

**Draft**  
**As of September 8, 2004**  
**Northern Arizona University**  
**Information Technology Strategic Plan FY 2005**

**I. Introduction and Overview**

Northern Arizona University's information technology infrastructure environment consists of a variety of information, computing, and telecommunication systems designed to meet the needs of a complex higher education institution. Most of these systems are centrally administered while some resources are decentralized and distributed across campus and the State of Arizona.

At NAU, we envision an electronic learning environment that meets the needs of on-campus and statewide students, faculty, and programs that support outstanding teaching and learning, research, and administrative systems.

As NAU's "digital utility", our administrative and academic systems employ web-delivered solutions that are user-friendly, promote a self-service capability, and support the better use of data for decision-making. Such systems will make important information more readily available, thereby improving the access to the university's information resources and enhancing the effectiveness of information analysis across university activities. Our users expect NAU systems to be like other utilities, always available. This type of service requires our systems to be built using high reliability and redundant techniques. NAU is committed to providing such services.

The NAU Information Technology Strategic Plan for FY05 reflects the unique mission of NAU in the state of Arizona to provide both a premier residential campus and an extensive and growing distributed learning program to students throughout the state and the nation. NAU's student population is becoming more diverse in age, ability, background, location, and learning experience and preference. In order to meet these diverse and ever-changing student attributes, NAU has developed a variety of synchronous and asynchronous forms of course delivery to reach these non-traditional, and often underserved, students. In fact, NAU has a long tradition of meeting the needs of students across the state, particularly in rural areas, with a variety of course delivery methods to suit their needs. Online student services are an invaluable and cost-effective means of providing distributed learning students access to academic and administrative systems wherever and whenever they need them. NAU is committed to provide literally all student services in an online, easy-to-use, self-service fashion.

Instructional technology's remarkable set of new and emerging tools allows us to re-examine and re-invent curricula and programs; to examine new ways to integrate instruction, research, and creative activity; and to escape traditional time-and-place-bound models of instruction. In so doing, faculty has the opportunity to infuse their teaching and research activities with a new excitement and enjoyment. New IT tools will also make more efficient use of faculty, students and staff time, and will increase the competitiveness of our students, faculty, and staff by exposing them to state-of-the-art systems.

# Draft

As of September 8, 2004

## II. Planning Environment: Assumptions and Realities

In order to fulfill NAU's academic missions across a wide variety of student venues and collegiate programs, information technology plays a critical role. Several significant issues provide a great challenge to the IT resources of NAU to successfully perform its crucial responsibilities. Here are the top three issues facing NAU's IT resources today.

- **Budget Reductions**

Since FY 2003, the Information Technology Services (ITS) organization's budget has been reduced by a net total of \$2.2M (17.2%). Layoffs, removal of vacant positions, and reductions in operating dollars were necessary methods to meet budget cuts, but came at a high cost. This reduction has virtually eliminated any budget flexibility and severely impacts capital equipment purchases normally used for network upgrades and routine equipment replacement. The loss of staff and vacant positions has left current employees with more work to do since the work load and expectations have continued to rise. ITS was not alone in suffering from budget cuts, as many academic and administrative offices had to make tough decisions on what budget areas to cut. These reductions did affect IT operations and initiatives throughout campus such as faculty and lab computer replacement, classroom technology upgrades, and other needed IT programs. Our current planning assumption is that no new State funds will be forthcoming and alternate funding sources, such as student IT fees, will be pursued. Without such new funding sources, the continued financial uncertainty will have an impact on planning and implementing new IT initiatives at NAU.

- **Securing Campus Networks and Information**

During FY04, several events caused NAU to look deeper at our overall security posture. There were several times during the year that new viruses plagued our campus networks and end-user computers. Starting with the Blaster worm in August through multiple viruses and their variants in the spring, our campus networks and email system were slowed to unacceptable levels. Immediate action was necessary and solutions were put into place, as well as a longer term plan to help control viruses on our campuses. Included in our plan was the obtaining of Arizona Board of Regents (ABOR) Technology and Research Initiative Fund (TRIF) funds for security initiatives.

Over the past winter, the NAU network was scanned for vulnerabilities by an ABOR-funded initiative which paid for scans for all three state universities. The results showed that there are multiple security holes in the network and user equipment around campus which could be exploited by hackers. ITS held several work sessions with other IT technicians around campus to review the report findings for their areas and discuss the fixes they needed to accomplish. Also, the scan report suggested that NAU is in need of a full-time staff member to oversee the security function for all of the campus. That suggestion was taken before the Cabinet during a briefing of the scan results and a new position was placed on an unfunded priority list for FY05. Additionally, the new ABOR-

# Draft

As of September 8, 2004

funded initiative to install the network access control system, Perfigo, will begin this year.

- **Integration of IT Services**

Integrating IT services across the campus, and in NAU's case, across the State, is getting increasingly complex and costly. Issues such as middleware for authentication, authorization, directory services, global ids, administration systems, web portal, e-business, and data warehouse all mean a great deal of study and work for the NAU ITS organization. Researching and developing strategies to successfully engineer solutions to solve integration issues for all of the above will take a great deal of resources from ITS and other IT professionals across campus.

The greatest of our efforts will continue to be in the area of core directory services, which uses LDAP (Lightweight Directory Access Protocol). This service will aid in efforts to integrate our portal (MyNAU) with applications like the PeopleSoft HR/SAS (LOUIE), Advantage and WebCT. Directory services provide the infrastructure for naming, locating, describing, and managing people, devices, and other members of an on-line community. NAU's directory services efforts will enhance our integration needs and will greatly aid NAU in assimilating future technologies and modern directory-enabled applications and services.

Along with directory services and portal development, has been the implementation of a single sign-on capability using the CAS (Central Authentication Service). Single sign-on gives our users the ability to log onto the MyNAU portal, and navigate to various campus applications without needing to log-in again. The convenience and easy-of-use are significant and will help us reach our new goal of "All you need is MyNAU!" to perform all users' business and academic activities at NAU.

### **III. Plan Purpose, Goal and Strategic Directions**

Information technology is a tool to aid in the accomplishment of NAU's mission and goals. IT should not drive what we do academically or administratively, but should assist the faculty, staff, and students with achieving their learning and business objectives.

The purpose of this Information Technology Strategic Plan is to provide guidance for developing, implementing, and maintaining a sound IT infrastructure, which will support NAU's primary purpose of teaching students both on-campus and across the state.

The plan's goal is to give university planners and IT professionals a clear and focused document to be used in decision making within their areas of control.

To set the IT path at NAU, six strategic directions are outlined below:

# Draft

As of September 8, 2004

## ***1. Use IT to enhance the learning and living experience of all NAU students.***

In the 21<sup>st</sup> Century's Information Age, NAU graduates must be prepared to meet the challenges of a global economy fueled by information technology. Their experience at NAU, both in and out of the classroom, should enable them to gain proficiency in using the most current IT systems. No matter how instruction is performed, be it in the traditional classroom or on the Web, the NAU IT infrastructure must be stable, easy to use, highly integrated, reliable, and secure in order to enhance student learning and promote the building of IT skills. Initiatives for this year include continued NAU portal development, improvements to network security, upgrading our WebCT course management software, and the expansion of wireless LANs will improve the already robust academic computing environment at NAU. This IT strategic direction supports NAU's 2005 Strategic Plan goals # 1 & 5.

## ***2. Integrate academic and administrative systems through the use of a technically sound and secure "middleware" environment.***

The integration of administrative and academic systems offers the sharing of information heretofore not possible. A reliable and secure "middleware" environment of core directory services will enable such integration to happen, but not without a great deal of complex work, increased resources, and time. NAU is committed to working on such programs and issues as single sign-on, active directory, LDAP, Shibboleth, portal integration, and other "middleware" services that are geared toward essential integration initiatives. In order to deal with the task of integration, ITS will take on the following initiatives this FY:

- Strengthen and improve our LDAP directory services model.
- Increase the use of the CAS authentication system.
- Improve the MyNAU portal, which uses the uPortal, open source software. The goal of the portal will be to integrate our CAS single sign-on capability with administrative and academic programs such as PeopleSoft HR and student administration system, Cline library, WebCT, and other systems into a user-friendly, one-stop, online portal environment for the entire campus community.

This IT strategic direction supports NAU's 2005 Strategic Plan goals #'s 1 & 5.

## ***3. Maintain a robust, reliable, secure, and sustainable IT infrastructure.***

As NAU's "digital utility", where all critical business and many academic systems are operated, our core IT infrastructure must be engineered and maintained in the most highly reliable fashion both on-campus and across the state. Having services nearly "always on", is a goal that is essential to a highly efficient and effective university. Essential basic services, such as email, Internet connectivity, and network access, coupled with the operation of major software systems, like the Advantage financial system and the PeopleSoft Student Administration and HR system, must be run in the highest state of reliability and security. Of particular interest is the performance of LOUIE during the start of the academic year when the system is heavily used. These activities require not only top-of-the-line hardware and software, but also, and more importantly, a highly skilled and motivated IT staff to keep these complex systems up and running smoothly.

# Draft

As of September 8, 2004

New initiatives for FY05 include:

- Advantage financial system upgrade (funded and ongoing)
- Installation and use of the Perfigo network access control system (funded and ongoing)
- New IT Security Manager position (unfunded)
- Upgrade or change our current course management software, WebCT Campus Edition, to WebCT Vista or another product (unfunded)
- Improve our software backup and restore capabilities for WebCT and other critical systems (partially funded and ongoing)
- More reliable and expanded disk storage using Storage Area Network equipment (funded and ongoing)
- Outsourcing of modem pools at nine locations statewide (completed August 2004)
- Complete telephone switch upgrade (completed August 2004)
- Support academic restructuring and new building construction and renovation efforts (funded and ongoing)

This IT strategic direction supports NAU's 2005 Strategic Plan goal # 5.

#### ***4. In all administrative systems, seek solutions that use web-enabled, self-service, easily trainable applications.***

One of the main reasons for selecting the PeopleSoft version 8 software for our new student administration and HR/payroll systems, was its new web architecture, which enables a great deal of self-service capability with just the use of a web browser. This means that a student, staff or faculty member can access and change their personal information, pay tuition, or check on their degree plan, from any computer, anywhere in the world that is connected to the Internet. Other completed initiatives, such as an in-house developed web payment utility, allow NAU departments to have their customers pay for items or services online. Our Advantage financial system software will undergo a major overall this year. The next version of Advantage does have a much friendlier web interface for users and will incorporate electronic workflow for many business processes. All of these web services integrated through our MyNAU portal will provide a robust, highly accessible and user-friendly environment which will increase employee productivity, provide enhanced self-service capabilities, and improve student services. Equally important will be the ability of ITS to maintain an adequate core of trainers who can teach our new users on NAU's applications and systems. This IT strategic direction supports NAU's 2005 Strategic Plan goals #'s 1 & 5.

#### ***5. Ensure IT funding and spending is tied to university strategic planning efforts.***

All campus departments, including ITS, must pay careful attention to their IT budgets, especially in these lean budget times. They must ensure that expenditures are going towards meaningful projects, equipment and software. These efforts must use this IT strategic plan and other university IT policies and procedures to guide them as they consider new spending or in upgrading existing systems. Once identified, new IT initiatives and projects must be inserted into the new NAU budget planning process for possible funding. In addition, ITS leadership has undertaken the initiative to develop a procedure to do a Self Evaluation and Status Reporting process to assess where we are

# Draft

As of September 8, 2004

now technically and organizationally, as well as to forecast IT spending for the future. This strategic direction supports NAU's 2005 Strategic Plan goal # 8.

## ***6. Support a spirit of cooperation among all IT users and professionals across the university.***

Communication is key to any endeavor and will greatly aid in gaining a spirit of cooperation across the university to use this IT strategic plan as a planning guide. NAU must seek input and suggestions from all corners of the university in order to ensure buy-in from all departments. ITS must continue to hold IT professional meetings on a regular basis to keep the channel of communications open for new ideas and needs. ITS and CITO participation in all forms of strategic planning and implementation are critical to success of any project. The Provost's Academic Computing Advisory Committee has established a forum to discuss pertinent issues surrounding the use of IT in support academic endeavors. And the Steering Committee on Administrative Computing has taken over the management of issues pertaining to the LOUIE system and all other administrative computing issues. This strategic direction supports NAU's 2005 Strategic Plan goals #'s 1 through 8.

## **IV. Plan Implementation Guidance**

The implementation of this strategic plan will be by several means: 1) working with the NAU Strategic Planning Council and the President's Cabinet to integrate this plan with the university's strategic plan and budget activities, 2) working with the Provost's Academic Computing Advisory Committee, the Steering Committee for Administrative Computing, and other IT-related committees to promote and review IT projects and advancements, and 3) monitor and measure the success of activities related to the plan. Since there is more than one department involved with IT tasks at NAU, the development of IT projects may involve a group of individuals outside of ITS. Continued communication and coordination will be necessary to ensure IT projects fit into the NAU IT infrastructure and this plan and, therefore, must be reviewed by ITS to guarantee compliance with NAU IT infrastructure guidelines and this plan.

## **V. Conclusions**

During our current budget reduction period, NAU must scrutinize all spending across the entire university. IT spending is an area that must be linked to a common purpose and plan, which is represented by this document. The university-wide strategic planning and budgeting process are key elements in establishing NAU priorities. This IT Strategic Plan must be an integral part of this process to ensure that IT initiatives are supportive of the overall university mission, plans, and goals, and are considered for ranking in the list of NAU's priorities.

## **VI. Related Plans, References, and Annexes**

- **Related Plans**

NAU Strategic Plan

# Draft

As of September 8, 2004

[http://www4.nau.edu/pair/UniversityPlanning/strategic\\_plans.htm](http://www4.nau.edu/pair/UniversityPlanning/strategic_plans.htm)

NAU IT Strategic Plan, FY 2004

[http://www.nau.edu/its/stats/NAU\\_IT\\_Strategic\\_Plan\\_FY04.doc](http://www.nau.edu/its/stats/NAU_IT_Strategic_Plan_FY04.doc)

State of Arizona Office of Strategic Planning and Budgeting

<http://www.state.az.us/ospb/index.cfm>

- **References**

ITS Website

<http://www4.nau.edu/its/>

Provost's Academic Computing Advisory Committee

<http://www2.nau.edu/provost/pacac/index.htm>

ABOR Strategic Directions

[http://www.abor.asu.edu/1\\_the\\_regents/reports\\_factbook/planning/dirgoals.html](http://www.abor.asu.edu/1_the_regents/reports_factbook/planning/dirgoals.html)

EDUCAUSE

<http://www.educause.edu>

# Draft

As of September 8, 2004

## Annex A

### Description of the IT Organization at Northern Arizona University

#### *Mission*

Information Technology Services (ITS) operates and maintains information technology and telecommunications services in support of the NAU mission and goals. Services include academic support, administrative systems support, student services, telecommunications, and faculty and staff support and training.

#### *Vision*

To achieve its goals, NAU must continue to take advantage of the latest information technologies to remain competitive among its peer universities. A highly integrated, extremely reliable, nearly always on IT infrastructure, which provides first class academic and administrative services and systems, is our target.

NAU's ITS organization must provide the necessary leadership and guidance to the campus on all critical IT initiatives. ITS must stay engaged with all NAU constituency groups in order to provide the best service to all NAU students, staff, and faculty, both on campus and statewide.

Achieving this vision will require extensive collaboration and partnering among the different NAU technology, academic, and administrative organizations in order to provide:

- Support of the university's mission through adaptive and innovative use of information technology.
- Empowerment of NAU staff, faculty, and students through access to the information and tools needed for successful performance as workers, teachers, learners, managers, planners, and decision-makers.
- Support the broadening of NAU's educational courses, programs, and resources to students within and beyond Arizona through the use of a variety of distance learning technologies and delivery means.
- Extension of cost-effective and user-friendly telecommunication and Internet technologies to all members of the Northern Arizona University community wherever they may be.
- Acquisition and provision of new, cost-effective information technologies to the university community to keep NAU as current and competitive as possible.
- Provide a highly reliable infrastructure and set of computer-based administrative, teaching, learning and research tools to meet the ever-growing needs of the NAU staff and faculty.
- Provide both general and specialized technical support for those using information technologies in the NAU community.
- Optimize the use of existing and planned investments in systems and technology.
- Reasonably protect information resources and systems from illegal access and use.