of Missouri at Columbia, has purchased the ImageNow product from Perceptive Software (a higher education-focused document management product comparable to NoliWeb in price and scope) in the offices of Academic Affairs, Accounts Payable and Finance, Admissions, Financial Aid, Human Resources, School of Medicine, and several other areas. This institution reports greater efficiency in the handling of millions of documents annually, reduction of repetitive manual tasks enabling numerous staff members to focus on value-add responsibilities, and better compliance with security initiatives through management of digital roles and access privileges.

**Cornell University** has installed the ImageNow product from Perceptive Software in the areas of Admissions and Financial Aid, and reports that digital document access and automated workflows have enabled them to continue to meet Ivy League admissions deadlines despite a 35% increase in applications over two years. In addition, productivity has been significantly

increased through the elimination of filing, sorting, transporting, and searching activities associated with paper file storage.

**Pennsylvania State University** has implemented a document management and workflow system from DocFinity Optical Image Technology on a campus-wide enterprise basis, after a proof-of-concept installation in one department. The system infrastructure and support are centrally funded, enabling all areas of the institution to provide local resources for their own implementations in accordance with their resources and requirements. This institution reports significant gains in productivity due to digitization of records from paper, microfilm, and microfiche.