POSITIONING
INSTRUCTIONAL &
CAMPUS TECHNOLOGIES
FOR THE FUTURE

ELON UNIVERSITY’S TECHNOLOGY PLAN
2008 – 2012

Christopher Fulkerson
Assistant Vice President for Technology/CIO
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FORWARD

Elon University has a history of planning, working the plan and moving forward. In technology, there have been two previous plans and from those plans, great advances have been achieved. The first plan (2000-2004) brought all technology into a single organization and set the basis for doubling the staff and building the infrastructure. Prior to the first technology plan, the infrastructure was poor and the staff was spread so thin that they were not able to respond to the needs of the institution in a timely fashion.

The second technology plan (2004 to 2007) built on the advances of the first, and made a broad range of technologies and support available for faculty, academic requirements, and classrooms. While the focus was high on academics, we also were able to focus on strengthening the helpdesk as well as making classrooms, the network and systems more reliable and functional.

Elon’s Instructional & Campus Technologies is nationally recognized as a leader in providing consistently robust instructional and administrative technology across the whole university while providing excellent support to the users. Other institutions of higher education and their consultants have sent teams to Elon’s campus to see our technology designs and applications. Our staff has presented nationally and internationally, explaining what we do with technology and how it was implemented.

In this new plan we have three goals:

1) Improve on an excellent infrastructure from which the university can build technologies that support the mission.
2) Leverage technology through innovation and integration to improve university services, save university resources and to further academic and administrative initiatives.
3) Develop an organization that meets university requirements and is positioned for the future to keep pace with changing needs.
EXECUTIVE SUMMARY

GOAL I: IMPROVE ON AN EXCELLENT INFRASTRUCTURE FROM WHICH THE UNIVERSITY CAN BUILD TECHNOLOGIES THAT SUPPORT THE MISSION

Continue to build a Renewal & Replacement Budget for the Network until it is $205,200 annually.

Elon University must continue to build and maintain a robust and flexible network that will be able to carry large amounts of data including the telephone system and video. $100,000 was set aside in the 2008-2009 budget for network renewal and replacement. Another $105,200 needs to be added for the existing network equipment (for details see page 38).

BUDGET: $105,200

Finish Voice over Internet Protocol (VoIP) implementation by purchasing the remaining handsets.

Elon University is more than 50% completed in its conversion from analog phones to Voice over Internet Protocol (VoIP). The networking equipment needed to upgrade the remaining buildings to VoIP will be covered by the network renewal and replacement fund, but the remaining handsets need to be funded as a one-time expense of $150,000. This allocation should be funded for fiscal year 2009-2010 because the existing phone switch is at the end of its life and needs to be removed from service (for details see page 40).

BUDGET: $150,000
Continue to build a Renewal & Replacement Budget for Servers until it is $200,000 annually.

The number of mission critical servers has grown from two (email and Datatel) in 1998 to 101 servers currently (see appendix G on page 86 for list of mission critical servers and services). These servers are expensive. $100,000 was set aside in the 2008-2009 budget for server renewal and replacement. An additional $100,000 needs to be added to the server renewal and replacement budget (for details see page 40).

**BUDGET: $100,000**

Raise the base level of technology for classrooms.

In the past we have called the highest level of technology a level 3 classroom (see Appendix H, on page 87). What we have called level 3 needs to be the base for all classrooms (for details see page 41).

**BUDGET: No effect on the operating budget, only construction budgets for future classrooms.**
Begin to put display and collaborative technology into conference rooms. Today, more people want to share information from their computer or from the internet while in meetings. Elon needs to begin to equip conference rooms and meeting spaces with display devices that are appropriate for the size of the room (for details see page 43).

*BUDGET: No effect on the operating budget, identified meeting rooms should go through annual budget process.*

Assist departments in developing an inventory of their technology. Elon’s schools and college have been frustrated because they know they have technology within their departments that is specific to the each department, but since it isn’t their expertise, they don’t know how to build and maintain an inventory of their technology or how to create budget models for renewal and replacement funds. We propose to assist departments in their efforts (for details see page 43).

*BUDGET: $30,000 one-time expense.*

Consider blocking computers from connecting to the network if they are not up-to-date with their system patches and have current versions of anti-virus and anti-spyware software.

Personal computers (PC’s) are actually the biggest “holes” in any information infrastructure. Improperly protected computers can easily be compromised and cause damage to our network or provide unauthorized access to our most secure systems (for more details see page 45).

*BUDGET: $220,000 one-time expense.*
We should hire a data security firm to run a security audit of our network and critical systems.

In November 2001, Elon hired Andersen Consulting to perform an electronic security audit. Elon’s network is more sophisticated, but the systems are more critical to the operation of the university. Every month there is a story about a college or university that has had confidential information compromised. While we believe our systems to be secure, it would be beneficial to have professionals systematically try to compromise our systems. We can then take the results of the analysis and continue to improve the security of our electronic data (for more details see page 45).

BUDGET: $10,000 one-time expense.

Develop a method for delivering software on demand through a broadcast based application system or virtualized desktop server.

The cost of maintaining software in computer labs is quite expensive. Both methods allow for purchasing only enough copies of software as needed at any one time instead of buying software for every computer on campus. It is estimated that the overall savings would be $82,000 to $131,000 per year. Based on preliminary studies, the system would pay for itself in 2 to 3 years (for more details see page 46).

BUDGET: $300,000 one-time expense and $20,000 annually.

Assist Campus Safety and Police with their technology infrastructure.

The master plan for Campus Safety and Police has many technology initiatives. Instructional & Campus Technologies will work with the University Campus Safety and Police to implement them (for more details see page 48).

BUDGET: Included in Campus Safety and Police Master Plan.
Consider outsourcing services like student e-mail to free up resources.
Institutions of higher learning are beginning to outsource services like email and online communication applications like instant messaging, blogs, and social networking. If outsourced, resources would be freed from no longer having to maintain hardware and licenses. Free outsourced e-mail often comes with a different price tag—lack of control, advertising, lack of access, etc. (for more details see page 49).

BUDGET: To be determined from study.

Explore Video over Internet Protocol.
Video over Internet Protocol (IP) may offer a solution to the fast approaching digital conversion mandate and an alternative to using local cable television vendors (for more details see page 50).

BUDGET: To be determined from study.

Implement Raiser’s Edge and its ancillary systems.
University Advancement purchased Blackbaud’s “Raiser’s Edge software to enhance their fundraising (for more details see page 50).

BUDGET: To be funded by University Advancement.

Work with Physical Plant to review and improve energy management system.
Elon University has recognized its responsibility to the environment and has put into place a significant environmental sustainability initiative. As part of the initiative, we should look for ways to improve energy management with the Physical Plant department. I&CT should work with both Physical Plant and the Sustainability Coordinator to seek out ways technology can help Elon’s efforts in sustainability (for more details see page 51).

BUDGET: To be determined from study, identified solutions should go through annual budget process.
Work with Physical Plant to review and improve their work order system.

Instructional & Campus Technologies will work with the Physical Plant to improve the efficiency and effectiveness of their work order system. We will analyze the workflow from the point of receiving requests to the distribution, completion, tracking of resources, and reporting of work orders (for more details see page 52).

*BUDGET: To be determined from study, identified solutions should go through annual budget process.*
GOAL II: LEVERAGE TECHNOLOGY THROUGH INNOVATION AND INTEGRATION TO IMPROVE UNIVERSITY SERVICES, SAVE UNIVERSITY RESOURCES AND TO FURTHER ACADEMIC AND ADMINISTRATIVE INITIATIVES

Look for ways that technology can make efficiencies in departments so additional staff will not need to be hired.

Elon University continues to grow, placing greater demands on support staff. There are appropriate technologies that create efficiencies and make staff more effective. During the time this technology plan is in effect, I&CT recommends that we look at processes in offices and apply appropriate technologies where they will make a difference in efficiencies and effectiveness for the staff (for more details see page 53).

*BUDGET: to be determined after study; items will go through regular budget process.*

Provide tools for easier collaboration.

While collaboration isn’t a new idea, how faculty, staff and students collaborate has changed. Advances in software and web-based tools have made it easier to share information and students are making the most of the tools. We propose pulling these technologies together to make them easier to use and assist faculty in incorporating the collaboration tools into their teaching (for more details see page 54).

*BUDGET: No effect on the operating budget, identified meeting rooms should go through annual budget process.*

Provide more technical help for faculty.

As faculty are asked to be more engaged in scholarship, they will have less time to learn how to use the technology. We need to build up our production staff to produce the more complex learning and scholarship materials for the faculty (for more details see 55).

*BUDGET: Budget included in Goal 3.*
Provide Data Warehouse and reporting tools.
Elon is an information rich institution, but it is not easy to access the data or analyze it. A Data Warehouse is a repository of an organization's electronically stored data and is designed to facilitate reporting and analysis (for more details see page 56).

BUDGET: $325,000 one-time expense and $35,000 annually.

Continue to implement Document Management.
The document management infrastructure that has been put in place enables the university to reduce the printing of paper, build efficiencies in the processing of documents, ease the retrieval of documents, minimize the storage of paper and in some cases, provides for the elimination of paper altogether. This plan lists areas that could benefit from implementing Document Management (for more details see page 58).

BUDGET: $80,000 one-time expense and $12,000 annually.

Leverage our investment in Datatel.
We purchased Datatel in 1994. Since the initial implementation, we have had turn over in staff and Datatel has added functionality. Many departments may not know the full capabilities of Datatel. We should do a usage audit of each area that uses Datatel to see if improvements can be made through changing processes or extra training. Datatel has improved over the last 14 years, have we kept up? This should be an institution-wide initiative and not just an IT initiative (for more details see page 60).

BUDGET: $24,000.

RECOMMENDATION: Explore the long term possibility of migrating to a more robust ERP (Enterprise Resource Planning) software package.
While Datatel still works well for the university as our ERP (Enterprise Resource Planning) software, Elon is no long the same school it was 14 years ago and will continue to grow in sophistication. We should research ERP software to see what is available for the school we think we will be in 20 years (for more details see page 61).

BUDGET: to be determined after study.
Explore a longer replacement cycle for computers.
Modern personal computers are more powerful than ever. When properly configured and maintained, they can remain useful for long periods of time. Also, many processor intensive applications are increasingly being housed on central servers instead of running on local machines. Considering these factors, it is understandable that we may want to keep computers longer, but it has to be weighed against what the machine is being asked to do and what effect it has on the computers that are reassigned to student workers and lower usage functions across the university (for more details see page 61).

*BUDGET: to be determined after study.*

Leverage our investment in video conferencing.
Elon has already made a significant investment in video conferencing technologies. Our current Cisco system was purchased to enable Board of Trustee members to connect and conduct business from offsite locations. We should look for new opportunities that will save the university time and money, and will bring people together in ways never possible (for more details see page 62).

*BUDGET: none.*

Create a Web interface that ties collaboration tools, Datatel, e-mail, Blackboard, network storage, Raiser’s Edge, Fortis Document Management system, print management and the rest of our e-services together.
We will install a powerful enterprise work environment and collaboration system (Datatel’s ActiveCampus) that seamlessly brings together people, systems and information through a unified Web interface (for more details see page 63).

*BUDGET: Already budgeted in Instructional & Campus Technologies budget.*

Continue to look for ways to create better customer service by moving services onto the Web as a form of self-service.
In the Amazon.com world, campuses are beginning to borrow customer-service techniques from the online business world (for more details see page 64).

*BUDGET: staff time for each project.*
GOAL III: DEVELOP AN ORGANIZATION THAT MEETS UNIVERSITY REQUIREMENTS AND IS POSITIONED FOR THE FUTURE TO KEEP PACE WITH CHANGING NEEDS

Examine the organization structure as advised by Kaludis Consulting.

In the spring of 2008, Kaludis Consulting was engaged to examine the organizational structure within Technology. While very complementary of what we have accomplished so far, the report pointed out issues that would impact Elon’s technology organization within the next 5 to 7 years. The report makes recommendations for minor rearranging of services to make the organization more effective. The leadership of Instructional & Campus Technologies in consultation with the Vice President for Business, Finance and Technology will review the recommendations made by Kaludis Consulting and implement them where and when appropriate.

BUDGET: none.

Review the roles and responsibilities of CATL & IDD.

Review the roles and responsibilities of CATL and IDD. Both have clear mission statements and list of responsibilities posted on the Web, but both have crossed into the other’s area. CATL has been the intake point for technology projects while IDD has assisted faculty in redesigning their classes. This has lead to confusion for the faculty. It is time to re-examine the roles of each and clear the confusion for the users (for more details see page 67).

BUDGET: none.

Hire general technologist to work within each school and college (similar to the model in the Law School).

This person would be able to help faculty with a variety of general technology issues and projects, and would be able to get the more advanced help for the faculty (for more details see page 67).

BUDGET: $250,000 annually.
Hire a programmer who can work strictly on faculty projects.
Elon needs to develop and deliver appropriate academic technologies, capabilities and support for faculty as new teaching, learning, scholarship and research paradigms emerge due to the report from the Task Force on Scholarship (for more details see page 68).

*BUDGET: none; reallocate from open position.*

Hire systems analyst.
A Systems Analyst is needed—someone who can analyze processes and break them down to their most basic levels, then bring the appropriate technologies and programmers together to build the integrated or specialized solution (for more details see page 69).

*BUDGET: $120,000 annually.*

Hire an Application Systems Analyst to manage the commercially purchased applications of PAVE, Novus, Ticket Return, CSO Research, etc.
The Application Technologies department needs an Application Analyst to manage the increasing number of 3rd-party web-based software applications that have already been purchased by other campus divisions (for more details see page 70).

*BUDGET: $75,000 annually.*

Hire two Web Application Developers to provide more online services.
The Web Technologies department will need two additional Application Developer positions over the next three years adequately meet the demands for additional automated online services and expanding existing services to new platforms (for more details see page 70).

*BUDGET: $145,000 annually.*
Hire a Database Administrator (DBA).
Mission critical databases have increased rapidly in both quantity and complexity, and the trend is accelerating. Many of these databases contain sensitive data, and the security of this data is of the utmost importance. A Database Administrator is experienced in building, integrating and securing databases (for more details see page 70).

*BUDGET: $84,000 annually.*

Hire a Data Security Officer.
Systems at Elon have grown and become more integrated. As the need to access systems remotely grows, the need to maintain security also increases. We need someone who will focus full-time on network and data security (for more details see page 72).

*BUDGET: $75,000 annually.*

Consider creating a department for Event Management.
The increased number and complexity of events are creating a problem of figuring out who to call to schedule support for the event. An event management department would contain staff that coordinates the university calendar, event setup, event technology, food service for event, and event planning (for more details see page 73).

*BUDGET: Reallocate existing staff from across campus.*

Examine the role of video services at Elon concerning the growing need for university video production vis-à-vis the need for academic video support.
Put something here (for more details see page 74).

*BUDGET: none.*

Consider the development of a Central Call Center.
The university should consider developing the helpdesk into a central university call center supporting campus information, administrative support services as well as broader technology (for more details see page 76).

*BUDGET: none.*
Hire a project manager
There is a need to formalize Project Management with campus-wide initiatives requiring technology. A process should be created to clarify the intake of creative ideas, academic projects, and university-wide proposals to increase communication, management of resources, and project launch/closure. The Kaludis Consulting Report (2008) warned that IT could not be all things technical to all people all the time. A structure has to be developed for an intake point so that resources can be maximized, but not overloaded (for more details see page 77).

*BUDGET: $68,000.*
## SUMMARY OF BUDGET

### OVERALL BUDGET

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<th>Recommendation</th>
<th>One-Time</th>
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One-Time Totals $ 1,685,000
Ongoing Totals $ 1,054,200
I. Summary of Previous Technology Plan

In the previous technology plans, we needed to build the size of our infrastructure and services from almost nothing to what it is now. Today, our technology is as solid as any institution of higher education. Many vendors use Elon as a model for how technology should work in higher education. Colleges and universities from across the nation use Elon as a case study for their development of technology. The last plan added staff, software and equipment to shore up the infrastructure where needed. We standardized equipment to improve ease of maintenance and reliability. In classroom technology, we went from 57% of the classrooms having technology better than a television to 97% of the classrooms having at least a data/video projector and 75% of all classrooms having fully integrated multimedia technology. We standardized the user interface in the classrooms with the highest level of technology to make it easier for faculty and students to go from one classroom to the next and operate the equipment.

As part of the last technology plan, we made the Koury Business Center high tech throughout. Each classroom has the most instructional technology incorporated into them. Some classrooms have Smart Board technology built into the instructor’s station. The finance lab has the latest software for researching stocks and corporations. The stock market lab shows real-time stock quotes. In the digital theatre, the projector is capable of projecting high-definition video. The room has surround sound and is also capable of originating and receiving video conferences. The computer labs have the latest equipment and one is arranged as a collaborative computer lab.

Since the second technology plan was published, Elon has developed online summer courses. Any faculty member who teaches online for Elon goes through extensive training regarding the pedagogy of teaching online. One should not simply take a face-to-face course and try to teach it online. The techniques of engaging students are very different online than face-to-face. The success of our faculty working together with Instructional Design and Development to perfect their online pedagogy is proven by the popularity of the courses. Students taking online summer courses outnumbered students taking face-to-face courses in the summers of 2007 and 2008. An added benefit of working with faculty who teach online is that they learn how to use the technology better for when they return to the classrooms.
II. Evaluation of Previous Technology Plan

Below is a review and evaluation of the previous technology plan with an explanation of what was done for each recommendation.

Enhance the teaching, learning and research of faculty, students and staff
Goal (1): Develop and support curriculum and program initiatives for teaching and learning through the use of appropriate technologies.

- Improve and expand classroom technology
- Develop the program for the Koury Business Center with technology staffing and resources
- Expand the support given by Instructional Technologies (IDD & ITS)

Goal (2): Develop the capability for distance learning through the use of remote technologies.

- Provide space in the Koury Business Center (Digital Theater) to use remote technologies
- Expand bandwidth, and partner with NC-REN (North Carolina Research and Education Network) to allow for satellite and remote video traffic
- Improve the networking and server capability on the campus

Prepare students for a life and career in a rapidly evolving age of technology
Goal (3): Develop college-wide and discipline-specific technology objectives, define ways to enable students to meet these objectives.

- Migrate from analog to the newly required digital technology, throughout campus, but primarily in the School of Communications
- Upgrade software packages in academic departments and throughout the campus
- Focus on academic departmental 5-year plans when adding new Instructional Technologies staff to maximize student learning outcomes

Goal (4): Infuse technology throughout the curriculum, internships and work experiences so that Elon University students become known nationwide for their expertise in the use of technology.

- Expand on-line offerings consistent with educational and pedagogical goals (supported and subsumed in numerous other objectives: servers, bandwidth, remote technologies, etc.)
- Provide on campus student work experiences in technology fields that allow students to work with the newest technology and methods (supported and subsumed in numerous other objectives: elite [Emerging Leaders In Technology @ Elon] Program, Helpdesk, Events Management, Scheduling Software, Print Management System, E-services, etc.)

Improve efficiency and effectiveness of communications and operations
Goal (5): Provide the infrastructure and support that enable improved communications and operations technologies to be introduced in a timely and efficient manner
• Continue to deploy Voice Over Internet Protocol (VoIP) as a cost savings and efficiency measure
• Improve technology staff development opportunities
• Expand E-services, including scheduling software and a print management system
• Provide additional support for database creation and management

Below are the recommendations of the last technology plan and an explanation of how we responded to them over the last 3 years.

**Classroom Technology**

**Recommendation:** Fund a renewal and replacement (R & R) budget for classroom equipment so that classroom technology can be replaced on a regular basis.

The renewal and replacement fund for classroom equipment was created. It is being used to upgrade classroom technology.

**Recommendation:** Equip all remaining (68) classrooms with a computer, data projector, and the current instructional technology. A typical classroom would have the following equipment:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data projector</td>
<td></td>
</tr>
<tr>
<td>Video playback device</td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td></td>
</tr>
<tr>
<td>Input for a laptop computer</td>
<td></td>
</tr>
<tr>
<td>Sound system</td>
<td></td>
</tr>
<tr>
<td>Control interface for equipment</td>
<td></td>
</tr>
<tr>
<td>Projection screen</td>
<td></td>
</tr>
<tr>
<td>Document camera (optional)</td>
<td></td>
</tr>
<tr>
<td>Image splitter (optional)</td>
<td></td>
</tr>
<tr>
<td>Digital Pad (optional)</td>
<td></td>
</tr>
<tr>
<td>Computer for each student (optional)</td>
<td></td>
</tr>
<tr>
<td>Transparency projector (optional)</td>
<td></td>
</tr>
</tbody>
</table>

We currently have 132 classrooms. Of those classrooms, 99 are at the highest level of technology with the equipment listed below. 24 classrooms have a video projector, video playback devices and control system. Only 9 classrooms have just a television and VCR (see Appendix H on page 87).

**Recommendation:** Put a phone in each classroom so faculty can get quicker response to problems in the classroom.

Since the Virginia Tech shooting, phones in the classrooms have become more important than ever. We are putting phones in classrooms as we upgrade the technology. We are currently at 75% of the classrooms having telephones.
**Recommendation:** Hire another staff person to support classrooms. This person should be scheduled to work at a time when classrooms are unused. Classroom checks should be performed daily and regular maintenance should be performed monthly. Having a person check classrooms daily will allow problems to be found and corrected before faculty and students use the equipment in classes.

We did hire another staff person to support classrooms. The addition of this staff person has reduced problems in the classrooms significantly. Classrooms are checked every evening and preventative maintenance is performed regularly. With the addition of this staff position and the one added when Koury Business Center was added, the staff reports that during any class time, they are able to respond to classroom problems within 5 minutes of the helpdesk receiving the call.

**Recommendation:** When purchasing classroom equipment, make sure there are two extras of each make and model of equipment so that equipment can be changed out quickly, rather than having a class wait while someone trouble shoots and repairs the equipment in the classroom.

This recommendation has become standard operating procedure for both classroom equipment and computer equipment.

**Recommendation:** The equipment interface should be standardized, flexible and easy to use. The design of such an interface should be reviewed and tested by faculty and students, then modified based on feedback.

This recommendation has also become standard operating procedure for the classroom support staff.
**Koury Business Center**

**Recommendation:** Add two technicians who can support all the technology within the building for the extended hours of operations this building will need to accommodate the MBA and Executive Education programs.

Two technicians were added to the support staff. There aren’t enough problems with the technology specifically assigned to KBC for the technicians to be assigned solely to KBC. While they operate out of KBC, they are also responsible for responding to problems in McMichael science building Belk library and other parts of north campus.

**Instructional Design & Development**

**Recommendation:** Over the next three years, hire 4 more instructional designers and 3 more multimedia designers.

Two more instructional designers and one more multimedia designer were hired. This seemed adequate to meet the need. Probably the addition of CATL was the reason more instructional designers were not needed.

**Software**

**Recommendation:** Purchase a 1,000 user license of Macromedia Studio MX, a suite of software packages for Web and multimedia development. The 1,000 user license is for 2 years and provides for free upgrades within that 2 year license. Studio MX provides the most popular combination of software for Web and multimedia development in a single suite.

**Recommendation:** Use the 2nd year of the $128,420 to purchase other popular software that is needed by the university like Adobe Reader/Writer, Final Cut Pro (video editing software), etc.

These two recommendations were never able to be implemented because different departments needed different software, and no single package met everyone’s needs. The recommendation of developing a method to broadcast software will probably meet this need (see page 46).
Recommendation: Require all university software purchases to funnel through PC Support so licensing information can be maintained and volume purchases can lower our unit cost. PC Support could purchase a large volume of a software package at a lower price and charge back the lower cost to requesting departments.

When departments go through purchasing to purchase software, it is funneled through PC Support. The procurement card has made enforcement of this policy difficult.

Technology Helpdesk

Recommendation: Use the helpdesk as the single number to call for all technology problems. This additional function and the significant increase in calls over the last two years will require an additional helpdesk associate.

The technology helpdesk has been greatly enhanced over the past 4 years. We have actually added 3 helpdesk associates. The helpdesk handles calls for all technology. The confusion of who to call has, for the most part, been eliminated. The helpdesk receives over 30,000 calls each year. In this new plan, we recommend taking the helpdesk to the next level by making it a call center for more departments (see page 76).

Networking

Recommendation: Upgrade the networking equipment in Staley, Moffitt, Maynard, West/Virginia, Sloan, Carolina and Smith residence halls.

The network was upgraded in the listed residence halls.

Recommendation: Establish an R & R fund for networking equipment. The life cycle of building networking equipment is about 5-6 years, but core network equipment has a life expectancy of 8 years.

The beginning of a renewal and replacement fund for networking was established for budget year 2008-2009. In this new plan, we recommend fully funding R&R of networking equipment (see page 38).
Recommendation: In year three of this plan, add another networking engineer.

A second network engineer was added.

Servers

Recommendation: For electronic services that are deemed extremely important or critical to the whole institution, make sure the equipment is in a clustered environment with appropriate redundancies at the time of purchase.

Two server rooms have been created—one in the Center for the Arts and another in Koury Business Center. The rooms have separate air conditioning and power as well as a generator for back-up power. All servers that are deemed extremely important or critical to the institution are purchased with appropriate redundancies. To see a list of mission critical servers see Appendix G on page 86.

Recommendation: Establish a 3-year R & R fund for servers that support extremely important or critical services.

A renewal and replacement fund was begun for budget year 2008-2009. In this new plan, we recommend fully funding R&R of server equipment (see page 40).

Recommendation: Each system administrator should not administer more than two mission critical systems or 10 servers. Once we have reached the maximum for existing staff, a staff member should be added to spread the work load so that we can ensure equipment reliability and dependable services. We currently have 32 servers and 2 system administrators. We should add an additional system administrator in the first year of the technology plan and a second system administrator in year three.

We currently have 4 system administrators. While we have over 94 servers, most of these servers are virtual and easier to maintain. Currently, the 4 system administrators are adequate for the servers we support.
**Events supported by Media Services**

**Recommendation:** Add another event support position in year two of plan.

We actually added two event support staff positions because of the increase in number of events needing technology set-ups. We will probably be able to remain at the current level of staffing in events because in this new plan, we recommend adding technology permanently built into meeting spaces (see page 43) and better coordination of campus events by pulling staff into a single department (see page 73).

**School Of Communications Technology**

**Recommendation:** Create an R & R fund for audio and video equipment used by the School of Communications based on an average 8 year life expectancy of equipment.

A fund was created for budget year 2008 - 2009 for the School of Communications.

**Digital Video**

**Recommendation:** Fund the digital upgrade of the School of Communications equipment over a 3 year period. Slow migration will allow us to use the existing studios by purchasing equipment, which is capable of both analog and digital. The last phase of the conversion will be the infrastructure and equipment where an analog/digital conversion isn’t an option. After the conversion, the recommended R & R fund will enable Elon to keep the equipment current.

The conversion to digital video within the School of Communications has been taking place. All video equipment and most audio equipment are now digital.

**Recommendation:** Fund the digital conversion of classrooms out of the proposed classroom R & R fund.

The conversion in the classrooms is underway.
Voice over Internet Protocol (VoIP)

**Recommendation:** As new construction, major renovations or additions take place; replace existing telephones with IP telephony. These costs will be borne by the construction budget for each project.

The conversion to Voice over Internet Protocol (VoIP) is well underway. Within the next two years, the conversion will be complete.

**Technology Staff Development**

**Recommendation:** Increase the professional development budget by $10,000 per year to help keep staff current with the new technologies.

The fund for professional development was increased and has been critical in keeping staff current with new technologies.

**Bandwidth**

Elon has been keeping up with the demands of more bandwidth. We currently have two internet providers—Time Warner Telecommunications and North Carolina Research and Education Network (NCREN). Both offer us a 100 MB/second pipeline. To see the distribution layout of the network see Appendix F on page 85.

**Web E-Services**

We continue to expand Web services. In this new plan we plan to continue to increase Web self-services (see page 64), and hire staff to develop and manage the Web applications (see page 70).

**Integration of Database Technology**

**Recommendation:** Hire a database manager to help department create and maintain databases.

This staff position was hired, but has been working mostly Web applications development by creating their databases. Our need has now evolved into adding a database administrator (see page 71).
**Scheduling Software**

**Recommendation:** Purchase the scheduling software and hardware.

The software (R-25) and hardware were purchased.

**Mobile Computing**

Mobile computing is still a development for which Elon will need to build capacity. 99% of students bring laptops to Elon. 100% of faculty have laptops or convertible laptops/tablet computers. 50% of the staff have laptops or tablet computers. Students are also bringing smart phones such as Motorola Q’s or Apple’s iPhone.

**Print Management**

**Recommendation:** Purchase a print management system from existing technology funds and recoup the funds from savings.

Print management was purchased and implemented. In the first year of operation the paper printing in computer labs and the library reduced from 10 million sheets in one year to 3 million. In the 2007-2008 academic school year, 2.8 million sheets were printed. The system was thought to have a 3 year cost recovery, but the system actually paid for itself within the second year.
III. Current State of Technology at Elon University

The department of Instructional and Campus Technologies is made up of five departments that report to the Assistant Vice President for Technology/Chief Information Officer (for a functional organization chart see Appendix L, on page 100). These departments are Campus Technology Support, Instructional Design and Development, Information Systems and Technologies, Instruction Technology Services, and Application Technologies. There is one director for each department.

Campus Technology Support has 21 staff members:
- 1 Director
- 1 Assistant Director for Classroom Support
  - 3 Classroom Support Technicians
- 1 Technology Helpdesk Coordinator
  - 5 Helpdesk Associates
  - 1 Student Computer Support Specialist
- 1 Assistant Director for Computer Support
  - 3 Computer Software Specialists
  - 2 Computer Hardware Support Specialists
  - 1 Apple Systems Certified Engineer
  - 2 Microsoft Windows Certified Engineer

Instructional Design and Development has 8 staff members:
- 1 Director
  - 1 Senior Instructional Designer
  - 3 Instructional Designers
  - 1 Instructional Support Liaison
  - 1 Multimedia Developer
  - 1 Sciences, Computing Sciences and Mathematics Liaison

Instructional Technology Services has 8 staff members:
- 1 Director
- 3 Media Technicians for Events
- 1 Elite Program Coordinator
• 2 Multimedia Developers
• 1 Office Manager

**Information Systems and Technologies** has 18 staff members:
• 1 Director/Assistant CIO
• 1 Program Assistant who also assists the CIO
• 1 Assistant Director for Systems Administration
  o 3 Systems Administrators
  o 1 Account Management Associate (part-time)
• 1 Assistant Director for Networking
  o 1 Network Support Specialist
  o 1 Telecommunications Manager
    ▪ 1 Telecomm Technician
    ▪ 2 Switchboard Operators
    ▪ 1 Network/Communication Technician
• 1 Assistant Director for Television Services
  o 1 Chief Engineer
  o 1 Senior Video Producer
  o 1 Senior Audio Producer
  o 1 Office Manager

**Application Technologies** has 10 members:
• 1 Director
• 1 Assistant Director for Web Technology
  o 1 Web Developer
  o 2 Application Developers
• 1 Senior Technical Specialist
• 2 Programmer/Analyst
• 1 Programmer
• 1 Project Manager for Administrative Computing
• 1 Applications Web Programmer
The technology salary and operational budget for the fiscal year 2008 (academic year 2007-2008) was $7,931,282. To see a comparative chart of the technology budget from fiscal years 1999 to 2008, see Appendix E, on page 84.

Elon University owns 2,733 computers. To see a comparative chart of the growth of the computer inventory, see Appendix A, on page 79. Most faculty, staff and computer labs are replaced with new machines every 3 years. The computers are then reassigned to student worker computers, office computers or lower usage/function applications (e.g. as devices that record output of equipment). As a whole, we tend to keep computers for 5 years. The exception is where a computer has taken a lot of abuse as in Belk Library. When Elon is through with the computers, they are offered to faculty and staff for purchase. Any computer not purchased by faculty and staff are sold to a computer refurbisher. This practice is in place to maximize our investment in computers while trying to keep as much out of the waste stream as possible.

The growth in the number of user accounts over the last 3 years has been significant. We had to hire a part-time person in Systems Administration to manage the accounts in Active Directory, which most systems authenticate against. To see a comparative chart of the growth of the user accounts, see Appendix B, on page 80.

Many people at Elon are surprised to learn that Application Technologies meets the university’s service and operational requirements with more than just Datatel (Elon’s ERP software) and homegrown Web applications. Datatel systems support about 60% of the university’s functional requirements while the remaining 40% is met with specialized systems that are often purchased for a specific need. Extensive integration is needed to make Datatel work with all of the auxiliary applications. To see a full list of applications supported by I&CT, see Appendix C on page 81.

Elon has been keeping up with the demands of more bandwidth. We currently have two internet providers—Time Warner Telecommunications (TWT) and North Carolina Research and Education Network (NCREN). Both offer us a 100 mbps (millions of bits per second) pipeline. Each ISP has an entry to the campus network through a core switch in different buildings. Time Warner Telecommunications (TWT) access is through the Center for the Arts while NCREN is through McMichael. These two locations were designed in case there was a disruption of service with one entry point. The network has the capability of self-healing and providing internet access through the other ISP within seconds. The two core switches have a 4 gbps (billions of bits per second) fiber
connection between them that enables the switches to distribute data throughout the network with high speed efficiency. For a layout map of the network, see Appendix F on page 85.

In the spring of 2008, Elon University again hired Kaludis Consulting to examine the organizational structure for Instructional & Campus Technologies. The purpose was to make sure we were appropriately organized and staffed for the next 5 to 7 years. Since we had used the same consultant, Elliott Haugen in 1999 and 2003 to evaluate technology at Elon, he had a unique advantage to offer comments on what I&CT looked like today and how Elon’s use of technology compares to other institutions. In the Kaludis Report (2008), Haugen stated:

   It is the opinion of the consultant that I&CT has moved toward the highest level of organizational achievement. Quite frankly, there are few higher education IT service organizations that have advanced to the current stage of Elon’s I&CT. This progress has resulted from needs-based, planned, and future-oriented strategies. It is therefore appropriate that Elon expects to advance its organizational focus and structure.

Technology has become an integral part of the university. It is important to understand that technology has become more than the hardware and software. It is more than a utility or tool, it is “now a required component in the way it delivers instruction; communicates within the University, local, and global communities; and meets its operational requirements.” (Kaludis Report, 2008).
ELON UNIVERSITY TECHNOLOGY PLAN
2008-2012

Because of changing technology, increased technological skills of our users and higher expectations by everyone, the next technology plan needs to focus on three areas:

1. Improve on an excellent infrastructure from which the university can build technologies that support the mission as well as improving efficiencies and effectiveness of the university.
2. Leverage technology through innovation and integration to improve university services, save university resources and to further academic and administrative initiatives.
3. Develop an organization that meets university requirements and is positioned for the future to keep pace with changing needs.

In preparing the new plan, Instructional & Campus Technologies evaluated the progress made in the previous plan which is reflected in the summary of previous plan on page 101. The Assistant Vice Presidents for Technology and Academic Affairs held focus group meetings with each of the schools, the College of Arts and Sciences and different academic support groups to ascertain what the technology needs are in Academic Affairs. The Assistant Vice President for Technology also met with the staffs of the vice presidents to learn what the needs for technologies will be for the next 3 to 5 years in the other divisions. Members of SGA, Academic Technology and Computing Committee, and Administrative Computing Users Group were also consulted for input to the plan.

Elon’s technology staff has grown tremendously in the last 8 years. The staff will not grow as dramatically as it has, but the questions were raised if we were organized appropriately and if we had the appropriate numbers of staff in the correct positions? The Vice President for Business, Finance and Technology, and the Assistant Vice President for Technology met with Elliott Haugen from Kaludis Consulting prior to the writing of the plan. Kaludis Consulting was asked to:

1. Develop a foundational understanding of Elon’s current and emerging information and communications technology environment, with specific attention to technology resources, services and support, projects (in-progress, planned, or requested), and challenges.
2. Conduct a high-level review of campus expectations for technologies, systems, services, and support. This activity would focus on input from campus IT-related committees, University leadership, and other constituencies identified by Elon.

3. Review Instructional and Campus Technology (I&CT) and its five departments and address organizational structure, staffing levels, and responsibilities. Recommend any changes necessary to most cost-effectively or efficiently provide the technology services needed by the University. (This was not a personnel appraisal.)

The self-review, focus groups input and the recommendations from the Kaludis Consulting Report (2008) were incorporated in the development of this technology plan.

Our infrastructure is the foundation on which all the technology is built. In this report, infrastructure refers to the network, servers, systems and hardware that all technology applications use to operate and communicate. Elliott Haugen, a consultant with Kaludis Consulting observed:

There is a clear sense within the University and by the consultant, that Elon has embraced information technology both as an important and expected factor in supporting its academic mission, operations, services, and communications. Students and faculty members have increasing expectations for technology use in teaching and learning, while the University envisions a greater role for technology and information in supporting planning, services, and operations. The growing and changing demands require a much greater need for planned, communicated, and integrated technology organizational, development, and support strategies. (Kaludis Consulting, 2008)

We, as an institution, must keep a solid, robust and reliable infrastructure so that the technology is available to support the mission and operations of the university.

Elon has been able to apply technology for strategic reasons and has resisted using technology for technology’s sake. This plan suggests that we strategically focus on areas where technology can improve the efficiency and effectiveness of an area. In the spring of 2008, we applied document management to the application process in Admissions. The original purpose of using document management was to cut down on the paper that was being printed and stored in Admissions. As part of the implementation, we analyzed the whole process of applying to Elon. The analysis showed that there were efficiencies that could be created by applying new technologies, thus making the process more effective for the staff. While document management won’t replace staff, it will make the process more manageable as the numbers of applications continue to increase.
A change has been taking place over the past 3 years, where the staff in I&CT are not just the people who install and maintain technology. Their roles have been evolving into developers, integrators and consultants. In the Kaludis Report, it was noted that, “I&CT staff will continue to migrate from being inventors to facilitators, process analysts, solution developers, and partners working with academic departments, service offices, and operational units.” (Kaludis, 2008). I&CT’s management attention will be increasingly outward not downward—helping other departments plan for, purchase, implement and integrate new technologies. Professional development, promotion, and hiring of (mid-level) management personnel within I&CT will require greater attention to communications skills, partnership and team-building abilities, and a perspective that extends beyond technology.

While Elon’s I&CT has certainly been a champion for using technology, it must not become “all things technical” for the institution. Non-IT leadership/management also have responsibilities in technology projects that include major functional, policy and procedural issues that should not be left to I&CT’s leadership to decide. Technology-related projects are now more visible and intertwined with University activities and processes. As the number and complexity of the projects increases, IT planning and project management requirements are increasing and departments must understand that their individual projects will interact and affect other larger institutional projects. Diverging requirements and independent priorities will challenge and even jeopardize the advantages of scalability and standardization. Because of the interactivity and interdependencies, I&CT may need to put limits on some projects so that the entire institution’s needs are considered. The I&CT leadership will need to facilitate better communication of project requirements between clients expectations and IT resources/ability to deliver within a client’s time table and budget.

As Elon continues to roll out new technology, I&CT must remain mindful of maintaining the “Elon Way.” Personal connectedness and responsive services amidst a changing student, faculty and staff population will be a challenge. Support and services will require a blend of personalized attention, online/self-service, and self-reliance.

Application Technologies (Web Technologies and Administrative Computing) is an area that will need to grow as more technology applications are purchased and developed. Many of the systems will need to be integrated with Datatel. As we develop and purchase more applications that hold separate databases, we will need a person who
can administer databases. As databases increase and we our use of data increases, we will also need to focus more attention to the security of data—setting policies and procedures for the safe and appropriate use and retention of data.

This technology plan is divided into the 3 goals as already mentioned. After each goal, the recommendations are highlighted with a detailed description of what the recommendation is and how it will be implemented. The budget for each recommendation and a rating of the impact on the institution are listed in italics at the end of each recommendation. The scale of the impact on the institution is 5 being the highest impact on the whole university and a 1 having the lowest impact. Any impact of 1 has already been pulled out of this plan as not being worth the effort and resources involved compared to the benefit that the institution would receive.
GOAL I: IMPROVE ON AN EXCELLENT INFRASTRUCTURE FROM WHICH THE UNIVERSITY CAN BUILD TECHNOLOGIES THAT SUPPORT THE MISSION

RECOMMENDATION: Continue to build a Renewal & Replacement Budget for the Network until it is $205,200 annually.

Elon University must continue to build and maintain a robust and flexible network that will be able to carry large amounts of data including the telephone system and video. Video takes a large amount of network bandwidth. As faculty, staff and students have greater needs to view and move video over the network, we must be mindful of the strain it places on a network and continue to expand the capacity and speed of our network. Athletics has an immediate need to share recruiting and game video among coaches. Communications, especially with their new Masters program in Interactive Media, has a need to stream video over the network.

Elon is now 100% wireless in all academic and residential facilities. We will need to expand exterior coverage of common areas and program spaces that are not close enough to buildings to use existing wireless networks. Students and staff will carry increasing numbers of mobile wireless devices requiring access to Elon services. Campus Safety and Police are experimenting with wireless devices in parking lots to control parking.

Elon has built a robust and redundant network that provides access to data, voice and limited video for the academic and residential community on all of Elon’s campuses (see Appendix F on page 85). With an investment of over $2 million, we have added equipment and wiring for the growing Elon physical plant. Much of the network’s recent growth has come from campus construction and new initiatives. The core of the network is aging and must be replaced in phases. The equipment in the buildings that provides services at the local level must be replaced as a large amount of construction was completed in the past 6 to 8 years (the life cycle of this equipment). In addition, the conversion to Voice over Internet Protocol (VoIP) telephony requires the replacement or upgrade of all switches.
In order to maintain the network, the university must build a resource pool to support long term renewal and replacement of the network infrastructure at the core and building level. In the past 5 years, increasing services rely on a resilient network. For example, Voice over IP will replace the existing telephone switch, wireless communication will expand to provide greater connectivity of devices, and video will continue to move increasingly to the network. $100,000 was set aside in the 2008-2009 budget for network renewal and replacement. Another $105,200 needs to be added for the existing network equipment. As the network grows, the budget will need to be reevaluated every 3 to 4 years to make sure the renewal and replacement budget is keeping up with the addition of network equipment.

**BUDGET: $105,200**

*Level of Impact: 4 (5=highest; 1=lowest)*

*Year of implementation within plan: 2*
Elon University is more than 50% completed in its conversion from analog phones to Voice over Internet Protocol (VoIP). The advantage to going over VoIP is multifold. With analog phones, a million dollar switch needs to be maintained and replaced every ten years; a separate wiring network must be maintained; and there is a significant labor expense in moving and changes. With VoIP, one network, the data network, is used and maintained. The intelligence does not reside in a central million dollar switch, but rather in the handsets that are on the desks. Having the intelligence in the handset makes moves and changes easier to perform—simply unplug the phone, move it to the new location, plug into the existing data network and the phone number follows the handset. VoIP also offers more functionality and specialized features. One example is the ability to integrate voicemail and email. Another feature is the ability to push emergency announcements over all the VoIP phones all at once.

The networking equipment needed to upgrade the remaining buildings to VoIP will be covered by the network renewal and replacement fund, but the remaining handsets need to be funded as a one-time expense of $150,000. This allocation should be funded for fiscal year 2009-2010 because the existing phone switch is at the end of its life and needs to be removed from service.

**BUDGET: $150,000**

*Level of Impact: 5 (5=highest; 1=lowest)*

*Year of implementation within plan: 2*

The number of mission critical servers has grown from two (email and Datatel) in 1998 to over 94 servers currently (see appendix A, on page 79 for list of mission critical servers and services). These servers are enterprise level servers with built in redundancies that protect data and ensure reliable service. Elon mission critical servers average 99.98% uptime, clearly better than the industry standard of 97.8% uptime for mission critical systems. These servers are expensive. For example, the server...
infrastructure for Datatel and e-mail (Elon’s administrative systems) was purchased within the past 2 years at a cost of approximately $650,000.

In addition to being expensive to purchase, enterprise level servers are expensive to operate, using a lot of power to operate and cool the hardware. New advances in server technology have enabled us to build multiple servers on a single server “box.” This technology is called virtual private servers. A virtual private server (VPS) is a method of partitioning a physical server computer into multiple servers such that each has the appearance and capabilities of running on its own dedicated machine. Each virtual server can run its own full-fledged operating system, and each server can be independently rebooted. We began changing over our server technology to virtual private servers after the purchase of the Datatel servers. Instead of purchasing a single server box with separate power supplies and processors putting off heat, we can now create multiple servers via software on a single box, cutting down on power consumption and output of heat. VPS has enabled us to cut down on our power usage in the server rooms. Virtualizing servers also cuts down on the replacement cost because we no longer have to buy a single box for each service. The increase use of virtual infrastructure will reduce hardware maintenance, but increase licensing and data back-up costs. For what it cost to purchase the Datatel and e-mail servers two years ago, we can buy the entire virtual private server farm.

Therefore, Elon needs to build an annual renewal and replacement budget to fund the replacement of the mission critical systems. This same fund will allow for routine replacements of small, yet integral systems like the web server, email, and other systems requiring data storage and access for business functions.

$100,000 was set aside in the 2008-2009 budget for server renewal and replacement. An additional $100,000 needs to be added to the server renewal and replacement budget. As more mission critical services are added, the budget will need to be reevaluated every 3 to 4 years to make sure the renewal and replacement budget is keeping up with the addition of equipment.

**BUDGET: $100,000**

*Level of Impact: 4 (5=highest; 1=lowest)*

*Year of implementation within plan: 2*

**RECOMMENDATION:** Raise the base level of technology for classrooms.
Initiated by the last two technology plans, Elon University has put a lot of instructional technology into classrooms. The purpose was to enable faculty and students to present material from any source (video, computer program, internet, etc.) with relative ease. The last technology plan called for bringing all classrooms up to level 3 classrooms. We called the highest level of technology a level 3 classroom. In a level 3 classroom, we have an overhead video/data projector, a VCR, a DVD, sound system, a computer and a control system. The call for all classrooms to be level 3 came from the faculty because they were building technology into their pedagogy, but it was difficult to prepare multiple sections of a class two ways—one with technology and one without. We came close to the goal (see Appendix G, on page 86). After the summer of 2008, only 7 classrooms will be equipped with minimal technology (television and VCR). Four of the remaining classrooms will be addressed in the renovation for the School of Communications’ Master’s program. This recommendation does not call for an addition to the operating budget unless significantly more classrooms are added. This recommendation is to create a policy that from this point forward, any classroom that is built or remodeled, should have as the base level technology an overhead video projector, a VCR, a DVD, sound system, a computer and a control system.

**BUDGET:** No effect on the operating budget, only construction budgets for future classrooms.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 1
Today, more people want to share information from their computer or from the internet while in meetings. Elon needs to begin to equip conference rooms and meeting spaces with display devices that are appropriate for the size of the room. The devices need to be easily connected to computers without wires stretched across the floors creating a trip hazard. This recommendation is not asking for a change in operating budget, but rather that meeting rooms should be identified as needing collaborative technology and budget requests made to enhance them.

**BUDGET:** No effect on the operating budget, identified meeting rooms should go through annual budget process.

*Level of Impact: 2 (5=highest; 1=lowest)*

*Year of implementation within plan: 2, 3, 4*

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**RECOMMENDATION:** Begin to put display and collaborative technology into conference rooms.

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Elon University has created a comprehensive inventory of computer, network, audio-visual and server equipment. This inventory has enabled us to create budget models for maintaining and replacing the technology. Elon’s schools and college have been frustrated because they know they have technology within their departments that is specific to the each department, but since it isn’t their expertise, they don’t know how to build and maintain an inventory of their technology or how to create budget models for renewal and replacement funds.

To create an inventory of physical resources, several things must be addressed. First, a decision on which equipment should be tracked. We recommend that only equipment with a total investment over $2,000 should be tracked. For example, a microscope may only cost $200, but all of the microscopes in a single lab might be worth $6,000. Therefore, we believe that 30 microscopes at $200 each, in McMichael 321, should be listed in the inventory. We also recommend that only equipment that is used on a regular basis as part of the instruction of students should be inventoried. Equipment that hasn’t been used in two years or more should not be counted.

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**RECOMMENDATION:** Assist departments in developing an inventory of all their technology (not just computers).
Secondly, a centralized database should be maintained for two reasons. One is insurance. For example, if the building were to have a fire, a record of technology would exist. The other reason is to have an idea of what technology is used and needs to be maintained for a high level of academic excellence in that school or college. With a centralized database, the data can be accessed from multiple places, but it will be maintained and backed up by Instructional & Campus Technologies. Elon will need to decide whether it is more cost effective to purchase and inventory software package or develop one in-house.

The third thing to address is the life expectancy for a specific piece of equipment. The department that owns the equipment should take responsibility for determining the life expectancy of the equipment through established criteria that is already established in their professional organizations and vendors. The department should consult several sources as vendors tend to use the minimal life expectancy.

The final outcome of this inventory should be to give the dean the data to make appropriate budget requests for renewal and replacement funds.

*BUDGET: $30,000 one-time expense.*

*Level of Impact: 2 (5=highest; 1=lowest)*

*Year of implementation within plan: 2, 3*
In November 2001, Elon hired Andersen Consulting to perform an electronic security audit. Elon’s network is more sophisticated, but the systems are more critical to the operation of the university. Every month there is a story about a college or university that has had confidential information compromised. While we believe our systems to be secure, it would be beneficial to have professionals systematically try to compromise our systems. We can then take the results of the analysis and continue to improve the security of our electronic data.

**BUDGET:** $5,000 one-time expense.

**Level of Impact:** 5 (5=highest; 1=lowest)

**Year of implementation within plan:** 1

**RECOMMENDATION:** Consider blocking computers from connecting to the network if they are not up-to-date with their system patches and have current versions of anti-virus and anti-spyware software.

Personal computers (PC’s) are actually the biggest “holes” in any information infrastructure. They are what connect the human user to the virtual collective of knowledge that is so important to academic institution. PC’s are the access point through which most information flows. Thus, the personal computers are also the largest target of modern criminals trying to access sensitive data.

Contrary to popular belief, the common computer virus is no longer the prevalent threat to information networks. Server and client level virus shields have virtually eliminated the threat of viruses. Today’s personal computers are instead compromised more often by information mining programs called “worms” and “spyware.”

“Worms” are programs written to cause harm (by creating denial of service attacks), steal information (like social security numbers) or allow an unauthorized user to take control of a computer (to gain access to server based information). They usually spread through holes in computer operating systems. The only way to protect computers from a “worm” attack is to keep the operating system properly updated.
“Spyware” is a program written to track and report a user’s activity to a third party. Many marketing corporations sponsor these “spyware” programs as a means to gather information on potential or existing customers. Most “spyware” is innocently installed along with free applications such as screen savers, weather bugs and branded web browser tool bars. Although not written to intentionally cause harm, “spyware” programs often disrupt network traffic, open “holes” through which criminals can gain access and generally slow a computer to the point that it is crippled. Protection from “spyware” is still in its infancy but the industry is growing.

Given the fact that an improperly protected computers can easily be compromised and cause damage to our network or provide access to secure systems circumventing security, it is imperative that compromised computers are quickly identified and blocked from our network. There are a variety of options available that will achieve this end. Prohibitive policies can be set through a “computer domain.” Networks can even protect themselves through devices that constantly monitor connected computers against a variety of compliances. We recommend that Elon examine the options and implement the most effective process that will protect the University network and data.

**BUDGET:** $220,000 one-time expense.

**Level of Impact:** 3 (5=highest; 1=lowest)

**Year of implementation within plan:** 3

**RECOMMENDATION:** Develop a method for delivering software on demand through a broadcast based application system or virtualized desktop server.

The cost of maintaining software in computer labs is quite expensive and is currently funded through several academic departments as well as the department of Instructional & Campus Technologies. This creates several problems. While the university may only use 100 to 150 copies at any one time of a particular software package, we have to purchase 300 to 500 copies of the software to have it installed on the computers for when it is needed—the just in case rather than just in time model. Having so many departments purchasing the software creates an inequity of versions. Departments that have large software budgets keep the latest version in the labs they use, while other labs may go two or three versions before they must upgrade due to incompatibility with the hardware. Another software problem is that Campus
Technology Services can only reimage the computers (refresh the software) in the labs twice a year because it is such a time consuming process to test all the software and fix incompatibilities before loading the image on each computer. The university also spends a great deal of funds replacing the hardware in computer labs and classrooms with increasingly powerful computers on a three year cycle.

There are two possible solutions for delivering software on demand to the computer lab machines. Both solutions also offer faculty, staff and students an option for remotely accessing the software for their own computers from anywhere in the world. A broadcast based application system or virtualized desktop server both allow for purchasing only enough copies of software as needed at any one time instead of buying software for every computer on campus. Currently, we maintain 300 copies of Adobe Creative Suite while less than 100 copies are used at any one time. Both methods allow software to be housed on a server and “checked out” by authenticated users. Both the broadcast and the virtualized desktop allow computer labs and software to be updated on the fly instead of waiting until lab downtime to make updates (currently twice a year). The broadcast based application allows an authenticated user to “check out software.” In reality, the software is housed and operates on an enterprise level server, but acts as if the software operates on the desktop as it always has in the past. The virtual desktop uses the same technology as the virtual private servers to create virtual versions of a desktop computer. All the software, including the operating system, functions on a server and is accessed through a browser or client piece of software. Both solutions require very little processing power at the user’s computer making the user’s computer into a dumb terminal.

It is estimated that the overall savings would be between $82,000 to $131,000 per year over the current model of purchasing and maintaining software. The savings is realized from purchasing less copies of software as well as “dumbing down” the equipment in the labs. Based on preliminary studies, the system would pay for itself in 2 to 3 years.

*BUDGET: $300,000 one-time expense and $20,000 annually.*

*Level of Impact: 4 (5=highest; 1=lowest)*

*Year of implementation within plan: 4*
RECOMMENDATION: Assist Campus Safety and Police with their technology infrastructure.

The master plan for Campus Safety and Police has many technology initiatives. Instructional & Campus Technologies will work with the university Campus Safety and Police to:

- Build a scalable infrastructure and create a dispatch center for University Safety and police that incorporates all existing systems into a centralized monitoring system (video surveillance, fire, smoke, intrusion, and card swipe).
- Assist in purchasing and installing video surveillance in the parking lots and on select streets.
- Work with Campus Safety and Police to update fire alarms and smoke detectors so they can be easily monitored. Make sure new construction includes systems that will work with the monitoring system.

**BUDGET:** Included in Campus Safety and Police Master Plan.

**Level of Impact:** 3  *(5=highest; 1=lowest)*

**Year of implementation within plan:** 1, 2
Institutions of Higher Learning are beginning to outsource services like email and online communication applications like instant messaging, blogs, and social networking. Companies like Google and Microsoft are offering alternative solutions for universities to host email and other applications for little to no cost to the institution. As Elon explores this option, the university can save resources by no longer having to maintain infrastructure, software licensing and account management. Outsourcing email allows staff to focus on the growing need to manage other applications that get added each year. Issues to consider regarding outsourcing include advertising space/exposure to our students, lack of control, lack of access to their information in crisis, and a dependency on an external vendor for technology support.

**BUDGET: To be determined from study.**

**Level of Impact: 2 (5=highest; 1=lowest)**

**Year of implementation within plan: 3**
The Elon University cable system provides video services of traditional cable programs as well as locally originated (Elon) content to our residential students. The mandate of High Definition (HDTV) in February 2009 and the increasing digital services of pay-per-view and Video on Demand (VOD) force our infrastructure to be outdated. The cost to upgrade the Elon Cable System using our vendor partner, Time Warner Cable, is cost prohibitive for them considering the poor business model with the lack of potential revenue and general costs to students. Our fiber network infrastructure, however, provides an alternative to distribute video signals to students via computer connections or converter boxes connected to televisions. Elon should explore contracts with programming providers for distribution options of channels and delivery of pay-per-view services to our students. In addition, Elon should ensure it has appropriate connectivity to the larger community or region with its locally produced programming (documentary, news programming, and sports programs).

**BUDGET: To be determined from study.**

*Level of Impact: 2 (5=highest; 1=lowest)*

*Year of implementation within plan: 1, 2*

**RECOMMENDATION: Explore Video over Internet Protocol.**

University Advancement purchased Blackbaud’s “Raiser’s Edge” software to enhance fundraising. Administrative Computing is converting the data to this new system and will have all modules functioning to meet the operation needs of the Advancement staff by the live date of February 2009. Each Advancement staff member will be trained on the Raiser’s Edge system prior to the live date and should be able to use the system with consistent business practices for handling prospects, data and the day-to-day operations. An on-going training program is highly recommended for future staff hires.

An Application Developer was moved from Application Technologies to support this area and a Systems Admin staff member was added to take on the additional server load and maintenance. An observation was made by the Raiser’s Edge consultants and IT staff at Furman University (a Raiser’s Edge school) that additional products would need to be purchased to customize Raiser’s Edge so it will be useful to Elon. Although
the Raiser's Edge will accommodate most of the functionality that is currently in place with Datatel's Benefactor software, there is still the need to create custom applications that are specific to Elon (such as the Phoenix Club Points System).

**BUDGET: To be funded by University Advancement.**

**Level of Impact: 4  (5=highest; 1=lowest)**

**Year of implementation within plan: 1**

**RECOMMENDATION: Work with Physical Plant to review and improve energy management system.**

Elon University has recognized its responsibility to the environment and has put into place a significant environmental sustainability initiative. As part of the initiative, we should look at energy management with the Physical Plant department and see if we can add energy management systems to buildings that don’t have any. The existing systems in the newer buildings should be and brought into a single, comprehensive energy monitoring and management system.

Instructional & Campus Technologies has worked with the Physical Plant and Duke Energy to put sub meters on several buildings for better monitoring of power consumption. We should continue to add sub meters and monitoring systems on the rest of the buildings.

Instructional & Campus Technologies should also work with the Sustainability Coordinator and the Director of Physical Plant to seek out new technologies that will assist Elon in meeting its sustainability goals.

**BUDGET: To be determined from study, identified solutions should go through annual budget process.**

**Level of Impact: 5  (5=highest; 1=lowest)**

**Year of implementation within plan: 2, 3**
Instructional & Campus Technologies will work with the Physical Plant to improve the efficiency and effectiveness of their work order system. We will analyze the work flow from the point of receiving requests to the distribution, completion, tracking of resources, and reporting of work orders. Where appropriate, we will make suggestions on where technologies can make improvements and create efficiencies for the staff.

**BUDGET:** To be determined from study, identified solutions should go through annual budget process.

**Level of Impact:** 3  *(5=highest; 1=lowest)*

**Year of implementation within plan:** 2
GOAL II: LEVERAGE TECHNOLOGY THROUGH INNOVATION AND INTEGRATION 
TO IMPROVE UNIVERSITY SERVICES, SAVE UNIVERSITY RESOURCES 
AND TO FURTHER ACADEMIC AND ADMINISTRATIVE INITIATIVES

RECOMMENDATION: Look for ways that technology can make staff more 
efficient and effective in departments so additional staff will not need to be 
hired.

Elon University continues to grow, placing greater demands on support staff. There are 
appropriate technologies that create efficiencies and make staff more effective. 
Document management is just one of those technologies (see page 58). Mark 
Albertson, Registrar, often says he hasn’t added staff in his office in 15 years. The 
registrar’s office is being asked to do more for a growing student body, but it has been 
technology (online registration, online submittal of grades, online grade reports, etc.) 
that has enabled Mr. Albertson to reassign staff to new tasks when technology frees 
them of old ones.

During the time this technology plan is in effect, I&CT recommends that we look at 
processes in offices and apply appropriate technologies where they will make a 
difference in efficiencies and effectiveness. This recommendation is not an effort to 
eliminate staff, but rather one to make their jobs easier and more effective. We will 
need to hire a systems analyst (see page 69) to help departments determine where 
technology is appropriate and how to move those processes to an electronic process.

BUDGET: to be determined after study; items will go through regular budget process.

Level of Impact: 5 (5=highest; 1=lowest)

Year of implementation within plan: 1, 2, 3, 4
While collaboration isn’t a new idea, how faculty, staff and students collaborate has changed. Advances in software and web-based tools have made it easier to share information and students are making the most of the tools.

The majority of students today are social learners and view learning as an active process where they learn to discover principles, concepts and facts for themselves. Learning for them takes place everywhere, not just within the walls of the classroom. They carry their “lives” with them 24/7 either through web-based tools, their laptops, cell phones, or on flash drives. Students view technology like the air they breathe. They don’t think about it because it is so infused in their day-to-day lives. However, faculty don’t always share that view when it comes to teaching.

Elon should consider offering more instruction to faculty on using collaborative technologies. Instructional & Campus Technologies recommends building upon existing campus technologies in both traditional and non-traditional learning spaces. I&CT should partner with CATL in order to share our expertise in using technology in teaching. Partnering will help faculty learn how technology can improve upon existing methods and teaching styles and not using technology for technology sake.

Students gather now in small groups with their laptops to collaborate on a project. Oftentimes they are each taking notes on their own laptops and emailing them to each other, or as the group discusses ideas, one student does all the typing. We should create more group workstations where students can take advantage of face-to-face collaborative tools—a place where students can gather around a touch screen and literally move ideas around with their fingers, or write a paper together by sharing the screen, or interact with research in ways like the overlays of a Google map with census data. This will allow students to supplement their own learning using technology as a resource.

I&CT should also consider taking advantage of systems that allow students and faculty to collaborate in the classroom or online. In the classrooms, we should take advantage of Tablet PC technology to allow faculty and students collaborate or share ideas perhaps connecting wirelessly to the data projector. As online classes gain popularity, we need
to use collaborative tools to mimic the face-to-face experience. Faculty and staff could gather virtually to share ideas, write papers, and complete assignments.

Some of the collaborative technologies are Share Point server and Fortis document management for sharing documents; Internet II for collaborative research between faculty at other institutions; Smart Boards or computer displays for collaborating in seminar and meeting rooms.

**BUDGET:** No effect on the operating budget, identified meeting rooms should go through annual budget process.

**Level of Impact:** 2 (5=highest; 1=lowest)

**Year of implementation within plan:** 2, 3

**RECOMMENDATION:** Provide more technical help for faculty.

As faculty are asked to be more engaged in scholarship, they will have less time to learn how to use the technology. We need to build up our production staff to produce the more complex learning and scholarship materials for the faculty.

In 2000, Instructional & Campus Technologies’ role in supporting faculty was to train them how to create their own websites, presentations, and related materials. Most of the software used to create materials was relatively new and not widely available due to expense. Our approach to training, rather than creating, seemed to meet the faculty need at that time. The faculty most interested in using technology in teaching kept up with training and learned enough to create the materials they wanted.

Over the past 8 years, the technology has become more available and the desire for integrating more complex technology into teaching has grown. Improvements in software have allowed faculty to easily create basic websites and presentations through the use of pre-designed templates. Advances in the Internet and design software now allow for more interactivity, customization, and collaboration among users. However, the more advanced design software requires specialized training and the time to keep up with new versions and features. Faculty recognize the benefits of the software, but don’t have the time to keep up.

The recent report from the Presidential Task Force on Scholarship makes clear the need for freeing faculty time so they can devote more time to scholarship. One solution is to
free faculty from having to produce their own mediated teaching/research materials. We recommend leveraging the faculty as content experts and partner them with production teams of instructional designers for pedagogical design of materials and multimedia developers/programmers for development specific applications and components.

We recommend hiring general instructional technologist (see page 67) for each school and college (similar to the one in the Law School). These people would be able to help faculty with a variety of general technology issues and projects, as well as be able to connect faculty with more advanced technical help.

We also recommend hiring a programmer (see page 68) to provide advanced programming and database support of faculty projects that won’t compete with projects that the programmers do for the business side of the university.

**BUDGET: Budget included in Goal 3.**

**Level of Impact:** 5 (5=highest; 1=lowest)

**Year of implementation within plan:** 2, 3, 4

**RECOMMENDATION: Provide Data Warehouse and reporting tools.**

Elon is an information rich institution, but it is not easy to access the data or analyze it. Attention must shift from merely providing online access to information in Datatel or Raiser’s Edge, to a greater focus on searchability, summarized context relevant to the subject, and the availability to drill down into data/information. Elon has data stored in many locations, in differently formatted databases with different structures and with different reporting tools.

A Data warehouse is a repository of an organization’s electronically stored data and is designed to facilitate reporting and analysis. A benefit of a data warehouse is that it provides a common data model for all data of interest, regardless of the data's source. This makes it easier to report and analyze information than it would be if multiple data models from disparate sources were used to retrieve information such as Datatel, Raiser’s Edge, and the ancillary systems in Admissions, Student Life, Financial Planning,
Accounting, Career Services, R-25, etc. Prior to loading data into the data warehouse, inconsistencies are identified and resolved. This greatly simplifies reporting and analysis.

Information in the data warehouse is under the control of data warehouse users so that, even if the source system data is purged over time, the information in the warehouse can be stored safely for extended periods of time.

Because they are separate from operational systems, data warehouses provide retrieval of data without slowing down operational systems. Data warehouses facilitate decision support system applications such as trend reports (e.g., based on historical data, what classes are needed for the next 4, 5 and even 6 years), exception reports, and reports that show actual performance versus goals. Data warehousing enables both historical data and current data to be analyzed with ease to make predictive calculations. For example, predictive software could show, based on trends, what the budget should be at any particular date. The software could also make developing budget models for the institution easier.

As part of the data warehouse project, appropriate reporting and analytic tools need to be purchased. These tools enable the creation of dashboards and meaningful reports.

The university will also need to develop a document retention policy. I&CT can help in the creation of the policy, but it needs to be an institution-wide initiative.

**BUDGET:** $325,000 one-time expense and $35,000 annually.

**Level of Impact:** 5 (5=highest; 1=lowest)

**Year of implementation within plan:** 4
Document management will be as significant a change for Elon University as e-mail and on-line registration have been. The document management infrastructure that has been put in place enables the university to reduce the printing of paper, build efficiencies in the processing of documents, ease the retrieval of documents, minimize the storage of paper and in some cases provides for the elimination of paper altogether. It is a flexible system that can mimic existing processes that are paper intensive while minimizing or eliminating the need to handle and store paper. Work flows can be built into the document management system making the processing and routing of documents faster and easier. For example, Admissions has put their application process into document management making the routing and viewing of documents much faster, and can eliminate the storage of 10,000 application file folders. The workflow between Fortis (the document management software) and Datatel make the indexing and retrieval of information much more efficient. Staff can retrieve documents stored in Fortis while they are in Datatel, or open a record in Datatel while in the Fortis document management system. Securities can be applied to each document or set of documents based on a person’s Elon login. The Fortis document management system complies with all regulatory requirements (FERPA, HIPAA, Sarbanes-Oxley, etc.).

So far, we have put the Admissions’ application process, Education’s Teacher Certification records, Contract Management, and University Advancement’s donor files into the document management system. Below is a list of recommended next projects:

- Put all study abroad information (e.g. passport and health information) into document management and make it accessible via the Web with authentication.
- Create paperless advising folders. In Admissions, we mimicked the document intake process for undergraduate admissions. When the incoming class student folders are paperless, we will need to pass the information on to Academic Advising. Because the documents exist as a paperless file, we can grant access to appropriate people in Academic Advising instead of photocopying the documents and physically handing them to Academic Advising.
- Create paperless Registrar’s folders. The same process of granting access to files electronically created in Admissions works for the registrar’s office as it will for the Academic Advising.

**RECOMMENDATION:** Continue to implement Document Management.
• Implement document management in Financial Planning, reducing the need for paper file folder storage.
• Implement document management in Graduate Admissions.
• Implement document management in Accounting for:
  o Auditing documentation
  o Journal Entries
  o Payroll
  o Accounts Payable
• Implement document management in Human Resources.
• Participate in developing a records retention process.

*BUDGET: $80,000 one-time expense and $12,000 annually.*

(Level of Impact: 5 (5=highest; 1=lowest)

*Year of implementation within plan: 1, 2, 3*
RECOMMENDATION: Leverage our investment in Datatel.

Elon purchased Datatel in 1994. Since the initial implementation, we have had turn over in many departments’ staff and Datatel has added functionality. Many departments may not know the full capabilities of Datatel as it exists today. We should do a usage audit of each area that uses Datatel to see if improvements can be made through changing processes or extra training. Datatel has improved over the last 14 years, have we kept up? This should be an institution-wide initiative and not just an IT initiative.

Datatel offers Usage Audits where their seasoned, results-oriented consultants come on campus to spend time with the key staff members in each functional area and help apply performance excelling principles and best practice standards for meeting strategic business objectives. These audits are tailored for each school and focus on institutional effectiveness and efficiency. The consultants identify potential opportunities to improve productivity, streamline business processes, and resolve any outstanding issues requiring additional analysis. The audits are performed on an individual basis with various departmental areas, but with the goal of ensuring institutional alignment, better managing of complex projects, improving critical business processes, and fully realizing the value of the Datatel system for areas that we might not be currently utilizing.

**BUDGET: $24,000.**

**Level of Impact: 5 (5=highest; 1=lowest)**

**Year of implementation within plan: 2**
RECOMMENDATION: Explore the long term possibility of migrating to a more robust ERP (Enterprise Resource Planning) software package.

While Datatel still works well for the university as our ERP (Enterprise Resource Planning) software, Elon is no long the same school it was 14 years ago and will continue to grow in sophistication. Datatel does keep updating their product and adding functionality, but we would be wise to investigate what the long term possibilities are. We should research ERP software to see what is available for the school we think we will be in 20 years. A migration of this magnitude will take 3 to 4 years and will need to be carefully researched and planned. Whatever ERP solution we might migrate to will probably be used for 20 years to make the return on investment viable.

**BUDGET:** to be determined after study.

**Level of Impact:** 5 (5=highest; 1=lowest)

**Year of implementation within plan:** 3, 4

RECOMMENDATION: Explore a longer replacement cycle for computers.

Modern personal computers are more powerful than ever. When properly configured and maintained, they can remain useful for long periods of time. Also, many processor intensive applications are increasingly being housed on central servers instead of running on local machines. Considering these factors, it is understandable that personal computer life spans have increased.

In most cases, personal computers can move from a three year replacement cycle to a four year replacement cycle. Computers assigned to general office work such as word processing, e-mail management internet browsing and database interfacing can easily remain in the field for four years or longer. However, computers assigned to web design/creation, database management, intense manipulation of graphics, or high-end number crunching need to remain on a three year replacement schedule. Still, it is important to note that implementing a thin client like solution (see page 46) may allow these computers to remain viable for many years.

The longer personal computers can be used, the lower the total cost of ownership. Simply moving from a three year replacement cycle to a four year replacement cycle will
decrease the yearly replacement cost, but it has to be weighed against what the machine is being asked to do and what effect it has on the computers that are reassigned to student workers and lower functions across the university.

**BUDGET: to be determined after study.**

**Level of Impact:** 2 (5=highest; 1=lowest)

**Year of implementation within plan:** 1

**RECOMMENDATION:** Leverage our investment in video conferencing.

Elon has already made a significant investment in video conferencing technologies. Our current Cisco system was purchased to enable Board of Trustee members to connect and conduct business from offsite locations. We should look for new opportunities that will save the university time and money, and will bring people together in ways never possible. Here are a few ways leveraging video conferencing will help the university:

- **Meetings/Planning** – Alumni, board members, planning committees could hold regular meetings that may require attendees to travel from great distances.
- **Guest Speakers/Lecturers** – We could invite faculty experts, business leaders, and others to meet virtually with students as part of their class.
- **Internship/Job Interviews** – Students could meet with potential employers and conduct interviews without having to leave campus. This may encourage more businesses to interview students because they do not have to travel to campus. Faculty and staff could conduct interviews with potential hires without having to travel or pay travel expenses.
- **Study Abroad/Language Immersion** – We could build partnerships with international institutions and provide a way for students to interact using their language of study. We could also tie together our study abroad locations, which would allow people on campus to connect with students abroad.

**BUDGET:** none.

**Level of Impact:** 2 (5=highest; 1=lowest)

**Year of implementation within plan:** 1
Collaboration is the key to success in higher education. Individuals, departments, and institutions must cooperate efficiently in order to succeed. But, while the need to productively interact becomes increasingly important, colleges and universities are hampered by ever-more complex systems, applications, and processes. Users have countless login names and passwords to manage, constituents must navigate multiple Web sites and resources across campus, and diverse groups in different locations face challenges every time they must come together.

We will install a powerful enterprise work environment and collaboration system (Datatel’s ActiveCampus) that seamlessly brings together people, systems, and information through a unified Web interface. Datatel’s ActiveCampus product provides a single point of access for everyone across the institution. Users benefit from a common environment within which they can cooperate and collaborate more freely and effectively.

ActiveCampus will provide a gateway to all resources a user might need, including but not limited to: OnTrack, Blackboard, e-mail, calendaring, collaboration tools, network storage, Raiser’s Edge, Fortis Document Management system, print management, Data Warehouse and the extensive array of internally-developed self-service applications.

Users have fingertip access to critical data, whenever they need it — so they can take advantage of convenient self-service opportunities, or provide greater support to others.

**RECOMMENDATION:** Create a Web interface that ties Datatel, e-mail, Blackboard, network storage, Raiser’s Edge, Fortis Document Management system, print management and the rest of our e-services together. Create a one-stop shopping for our users with a single sign-on.
The ActiveCampus incorporates personas for dozens of roles across the institutional environment, each delivering a customized point of entry designed to enhance the user’s experience. Examples of ActiveCampus personas include: Student, Bursar, Faculty Member, Executive, Advisor, Staff, and many more.

**BUDGET: Already budgeted in Instructional & Campus Technologies budget.**

**Level of Impact: 4 (5=highest; 1=lowest)**

**Year of implementation within plan: 2**

**RECOMMENDATION:** Continue to look for ways to create better customer service by moving services onto the Web as a form of self-service.

In the Amazon.com world, campuses are beginning to borrow customer-service techniques from the online business world. We should continue to incorporate ways to provide more timely and robust technology that enables customer-service websites to provide the means for people to get their own answers, submit forms, register, purchase and transact 24/7 without walking all over campus visiting several offices.

Not only do users want services online, they want to view them in one place and have control over what they see on their page. The Net Generation’s view of the Web is that “it’s about me and the way I want it.” While we have numerous services available online, they are scattered about and hard to find. Unless you know what you want, it’s difficult to find it. We should work toward creating a user experience that keeps users connected to Elon from application to graduation and beyond (see previous objective about bringing services together in a single Web interface, on page 63).

Faculty and staff could benefit from:

- Online book and media renewal
- Supervisor review of employee vacation and sick balances
- Grant proposals
- Purchase requests with documentation
- Check requests with documentation
- Faculty unit I forms and documentation
- The ability to fill in and submit forms online for:
  - Reimbursement
  - Travel forms
Current outstanding assignments
Graduation application
Energy savings suggestions
Hiring applications and associated forms
Budget transfers
- Reports of systems up/down
- Simple and informative event planning
- Online timesheets for hourly staff

Students could benefit from:
- Self-selection of roommates for incoming students through social networking
- Better search capabilities for answers to commonly asked questions through a Wiki
- Faculty office hours
- Interactive or shared calendars with pre-populated information about Elon deadlines or activities
- Services for mobile devices
- More graphical interfaces for online services

**BUDGET:** staff time for each project.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 1, 2, 3, 4
GOAL III: DEvelop an organization that meets university requirements and is positioned for the future to keep pace with changing needs

RECOMMENDATION: Examine the organization structure as advised by Kaludis Consulting.

In the spring of 2008, Kaludis Consulting was engaged to examine the organizational structure within Technology. While very complementary of what we have accomplished so far, the report pointed out issues that would impact Elon’s technology organization within the next 5 to 7 years. The report makes recommendations for minor rearranging of services to make the organization more effective. The leadership of Instructional & Campus Technologies in consultation with the Vice President for Business, Finance and Technology will review the recommendations made by Kaludis Consulting and implement them where and when appropriate.

BUDGET: none.

Level of Impact: 4  (5=highest; 1=lowest)

Year of implementation within plan: 1
It is time to review how the department of Instructional Design and Development and the Center for Advancement of Teaching and Learning work together. Both have clear mission statements and list of responsibilities posted on the Web (see Appendix I, on page 96), but both have crossed into the other’s area. CATL has been the intake point for technology projects while IDD has assisted faculty in redesigning their classes. This has lead to confusion and frustration for the faculty. It is time to re-examine the roles of each and clear the confusion for the users. The recommendation is to create clear expectations and publicize them prior to any reorganization within the academic side of Instructional & Campus Technologies.

**BUDGET:** none.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 1

**RECOMMENDATION:** Review the roles and responsibilities of CATL and IDD.

The schools of Business, Communication and Education, as well as the College of Arts and Sciences have been asking for a general technologist to reside within their department. The Law School has a general technologist of their own because of the distance between main campus and the Law School. The general technologist helps faculty with projects, assists them with their technology, and offers trouble shooting/solutions for classroom equipment. Our recommendation is to hire the technologist and house them within the schools. They can offer help to the faculty with a variety of general technology issues and projects, as well as connect faculty with more advanced technical help when needed. These technologists would become familiar with the discipline-specific software for the departments they serve and provide a conduit to Instructional & Campus Technologies.

**RECOMMENDATION:** Hire general technologist to work within each school and college.
As faculty are asked to be more engaged in scholarship, they will have less time to learn how to use the technology. We need to build our production staff to produce learning and scholarship materials for the faculty (see page 55) and provide general technologist to facilitate immediate needs within their buildings.

*BUDGET: $250,000 annually.*

*Level of Impact: 5 (5=highest; 1=lowest)*

*Year of implementation within plan: 2, 3, 4*

**RECOMMENDATION:** Hire a programmer who can work strictly on faculty projects.

Elon needs to develop and deliver appropriate academic technologies, capabilities and support for faculty as new teaching, learning, scholarship and research paradigms emerge due to the report from the Task Force on Scholarship.

In the past, the need to employ programmers was strictly on the business side of a university. As Elon’ faculty become more sophisticated with technology in their research and teaching, we need to hire a programmer to provide advanced programming and database support that won’t compete with projects that the programmers do for the business side of the university.

*BUDGET: none; reallocate from open position.*

*Level of Impact: 5 (5=highest; 1=lowest)*

*Year of implementation within plan: 1*
“Elon, like other institutions, has been meeting its service and operational requirements that extend beyond the tradition ERP functionality. This specialized application expansion is symbolic of Elon’s systems maturity (going beyond Datatel’s intent) to meet specialized requirements, e.g., Phonathon, health services, counseling, student judicial (conduct), and ticketing. Within Elon, Datatel systems support about 60% of the University’s functional requirements while the remaining 40% are met with specialized systems. This multi-product solution is needed because Elon requirements extend beyond the defined functionality of the Datatel ERP core modules, but it requires extensive integration work.” (Kaludis Consulting, 2008).

A Systems Analyst is needed to determine the appropriate technology processes for departmental projects. Elon has been good at providing support to departments with programming for Datatel or the Web, but as department needs become more complex and the systems need to be integrated, someone is needed that can look at the needs from a higher level—someone who can analyze processes and break them down to their most basic levels. Once the needs are thoroughly assessed, a systems analyst can then bring the appropriate technologies and programmers together to build the integrated or specialized solution. We need to hire a Systems Analyst that has experience outside of Elon—someone who has experience building systems more advanced than ours. While we have good programmers, they have spent their entire careers at Elon building the systems we have. As we continue to search for ways to operate the university more efficiently and effectively (see page 53), our systems will continue to grow and we find that we are in need of experience outside of our current knowledge or abilities.

**Budget:** $120,000 annually.

**Level of Impact:** 5 (5=highest; 1=lowest)

**Year of implementation within plan:** 2
The Web Technologies department needs an Application Analyst to manage the increasing number of 3rd-party web-based software applications that have already been purchased by other campus divisions.

These systems include PAVE (Judicial Affairs), Novus (Human Resources), Ticket Return (Athletics, Cultural Programs), CSO Research (Career Services), Entrinsik (administrative reporting), Digital Storefront (Print Services), Fortis Document Management, and many others. These applications are an important complement to the many internally-developed applications and often are the most cost-effective solution for core services that don’t require significant customization to match Elon’s operational practices. These systems were purchased without thought to who would support the applications. Management of these applications currently falls to Application Developers and Programmers who already have high workloads and are responsible for other systems. The skill-set for an Application Analyst is significantly different than what is required of an Application Developer and Programmer. When software applications are purchased in the future, support of the application must be considered as part of the cost of purchase.

**BUDGET:** $75,000 annually.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 2

The Web Technologies department will need two additional Application Developer positions over the next three years in order to adequately meet the demands for additional automated online services (see page 64) and expanding existing services to new platforms.

The applications created in Web Technologies typically replace labor-intensive manual processes in other departments (examples include housing registration, application processing, & event registration). Demand for new services has increased beyond our capacity, and maintaining & upgrading the existing applications is taking an increasing
portion of our capacity. The new positions will allow the department to continue to develop additional automated applications to replace manual labor in other departments; to develop longer-term high-value projects; to appropriately maintain and update the existing applications; and to stay current with the many new ways students and others are using online technology (mobile computing, social networks, & more).

**BUDGET:** $145,000 annually.

**Level of Impact:** 3  (5=highest; 1=lowest)

**Year of implementation within plan:** 2, 3

---

**RECOMMENDATION:** Hire a Database Administrator (DBA).

Mission critical databases have increased rapidly in both quantity and complexity, and the trend is accelerating. Many of these databases contain sensitive data, and the security of this data is of the utmost importance. We currently have a knowledge & experience gap in this area. Both Application Technologies and Systems Administration create and maintain mission-critical database systems, but neither department has a position with the dedicated skill-set and experience to address the full demands of administering these mission-critical databases.

The Database Administrator (DBA) will have responsibility for the security, reliability, efficiency, and compatibility of these databases serving all mission-critical campus applications including Datatel, Blackboard, Raiser’s Edge, Email, Document Management, and other 3rd party & custom applications. The position will ensure that databases are secured against inappropriate access, optimized for efficient operation, and equipped for redundancy & disaster recovery. The position will write appropriate code to access, modify, and maintain the data. The position will update database software per vendor and industry standards and will coordinate the creation of all new mission-critical databases for new 3rd party or internally developed applications. The
position will create the comprehensive database structure required by our increasingly complex and sensitive data. The DBA should be hired before we begin data warehousing (see page 56).

**BUDGET:** $84,000 annually.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 2

---

**RECOMMENDATION:** Hire a Data Security Officer.

Systems at Elon have grown and become more integrated. As the need to access systems remotely grows, the need to maintain security increases. We need someone who will focus full-time on network and data security.

Information and Data transfer over the Elon Network has increased exponentially in the last five (5) years. Also, the numbers of new systems requiring access to internal and external resources continue to grow. We currently utilize our Networking leadership to serve as a security professional to provide insights and monitor network traffic. We receive over 90,000,000 alerts or potential attacks on our network resources each day, with 500 of those alerts (each day) considered to be high threat that must be investigated. Many of the threats deemed low are ignored, and any threats in the medium range are not investigated due to sheer quantity. The increase in campus supported computers/laptops, wireless networking locations and buildings with public access to resources demand that we devote more attention to security.

The new systems installed by various departments that provide e-commerce over the web require us to research and implement new security features to meet compliance regulations by the credit card companies.

Elon takes these processes seriously now, but we are too dependent on too many people understanding and communicating the needs to each other to ensure data security. A dedicated security officer would be tasked with maintaining current knowledge, partnering with peer technology staff, and briefing senior technology staff on security issues facing the university and the online community as a whole. An
institution of higher education of our size should have a person devoted to data security.

**BUDGET:** $75,000 annually.

**Level of Impact:** 4 (5=highest; 1=lowest)

**Year of implementation within plan:** 3

---

**RECOMMENDATION:** Consider creating a department for Event Management.

The university should consider creating a department for Event Management. This department would contain staff that coordinates the university calendar, event setup, event technology, food service for events, and event planning. As Elon continues to grow, the number of events and level of support required has increased dramatically. Adding to the increased number of events is the complexity of figuring out who to call to schedule support for the event. A typical campus event requires coordinating space requests, seating, staging, food service, video and/or graphic production, and technology staff to setup and operate the equipment.

There are currently 7 areas (Media Services, President’s Office, Moseley Center, ARAMARK, Campus Calendar, Cultural Programs, and Moving and Set-ups) responsible for support/scheduling campus events. The division of support causes confusion among requestors and increases the risk of missing events.

Creating a central events and conferences department would streamline the event planning process and eliminate the “who do I call” question by creating a single point of contact. It allows the organizers to focus on designing the program while event staff members arrange all logistical details for the event, including:

- Room reservations
- A/V and presentation technology
- Video production and graphic design
- Seating and staging
- Parking
- Catering
- Signage
This model benefits Elon by giving a department the entire scope of the event instead of each department only understanding their specific role. It maximizes available resources and staffing while minimizing overbooking of resources and staff fatigue. The result will be higher quality events through advanced planning and coordination of services.

*BUDGET: Reallocate existing staff from across campus.*

*Level of Impact: 3 (5=highest; 1=lowest)*

*Year of implementation within plan: 3*

---

**RECOMMENDATION: Examine the role of video services.**

We need to examine the role of video services at Elon concerning the growing need for university video production vis-à-vis the need for academic video support. The role of video services to support the larger university and academic departments has grown exponentially in the past several years. Academic departments who do not teach video production are also requiring new levels of support. For example, English is teaching basic video production as a way to convey messages or tell stories.

Video support for campus events, marketing productions, and historical documentation will be evaluated in the coming year to clarify priorities as there are more events that staff to capture them. The past two years show a 42% increase in requests for video for course related or supplemental instruction. We are also producing more information-based productions supplement presentations at national conferences or regional seminars promoting Elon. These topics include (service and engaged learning, Elon Academy, Study Abroad). In addition, there are more visual elements created for administrative communications such as Phoenix Card, Alumni Affairs, and Admissions.

One of the largest academic units requiring support by Campus Technologies/Television Services is the School of Communications. Historically, the School received academic support functions from Technology to maintain facilities like update computer labs, maintain teaching studios and edit suites. Television Services also oversees purchases and oversees all equipment/software for courses while maintaining a check-out system for students to easily access equipment for hands-on learning. This office also provides training to faculty/students through engineering, software training and workshop offerings to supplement classroom instruction. The growth of the faculty and the
addition of a graduate program certainly require a greater level of support from Campus Technologies. Several other divisions like the School of Business for example or Center for Teaching and Learning have increasing number of video requests to support their programs. Even though several departments would benefit from departmental staff focused attention on video production, the university does not have the resources/staff to divide the unit into multiple groups due to shared equipment and facilities.

The original structure in Television Services provides a one-stop services model for anyone at the university needing video services. A new model should be explored to create a new unit with broader responsibilities across the university to make sure the creative professional staff in video production is maximized.

The new Video Services unit should:

- Address the increasing demand for marketing communications in Admissions
- Support the growing promotional videos online in University Relations
- Refocus the equipment check-out and maintenance functions toward a Library/Media Services style model (33,000 pieces of equipment circulated last year)
- Leverage the existing resources in campus multimedia to support projects using graphics and web elements.
- Further utilize the Instructional Design staff to build effective and efficient projects supporting instruction
- Set new criteria with the goal of reducing number of events recorded annually to better match priorities and resource allocation
- Allocate staff time to provide support for the highly technical schools, but have a central focus to ensure appropriate projects receive attention to advance the larger university.
- Provide broadcast quality video content from campus events to University Relations to support external communications. (ENet, YouTube)
- Create robust distribution network for local content over traditional cable, fiber, and new community access networks. Elon creates outstanding student-driven content that should be shared on campus and to the surrounding region.

The School of Communications will continue to receive the same level of support in technology purchasing, maintenance, facility coordination, and lab management. The faculty in the School will also be able to partner with experts in the office to receive high level training to support new technologies in the field. Some of the day to day operations of the School and its equipment should be reallocated to departmental or central Media Services support. Staff should be realigned to match institutional priorities and outsourced solutions be defined to support the large number of creative projects that fall outside the core missions. The further definition of project management within academic/administrative requests will assist in matching
appropriate resources to projects that provide the greatest impact on advancing the university.

**BUDGET:** none.

**Level of Impact:** 2 (5=highest; 1=lowest)

**Year of implementation within plan:** 1, 2

**RECOMMENDATION:** Consider the Development of a Central Call Center.

We recommend considering developing the helpdesk into a central university call center supporting campus information, administrative support services as well as technology.

The Elon University Technology Helpdesk receives nearly 30,000 phone calls each year. Just under two thirds of these calls are settled without escalating the issue to another unit. While the helpdesk associates are very successful, the intricacy and the amount of new information are quickly exceeding what they can answer from memory. No individual can memorize and recall every piece of information reliably and consistently. Understanding that limitation, the Technology Helpdesk has begun to adopt new procedures. The helpdesk associates are moving to a model that tests an associate’s skills at finding information, not their ability to memorize it.

We have begun to create a comprehensive knowledgebase that will be easy to use, easy to edit and accurate. It will be up to the technical units to invest time and effort in populating this knowledgebase with pertinent, clear and concise information. Establishing guidelines of what information is entered, how it is entered, when it is entered and who is to enter that information will be formalized with intradepartmental support agreements.

These agreements between surrounding technical units and the Helpdesk will reduce confusion, improve communication and offer a unified technology information depot for campus users. The Helpdesk will be able to quickly provide callers with correct information on nearly any subject.

Since memory will no longer be an issue, these agreements, along with a well populated knowledgebase, will enable the Helpdesk to grow in responsibilities. A single skilled associate could then manage a team of well spoken, well trained students who could in
turn support several areas thereby greatly extending the impact of our professional associates. As the knowledgebase grows and as agreements are extended to other departments, the helpdesk could grow to become a university-wide call center that supports many departments outside of Technology.

**BUDGET:** none.

**Level of Impact:** 3 (5=highest; 1=lowest)

**Year of implementation within plan:** 3

---

**RECOMMENDATION:** Hire a Project Manager for Technology.

There is a need to formalize Project Management with campus-wide initiatives requiring technology. A process should be created to clarify the intake of creative ideas, academic projects, and university-wide proposals to increase communication, management of resources, and project launch/closure. We need to formalize approvals/priorities process or add staff to support rapid campus-wide implementations. The Kaludis Consulting Report (2008) warned that IT could not be all things technical to all people all the time. A structure has to be developed for an intake point so that resources can be maximized, but not overloaded.

University projects involving technology are growing in scope and quantity. The implementation of these projects requires extensive research, collaboration with users, process changes, and improved communication of deadlines/deliverables. During the 2007 – 2008 academic year, Technology has been involved in multiple projects (54) that initially appeared to require minimal technical impact. However, once the project was fully investigated or partially implemented it was revealed that additional financial or security details must be worked out.

In the academic area, faculty are being asked to incorporate more multimedia/visual elements requiring creative/design support. The faculty finds it challenging to identify an entry point on campus to get technical support. The formal project management process would allow grant-funded and instructional projects to be reviewed and assigned appropriate resources to realize quality outcomes.

Currently, technology provides project guidance for high-level university-wide projects. The next phase of this initiative will be to reallocate existing staff toward project
management to insure proper technical and creative oversight exists. The staff in
technology will need additional training to understand basic project management
practices and uses of tools to monitor ongoing projects.

The addition of a certified Project Manager will provide overall guidance to all projects
cross all sectors of technology including technical/server, programming, database
integration, creative, instructional, and security issues. This new area will also allow a staff member to focus on project approvals at all levels of
the institution, increasing communication and appropriate funding for priority projects. In this way, projects not receiving top priorities can be reduced or limited to conserve resources.

*BUDGET: $68,000.*

*Level of Impact: 4 (5=highest; 1=lowest)*

*Year of implementation within plan: 4*
Appendix A

Elon University Computer Inventory by Year

- 1996: 997
- 1997: 1,349
- 1998: 1,376
- 1999: 1,398
- 2000: 1,407
- 2001: 1,490
- 2002: 1,581
- 2003: 1,664
- 2004: 1,783
- 2005: 2,001
- 2006: 2,591
- 2007: 2,616
- 2008: 2,733
### User Account Growth Statistics

<table>
<thead>
<tr>
<th>Number of Accounts</th>
<th>Spring 1999</th>
<th>May 2003</th>
<th>May 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty and Staff</td>
<td>691</td>
<td>905</td>
<td>1,770</td>
</tr>
<tr>
<td>Students</td>
<td>3,708</td>
<td>4,753</td>
<td>9,864</td>
</tr>
<tr>
<td>Org/Special/Retirees/Etc.</td>
<td>50</td>
<td>324</td>
<td>567</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,449</strong></td>
<td><strong>6,872</strong></td>
<td><strong>12,201</strong></td>
</tr>
</tbody>
</table>

#### User Account Growth

![User Account Growth Chart](chart_url)
Appendix C

Applications Supported by I&CT

Academic Service Learning Management
Active Campus
ApplyNow (suite of admissions applications)
Blackboard Learning Management System
Blackboard Transaction System (Phoenix Card)
Campus Call (Institutional Advancement)
Campus Directories (Fac/Staff, Student)
Catering Online
Computer Inventory System/CTS
CRC Catalog
Datatel
Datatel UI
Elon Phone Bills Online
ElonPhoenix.com
Email
Entrinsik
FEEDS system/Financial Planning
File Magic/Institutional Advancement
Footprints (helpdesk software replaced Track-it)
FR&D Application Online
Freshman Course Request Online
Gasoline Usage Tracking System (physical plant)
Greek Awards
HR Open Enrollment Online
Incoming Student Housing Request Online
Institutional Research Survey system
Make-a-Gift Online
Meal Plan Change Request Online
Media Services Inventory
Microsoft Server Management System
Novus (HR software)
NueMD/ Health services
OnTrack
Parking Registration System
PAVE Judicial Software
Pharos/Print Management
Physical Plant Work Order System (TMA)
Pistol 2000
R-25 scheduling software
Student Elon Experience Transcript
Student Organizations (rosters and goals)
Student Timesheets Online
Student Voting
Student Work Agreements Online
Study Abroad Registration Online
SUB Tickets Online
Titanium/Counseling services (replaces Protégé)
VPN client
Web site (elon.edu)
Wellness Program Registration & Tracking
WinCati/Polling
Windows System Update Server

1 Application was purchased by another department and maintained by I&CT.
2 Application was purchased and maintained by I&CT.
3 Application was developed for another department by I&CT and is maintained by I&CT.
Appendix D

Software Supported by I&CT

215,000 Clip Art - Comm Dept
Acrobat
Adam Practice Practical
Adam Pro Media
Adobe Aftereffects
Adobe CS3 Web and Design Suites
Adobe Photoshop
AMOS
Apple Remote Desktop Task Server
Appleworks
ArcGIS
ArcGIS Business Analyst
Audacity
Auralia - Music Dept
AutoCAD
Avid Express
Barron’s
Cartalinx
Chemskech
Classroom Conquest
Conduit
Confluence wiki
Corel Painter
Crossword Forge
CRSP 2.97
Deep Freeze
Dreamweaver MX
E-Chug
EcoBeaker
Enterprise Guide (SAS Component)
E-Prime
E-Toke
Fathom 2.1
Fetch
Final Cut Studio
Final Draft
Fireworks
Fitness Gram
Flash
Flip4Mac
Geometers SketchPad
Grade Machine
Guide to Physical Therapist Practice
Hu-M-an
Human Anatomy
iLife
Image Analyst
Inspiration
InspireData
Inspiredata
Inspiration
Interactive Brain Atlas
Interactive Brain Atlas
IWheel
Kisdpiration
Kidspiration
Mathematica
Matlab
Microcase
Microsoft Access
Microsoft Excel
Microsoft Groove
Microsoft OneNote
Microsoft Outlook
Microsoft PowerPoint
Microsoft Project
Microsoft Publisher
Microsoft Visio
Microsoft Word
Morningstar EnCorr
Morningstar Principia
Movie Maker
Net Support School
NueMD/ Health services
Open Mind
Software Supported by I&CT (cont.)

Parallels
Password Officer
Photo Story
Pro Tools
Quark
Quark - Comm. Dept
Quickbooks Pro
Quicktime Streaming/PodCasting Server
Radiologic Anatomy
Raswin
Real Player
SAS
Sawtooth
SciFinder
Scratch
Sibelius
SigmaPlot 9.0.1
SigmaStat3.1.1
Simnet
Sniffy Pro
Solidworks
Sound Slides
Speed Reader
Spreadsheet Templates
SPSS
Stereo Analyst
Studio MX
TextWrangler
Tradestation
Tradeweb
Tri-Fit
Visible Analyst 7.5
VPN client
Note: First Technology Plan budget began in Fiscal Year 2002
(Academic Year 2000-2001)

1999  $2,345,632.00
2000  $2,980,021.00
2001  $4,148,617.00
2002  $4,693,243.00
2003  $4,979,808.00
2004  $5,760,699.00
2005  $6,481,620.00
2006  $6,805,405.00
2007  $7,289,511.00
2008  $7,931,282.00
Appendix H

Classrooms Technology List

<table>
<thead>
<tr>
<th>Building Room no.</th>
<th>Room Type</th>
<th>Level of Room</th>
<th># of Seats</th>
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</tr>
<tr>
<td>HP-101</td>
<td>CLASS</td>
<td>LEVEL 3</td>
<td>29</td>
</tr>
<tr>
<td>HP-103</td>
<td>CLASS</td>
<td>LEVEL 1</td>
<td>18</td>
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<tr>
<td>IP-101</td>
<td>CLASS</td>
<td>LEVEL 3</td>
<td>22</td>
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<tr>
<td>IP-103</td>
<td>CLASS</td>
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<td>Alamance</td>
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<tr>
<td>101</td>
<td>MEETING</td>
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<td>201</td>
<td>ENG LAB</td>
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<td>CLASS</td>
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<td>COMP LAB</td>
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<tr>
<td>318</td>
<td>COMP LAB</td>
<td>LEVEL 3</td>
<td>25, 25PC</td>
</tr>
</tbody>
</table>

Note: Level 3, has an overhead video/data projector, a VCR, a DVD, sound system, computer, a laptop connection and a control system

Level 2, has an overhead video/data projector, a VCR, a laptop connections and a control system

Level 1, has a TV and VCR
<table>
<thead>
<tr>
<th>Building</th>
<th>Room no.</th>
<th>Room Type</th>
<th>Level of Room</th>
<th># of Seats</th>
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<td></td>
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<td>CLASS</td>
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<td></td>
<td>118</td>
<td>COMP LAB</td>
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<td>20,20 MAC</td>
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Note: Level 3, has an overhead video/data projector, a VCR, a DVD, sound system, computer, a laptop connection and a control system
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### Classrooms Technology List (cont.)

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### Classrooms Technology List (cont.)

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| Greenhouse    | SPECIAL   | LEVEL 2   |

**Note:**
- Level 3, has an overhead video/data projector, a VCR, a DVD, sound system, computer, a laptop connection and a control system
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- Level 1, has a TV and VCR
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Classroom level key

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Appendix I

Missions and Responsibilities of CATL & ID&D (From Kaludis Report, 2008)

The following mission or unit responsibilities were extracted from Elon’s web site:

**Center for the Advancement of Teaching and Learning (CATL):**

**Mission:** The Center for the Advancement of Teaching and Learning promotes greater understanding of the learning process, supports the implementation of teaching innovations and best practices, and fosters the scholarship of teaching and learning at Elon University.

The Center’s flexible teaching spaces, professional staff, and print and electronic resources create a rich and inviting environment for faculty experimentation, collaboration, and reflection. The center also provides a campus and national forum for examining effective and innovative teaching and learning practices.

**The Center’s Goals and Objectives**

1. Investigate and inspire learning
2. Promote innovative teaching and programs
3. Support the Scholarship of Teaching and Learning
4. Assist faculty reflection and self-evaluation
5. Identify “best practices” in teaching
6. Promote campus and national discussions
7. Develop and maintain the Center’s physical resources

**Instructional and Campus Technologies (I&CT):**

Instructional Design & Development (ID&D) is comprised of educational technologists, instructional designers and information technology professionals who work to support faculty in their teaching, research and other work. Between us, we offer expertise in the following:

- Instructional design and strategies for teaching with technology
- Presentation design and development
- Use of the Blackboard course and content management system
- Multimedia development
- Digital video and still photography
- Various software packages.
- Summer online courses
- Resource Links for Faculty
- Summer Faculty Development Grants

Our departmental goals are to provide leadership for the integration of technology into traditional and online teaching and learning environments and to provide faculty with meaningful professional development opportunities that will enhance their effectiveness. Specifically, we provide a variety of services ranging from providing workshops to consulting with faculty about technology issues and coordinating the online courses that Elon offers each summer.
Appendix J

Non-Mission Critical Servers
Maintained by Campus Technologies Support
30 Servers

R25 Scheduling System
- Diamonas
- Blepo
- Doulos
- Idou

Academic Servers
- Trivia (PC Lab, Academic Application Management)
- Netboot (Mac Lab, Academic Application Management)
- Jadis (Polling Center Application)
- Pendulum (Pendulum File Storage)
- Quick Silver (Communications File Storage)
- Yosemite (Education File Storage)
- Digital Art (Digital Art File Storage)
- Gallery (Digital Art Portfolio Presentation)
Non-Mission Critical Servers (cont.)

Campus Technology Support Asset Servers

- **Caspian** (Server Management)
- **Cerberus** (Support Application Management)
- **Hermes** (Windows OS Management)
- **Aslan** (Printing Management)
- **Schmute** (Wiki Server)
- **CTSNAS** (CTS File Storage)
- **CTSNAS2** (CTS File Storage)
- **EMUG** (CTS File Storage)

Administrative Servers

- **Ariel** (Inter Library Loan Application)
- **Resref** (Career Services Server)
- **DocData** (Institutional Advancement - File Magic)
- **Odin** (Institutional Advancement – Call Center)
- **Hal2010** (Athletics File Storage)
- **Feeds** (Financial Planning)
- **Pistol 2000** (Campus Police)
- **Media** (Streaming Video)
- **Physplant2** (Physical Plant)
- **Survey** (Institutional Research)
Appendix K

Project Servers Maintained by Others

20 Servers

Computer Science
- Horn
- Ifa
- Pandora
- Typhoon
- Whalebone
- Jonah
- Grid0
- Grid1
- Grid2
- Grid3
- Grid4
- Grid5
- Grid6
- Grid7
- Grid8
- NetMeetingdir

Math
- Math
- Frodo

Instructional Design
- BbTest Server
- Idd.elon.edu
Appendix L

Instructional & Campus Technologies
Functional Reports

Current as of May 2008
### Appendix M

**Review of Goals, Budget, Impact and Year**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Recommendation</th>
<th>One-Time</th>
<th>Ongoing</th>
<th>Impact</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>R&amp;R for Networking</td>
<td></td>
<td></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>R&amp;R for Servers</td>
<td></td>
<td></td>
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<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Handsets for VoIP</td>
<td>$ 150,000</td>
<td></td>
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<tr>
<td>4.</td>
<td>Raise base level of classrooms to level 3</td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
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<tr>
<td>5.</td>
<td>Display technology in meeting rooms</td>
<td></td>
<td></td>
<td>2</td>
<td>2,3,4</td>
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<tr>
<td>6.</td>
<td>Inventory department equipment</td>
<td>$ 30,000</td>
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<td>2,3</td>
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<tr>
<td>7.</td>
<td>Blocking computers Network Access Control</td>
<td>$ 220,000</td>
<td></td>
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<td>3</td>
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<tr>
<td>8.</td>
<td>Security Audit of Network and Critical Systems</td>
<td>$ 10,000</td>
<td></td>
<td>5</td>
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<tr>
<td>9.</td>
<td>Deliver Software (thin client)</td>
<td>$ 300,000</td>
<td>$ 20,000</td>
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<td>4</td>
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<tr>
<td>10.</td>
<td>Assist Campus Police in Master Plan</td>
<td></td>
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<td>1,2</td>
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<td>11.</td>
<td>Outsource e-mail</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
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<tr>
<td>12.</td>
<td>Video over IP</td>
<td>TBD</td>
<td>TBD</td>
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<td>1,2</td>
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<tr>
<td>13.</td>
<td>Implement Raiser's Edge</td>
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<td></td>
<td>4</td>
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<tr>
<td>14.</td>
<td>Physical Plant energy management</td>
<td>$ 500,000</td>
<td>$ 25,000</td>
<td>5</td>
<td>2,3</td>
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<tr>
<td>15.</td>
<td>Physical Plant work order system</td>
<td>TBD</td>
<td>TBD</td>
<td>3</td>
<td>2</td>
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<td>16.</td>
<td>Find efficiencies</td>
<td>TBD</td>
<td>TBD</td>
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<td>1,2,3,4</td>
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<tr>
<td>17.</td>
<td>Collaboration tools</td>
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<td>2,3</td>
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<tr>
<td>18.</td>
<td>Hire 5 general Technologists</td>
<td></td>
<td>$ 250,000</td>
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<td>2,3,4</td>
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<tr>
<td>19.</td>
<td>Provide Data Warehousing</td>
<td>$ 250,000</td>
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<td>4</td>
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<td>20.</td>
<td>Purchase reporting &amp; analytic tools</td>
<td>$ 125,000</td>
<td>$ 35,000</td>
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<td>21.</td>
<td>Document Management</td>
<td>$ 80,000</td>
<td>$ 12,000</td>
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<td>22.</td>
<td>Datatel usage audit</td>
<td>$ 24,000</td>
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<td>23.</td>
<td>Explore New ERP</td>
<td>TBD</td>
<td>TBD</td>
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<td>3,4</td>
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<tr>
<td>24.</td>
<td>Explore longer replacement cycle for computers</td>
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<td>25.</td>
<td>Leverage Video Conferencing</td>
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<td></td>
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<tr>
<td>26.</td>
<td>Create interface for all applications</td>
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<td>2</td>
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<tr>
<td>27.</td>
<td>Provide online customer service</td>
<td></td>
<td></td>
<td>4</td>
<td>1,2,3,4</td>
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<tr>
<td>28.</td>
<td>Examine I&amp;CT Organization</td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td>29.</td>
<td>Review roles of CATL &amp; IDD</td>
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<td></td>
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<td>1</td>
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<tr>
<td>30.</td>
<td>Hire a programmer for academics</td>
<td>reallocate</td>
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<td>1</td>
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<tr>
<td>31.</td>
<td>Hire a Systems Analyst</td>
<td></td>
<td>$ 120,000</td>
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<td>32.</td>
<td>Hire an Application Systems Analyst</td>
<td></td>
<td>$ 75,000</td>
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<tr>
<td>33.</td>
<td>Hire a Database Administrator</td>
<td></td>
<td>$ 84,000</td>
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<tr>
<td>34.</td>
<td>Hire 2 Web Developers</td>
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<td>$ 125,000</td>
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<td>2,3</td>
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<td>35.</td>
<td>Hire a data security officer</td>
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<td>$ 75,000</td>
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<td>36.</td>
<td>Consider creating a dept of event management</td>
<td></td>
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<td>3</td>
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<td>37.</td>
<td>Consider development of Call Center</td>
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<td></td>
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<td>3</td>
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<tr>
<td>38.</td>
<td>Examine role of Video Services</td>
<td></td>
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<tr>
<td>39.</td>
<td>Project Manager</td>
<td></td>
<td>$ 68,000</td>
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</table>

**Totals**: $ 1,689,000 $ 1,094,200