STRATEGIC TECHNOLOGY PLAN 2007

Florida State College

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INFORMATION TECHNOLOGY
FLORIDA STATE COLLEGE AT JACKSONVILLE™

STRATEGIC TECHNOLOGY PLAN

Florida State College

This document is the Strategic Technology Plan for Florida State College. The purposes of this strategic plan are to ensure the continued growth and advancement of the College's technology environment, maintain its leadership position, and continue the establishment of a dominant competitive advantage in the higher education market-space.

Dr. Rob Rennie

January, 2007

NOTE: The Major Project Status Updates chapter (previously chapter 8) has been removed from this document and formatted as its own separate document. The content is updated quarterly and resides on the Technology department's website at http://www.fccj.org/techteam/projstat.htm

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FOREWORD

This is the third five-year strategic technology plan developed under my presidency at Florida State College. It represents our commitment to providing the best possible educational technology and digital learning resources to our faculty and students. Further, it supports our interest in maintaining a dominant leadership position in technology.

However, this commitment is not made lightly; it is a serious and costly endeavor which requires extensive collaboration, planning, and well-coordinated implementation to be successful. Completion of the major initiatives in this plan will help us to serve the ever-growing proportion of our students who are digital natives as well as an ever-more digitally-oriented faculty.

It is easy to mistakenly assume that technology plans are about hardware and software. Although these are most certainly critical components of any technology plan the focus of the plan is really on the learning experience and adding value for students and faculty by enhancing the digital resources available; the quality of student - student, faculty - student, and faculty - faculty interaction; providing best-of-class advising and support services; creating an environment for the development of high quality scholarly work; and ensuring students opportunities to engage in meaningful and relevant computing experiences.

I am excited to be undertaking this next segment of our journey together to make Florida State College the best possible resource it can be for our community and I commend the leaders of our Information Technology Division for the development of this progressive and highly effective plan.

Dr. Steve Wallace,
College President
Florida State College

INTRODUCTION

"Change in all things is sweet." -Aristotle

This document is the result of a complex and continuous planning process that includes broad-based internal and external collaboration, data collection, research, and evaluation.

Internal sources of input, requirements, and coordination include the following Collegewide committees, forums, and meetings:

Frequency	Committee/Meeting/Forum	General Purpose
Monthly	ORION Steering Committee	Identify fiscal year institutional systems development priorities
Semester	ORION Executive Committee	Oversight & alignment ID initiatives review progress
Continuous	ARTEMIS Faculty/Staff/Student Direct Input	Interfaces, functions, & aesthetics
Bi-monthly	Learning Futures Group	Broad range of future technology requirements
Semester	Collegewide Tech Committee	General advisory
Continuous	LSC Input from Tickets	All operational issues
Bi-weekly	Instr. Affairs Council	All dean academic/technology issues
Monthly	AD/IPM Meetings (as requested)	MIS/Dashboard, ARTEMIS, ORION input
Bi-monthly	Campus Tech Meetings	Infrastructure, lab replacement, support, telecommunications
Bi-weekly	State Reporting/Data Accuracy Group	Data & process improvement
Weekly	Non-credit Enhancement Team	End-to-end student Business Process Management
Monthly	Campus Presidents Meeting	Share general & specific information
Continuous	QEP Driven Initiatives	Reactive to requirements
Bi-weekly	SIRIUS Meetings	Course related technology development
Monthly to Semester	IT Liaison Meetings - IT Leadership to College Leadership Meetings	Input on all technology issues
Monthly	Podcasting Group	Ad hoc faculty task force on iPods, blogs, & podcasts

Frequency	Committee/Meeting/Forum	General Purpose
Monthly	Learning Innovations Advisory Group	Faculty, instructional technology, distance learning, academic technology
Bi-monthly	HR/DAS Meetings	Specific to HR-related to Business Process Management Automation

Additional individual and ad hoc meetings with faculty and staff are held regularly to discuss a variety of technology issues and projects.

Due to the College's early adoption of technology and strong emphasis on disruptive and emerging technologies external collaboration, input, research, and advising are critical to successful technology initiatives. The following external forums represent the most significant sources of input and research.

Month/ Frequency	Forum/Meeting/Conference	General Focus
February	Southeastern Blackboard Users Group	Blackboard LMS
July	Blackboard Users Group	Blackboard LMS
June/ December	SAKAI	Open Source LMS
June	Networkers	Infrastructure & Telecomm
Monthly	Infraguard	Data Security
January	Oracle/Sun ERC	Educational & Research Conference
November	Software AG Developers Conference	Development in Natural
August	Apple Developers Conference	Development in Apple related technologies
February	Crescendo	Imaging & Contact Management
October	EDUCAUSE	General Educational Technology
March	NAB	Educational Media & Networking
Continuous	MSDN	Microsoft Developer Network
Continuous	ADN	Apple Developer Network

Month/ Frequency	Forum/Meeting/Conference	General Focus
Quarterly	JITC	Jacksonville IT Council-General Tech Issues
Annual	Jax CIO	General Tech Management Issues
December	WolffPack	Financial Aid System Conference
June	FACTS	State Academic System Conference
Quarterly	MISATFOR	Data Reporting
September	FAEDS	Statewide Educational Technology

In addition to these open forums and conferences, there is an extremely valuable quarterly networking and leadership event hosted by the College. The IT Leadership Academy programs involve thirty to forty global IT leaders from the world's leading companies and organizations who meet to discuss technology issues, futures, trends, markets, and problems. The College IT leadership team participates in these events and regularly engages this professional network in discussions of specific College-related technology issues and plans.

The last significant source of input and research is the CIO's participation on boards and in forums focused on technology issues of the future, emerging technologies, best-of-class implementations, and innovation. Currently these include:

- Member Software AG International Executive Committee
- Member Apple Computer University Executive Advisory Forum
- Member Sun/Curricki (GELC) Global Education Board
- Past honoree and participant in Computerworld's Premier 100 IT Leadership Program

The CIO also engages in frequent work with Gartner and Forrester in the presentation of keynote addresses, session papers, and webcasts on major technology topics.

This extensive collaboration and participation results in the creation of technology initiatives as part of the College's initiatives-based planning process. These initiatives then evolve into actionable objectives and tasks summarized in this plan.

The primary role of technology leaders is to aggregate and distill broad-based requirements and input into a comprehensive technology vision and to then cause that vision to be realized. This plan presents the five major technology initiatives that will result in the realization of the new three-part technology vision:

- Environment for Digital Natives
- First Class Academic Computing
- Flexible and Agile Delivery Model

The five major initiatives are:

- Next Generation Computing Environment
- Global Learning Technologies
- ARTEMIS II
- SIRIUS
- ORION 3

The College's current position as a technology leader is the direct result of the two previous iterations of this technology strategy development process. There is no question that these initiatives will build on and extend that success over the next five years.

EXECUTIVE SUMMARY

"Success is never final." -Winston Churchill

This document is the Strategic Technology Plan for Florida State College. As such it will be the guiding influence and primary framework for technology initiatives and projects undertaken by the College for the initial five-year period covered by the plan (Fiscal Year 2007 - Fiscal Year 2012) and subsequent years as amended.

In an extremely aggressive and rapid fashion, starting in late 1997, the College evolved from what once was a technological "backwater" into a technological leader. This leadership position is evident in virtually every area of the College from infrastructure to educational computing environments and from courseware development to faculty computing resources and is affirmed by the College having been ranked 1st in the nation in technology among large colleges by the Center for Digital Education three times in the past four years.

As the College approaches the tenth anniversary of its technological transformation, it is time for yet another great advancement in technology infrastructure, computing, environment, and quality of experience. However, it is critical to point out, as Mitch Kapor is quoted in Scott Rosenburg's Dreaming in Code, that "The issue is about empowering people. It's not about the infrastructure."[1]

The purpose of this strategic plan is to ensure this next great transformation of technology at the College, the continued growth and advancement of the College's hard-earned technology leadership position, and to continue the establishment of a dominant competitive advantage in the College's higher education market-space.

In its most summarized form, this plan recommends the following: continued pursuit of the established technology vision; continuation of a multi-tiered function-driven technology infrastructure; continuation and expansion of partnerships with Dell, Oracle/Sun, and Apple for the provision of workstations and application servers; and continued implementation and

[1] Rosenberg, S. (2007) Dreaming in Code (p. 214). New York: Crown.

expansion of EMC, Oracle/Sun, and Apple storage solutions and the Oracle/Sun enterprise server environment.

Additionally, this plan recommends further advancement of the College's enterprise system (ERP, aka: ORION) through business process management (BPM)-driven Web-enablement; modified workstation and lab refreshment cycles that are device-type dependent; expanded multi-media capability for instructional computing; continued emphasis on educational versus administrative systems; continued pursuit of fiscal distribution targets and increased funding (including funding stability); and continued aggressive pursuit and implementation of emerging technologies.

The planned acquisitions have been developed through the employment of an architectural blueprint representing major acquisitions scheduled over a five year period in accordance with Collegewide technology initiatives.

Further, this plan recommends the continuation of the current technology organization structure with modifications as necessary to accommodate changes in staffing levels that occur through the normal course of business and revisions to position descriptions to create a distinct technical class of employees.

In no way, however, shall this plan inhibit the agility necessary to meet changing fiscal or business demands or the ability of the technology sector to support Collegewide initiatives as they are developed and approved.

CHAPTER 1

Technology and Higher Education: The Future

"The future ain't what it used to be." –Yogi Berra

Introduction

The purpose of this chapter, as the title would imply, is to provide a 'future view' of technology. This future view serves as the foundation of the planning process and is presented in the form of a five-year outlook of the technologies, trends, and issues that will most likely prove to have a significant effect on the College and which have had the most influence in the planning processes that produced this strategic technology plan.

In CHEMA's report on the future of higher education, Goldstein introduces the two dominant views of the effect of massive forces for change on higher education, "Undeniably significant forces for change are growing, changing demographics, the rise of global competition, technological change, and constrained budgets have already become significant forces for change. Some view these forces as dark clouds on the horizon that threaten higher education. Others view them as agents of change that will enable higher education to reinvent itself in positive ways."[2]

The College's technology leadership agrees with the latter interpretation. The global forces of change at play represent a tremendous opportunity for substantial redesign and improvement of higher education. We have therefore committed ourselves to the creation of a strategic technology plan that will support the College in its efforts to optimize its opportunities for effecting positive change.

The dynamic nature of technology and the rapid introduction and absorption of culture-changing behaviors make any prognostication a risky venture. Neils Bohr is quoted as saying "Prediction is very difficult, especially of the future." While George Will points out that, "the future has a way of arriving unannounced." Futurists generally, advise that there are four distinct futures:

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[2] Goldstein, P. (2006). The Future of Higher Education: A View from CHEMA. (p.1)

1. The future extrapolated from current trends, the forecast.

2. The future consisting of bad things that will happen to us, unwanted surprises.

3. The future consisting of good things that will happen to us, delightful surprises.

4. The future we cause to become reality, the product of our dreams and conjuring. [3]

Of course, the future that actually occurs is a combination of all four types, but the power we have to alter our experience is in the fourth type: the future we cause to happen from our dreams. This future has the potential to alter the other three in very significant ways. By forecasting the things that are likely to happen to us, and deliberately modifying the current observed trends in positive ways, we can, to a very large degree, determine much of our future. Or, at a minimum, we can mitigate the effects of unwanted surprises.

This chapter presents many of the trends and assumptions that resulted in the development of the strategies, plans, initiatives, standards, and recommendations contained in this strategic technology plan. It is a very specific purpose and objective of the planning process to create, to the extent possible, an extremely positive and rewarding future for the College and its constituent communities. We have, quite deliberately, attempted to follow the model developed by Rubenstein and Firstenburg to 'bring the future to the present.'[4]

Technology Trends

Digital Content- Currently, and for the foreseeable future, there will continue to be enormous shifts in the area of digital content. Ever-more user created content is being developed. In its Horizon Report, Educause's New Media Consortium cited user created content[5] and new scholarship (encompassing collaborative research and publication as well as alternative instructional resource development, as in digital assets)[6] as two of its six biggest trends to affect

[3] May, T. (2006) Designing the Future You Want. Jacksonville, FL: ITLA.

[4] Rubenstein, M. & Firstenburg, I. (1999). The Minding Organization. New York: Wiley & Sons. (p.133)

[5] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.6)

[6] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.21)

higher education. Further it suggests the trend towards more user-created content is currently underway, a zero to one-year horizon, while new scholarship has a horizon of four to five years.

Spurred by powerful new tools and virtually limitless bandwidth, faculty and students have embraced the design and development of digital content, self-publication of intellectual property, collaborative IP (intellectual property) creation, and the idea of shared ownership. This trend is likely to accelerate rapidly.

Additionally, traditional publishers and content providers have entered into the somewhat cannibalistic business of digital content provision, ultimately eating away at their very own traditional distribution and economic models. These powerful trends come together to form an inevitable transition towards dramatically different, and likely contentious, revolutionary models in the areas of digital rights, IP management, distribution, consumption, and licensing.

Scenarios where faculty and students engage in the teaching, learning, and research processes that are the core of higher education, employing a mix of open source, creative commons-style content, traditional media from traditional content providers, digital subscriptions, and publication assets aggregated into a learning management or other delivery system are currently in play. This will only become more prevalent over time.

Colleges will need to develop technological and process support for these major trends. These will include robust and highly available delivery platforms with rigorous content management and digital rights facilities and high quality tools for the design, creation (including shared collaborative spaces), storage, tagging, and distribution of massive amounts of user-created content. The establishment of extensive licensing deals and integration of systems in support of subscribed and licensed content that include license and legal compliance for multiple models and forms of content ownership and use rights will be essential.

Hardware- Over the past thirty or more years there has been a steady advancement of technology driven by the evolution of hardware, software, and the architectural models used to forge them together into functional computing environments. This trend is going to continue and will accelerate at an accelerating pace.

Hardware will continue to advance and improve even though a temporary ceiling may have been encountered in the 3.0 GHz range for processor speed. The development of 64-bit multi-core processor technology and corresponding multi-thread software development will compensate in throughput (processor capacity) for the speed limitations. Storage, too, continues to advance in speed, density, reliability, and cost per unit of storage making centralized and stratified data storage with virtualized access practical for most enterprise environments.

Operating Systems Software- Operating and other systems software is becoming better integrated, more versatile, have better stability, and are considerably more compatible with every new release. Solaris, Mac OS X, and Linux are secure by most measures and are now 100% standard compliant Unix. Adherence and compatibility with the Unix standard expands the developer community and its ability to create products for multiple OS environments without significant re-design or additional coding. The Windows environment, however, is not Unix compliant, creates significant compatibility issues, and still faces significant security challenges even with the improvements made in Vista. These factors have had significant influence in the creation of OS-dependent elements of this strategic plan.

Software Applications- Applications development is still a primitive process but it is slowly improving in terms of the quality of tools available for developers and the usefulness of standards (due to broader adoption within the industry) to ensure interoperability. The focus of most development activity will be on systems integration, services enablement, and greater personalization of the computing experience.

Individualization takes advantage of user profiles linked to federated identity management systems that provide secure authentication and 'from anywhere' access to all appropriately available services and digital resources. The use of Widgets and other dashboard-like components support personalization.

Next generation, Web 2.0, applications- to a large extent deployed through the use of AJAX (asynchronous JavaScript and XML) technologies- provide a richer, more interactive on-line experience for the user and further advances the personalization of the experience. The ability to develop and deliver highly interactive web experiences with integrated simulations and event-

driven functions is now a reality. The complexity and cost of such development continues to trend down.

Architecture- Much like the construction of a city or neighborhood, technology environments with a well-planned and executed architecture are more appealing and, quite simply, work better. The persistent challenge in developing a long-term successful computing architecture is the dynamic nature of technology. Constant advances in hardware, evolving standards across all technologies, operating system upgrades, price-performance advancements, versioning and release management, interoperability and compatibility issues, and user demand all contribute to the complexity and difficulty of architecture development.

The architectural models presented in this plan are designed to leverage standards, provide the greatest possible amount of flexibility throughout the environment, and position the College to take advantage of the phenomenal technology advancements that will be seen in the next five years and beyond. This agile architecture emphasizes openness, SOA (services oriented architecture), and deployment of the most powerful mix of tools available.

Telecommunications and Networks- Changes in telecommunications and network technologies represent improved price-performance, broader ubiquity, larger bandwidth, better reliability, and greater manageability. This provides the fundamental infrastructure for extensive content delivery, provisioning of intensive grid-based computing capacity, fast and voluminous data transfer, real-time simulation, complex communication structures, and large-scale on-line global collaboration.

Voice over Internet Protocol (VoIP) and ubiquitous wireless coverage have significant implications for native integration of converged devices throughout the computing architecture. Wireless network coverage, while currently available throughout College facilities and certain public spaces, will become more pervasive in most non-College areas.

Coverage gaps in wireless networks will eventually be covered by the expansion and improvement of commercially offered edge/broadband wireless networks operated by cellular service providers. The College will maintain its 100% wireless coverage and upgrade the speed and performance of the network as need dictates. Additionally, the current VoIP network covers

approximately 85% of the College's facilities, the final 15% of conversion is expected to be completed this year, well positioning the College to take advantage of new service offerings designed for these environments.

Carbonware- Despite the importance of hardware, software, architecture, and telecommunications and network decisions, the most critical element will continue to be the 'carbonware,' the humans employed in the technology environment. The emphasis on hiring for pure intellectual horsepower will prove to be the most significant factor in the College's continued leadership in technology.

The department is structured to be a 'learning organization' so as to prepare staff to deal with the massive changes predicted for the future. The noted and prolific author and social commentator Eric Hoffer once admonished "In times of change, learners inherit the Earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists."

Glaser and May posit, "The educational background, the skill set profile of next generation IT leaders (the stuff you are supposed to know), is the greatest single source of competitive differentiation available to enterprises today."[7] This reality is the genesis of the technology leadership team's emphasis on the development of technology staff and training in leadership skills.

It is the intent of the technology leadership team to create an environment suitable for the achievement of excellence. In a meeting with Apple's head of design, the generally acknowledged as brilliant, Jonathan Ives described the factors that have led to his team's phenomenal success in creating Apple products over the past fifteen years:

- A supportive 'listening' environment
- Space to think
- An impossibly curious culture
- A team that is completely prepared to be wrong
- Prolific prototyping
- Courage to throw away good designs to achieve the best.

[7] Glaser, R. & May, T. CIO Leadership Institute. 2006. UC Berkeley, CA.

This description serves as the model for the technology team's target environment and cultural aspirations. It is the responsibility of technology leaders to create and sustain a creative, productive, well equipped, and healthy environment in which value is created for the College through the efforts of the technology professionals it employs.

Virtual Reality and Gaming- Included as two of the six major trends for the future of higher education in the Horizon Report are the closely related, and somewhat interdependent, advances in virtual worlds - cited as a two to three year horizon trend[8] and new gaming technologies, estimated to be a major focus in the four to five year range.[9]

There is no doubt that gaming technology has advanced beyond the wildest dreams of most early gamers. The interfaces, sense of reality, suspension of disbelief, and highly interactive virtual environments offer a powerful environment for experiential and collaborative learning. Most commercial game development environments are prohibitively expensive for educational adoption. However, there are a few high-end open source options emerging such as Croquet and Multi-verse.

The most widely used virtual environment in higher education at this time is Second Life (SL), which boasts over three million accounts and has 12,000 to 25,000 active residents on any given day. The residents engage in large-scale social networking, participate in a virtual economy that actually crosses over to the real economy through trade and L$ (Linden dollars, the currency of the SL economy) to US dollars conversion through genuine formal markets dealing in SL property and assets.

In the very near future MMO (massively multi-player on-line) solutions will be affordable and readily available on-line. These systems will provide highly scalable, richly immersive, experiential environments for learners. Colleges must prepare themselves to take advantage of these opportunities to enrich the learning environment by ensuring computing and network

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[8] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.18)

[9] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.25)

infrastructure systems and the culture of the College community are ready for the application of advanced virtual environments.

Converged Mobile Devices- The continual improvement of cell phone, digital media player (audio and video playback devices such as the Microsoft Zune-based players and Apple's iPod), and PDA (personal digital assistants, devices that provide a variety of mail, messaging, contact, and calendaring functions such as the HP iPaq, Dell Axim, and Palm Life Drive.) technology has led to the creation of highly functional and practical converged devices. Mobile devices were reported as a two to three year horizon trend in The Horizon Report.[10] The technology leadership team, however, believes it is more likely a one to three year horizon trend.

Although the Blackberry, Treo, and Motorola Rokr have been the best examples of converged devices to date, the release of the Apple iPhone ushers in a new era of convergence. The iPhone introduces a high quality intuitive user interface, an exceptionally high quality broad palette of services, and a market-leading form factor. The iPhone, and its inevitable competitor equivalents, should prove to be ideal mobile platforms for the higher education environment.

Utility-based Computing- The last of the hardware, software, and architecture trends to be discussed here, although many others have been researched, is the advent of utility-based computing. Utility-based computing is a service model for the provision of on-demand, scalable computing resources, acquired through a data center/grid computing service provider, typically on a pay-per-unit of compute power basis. The model allows for the smoothing of peak demand cycles, normalization of costs, and creation of a managed-services environment.

Although utility-based computing is in its very early stages, it is likely to mature and gain relatively broad adoption over the next five years. To prepare for the potential availability of utility-based computing the College is structuring its computing services model to an internally provisioned utility model. This includes the weeding of the services catalog and applications portfolio, simplification of processes, and standardization of the server and operating systems environments.

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[10] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.15)

Social and Behavioral Trends

Social Networking- Perhaps the most significant trend that will have long-lasting impact on higher education, and society in general, is the expansion and advancement of social networking facilitated through the adoption of new applications and services. This trend toward greater social networking is cited in The Horizon Report as one of its six most important future trends and is identified as a zero to one-year horizon phenomenon. It is noted in the report that this social interaction model is already second nature to students and provides them with a virtual gathering place in support of their educational experience.[11]

Students currently network and collaborate through a variety of tools such as MySpace (commercial social networking web site started in the University environment, now owned by News Corporation, it is the US's sixth most visited website) and Facebook (this college-focused social networking website began at Harvard and is now the US's seventh most visited web site).

These websites provide a venue for members to communicate, collaborate, share digital resources, and build personal and virtual relationships-communities that are self-organizing and, to a very large degree, self-managed. Student use of social networking and their comfort in the virtual world of the communities built there is one of several differences of perspective between students and faculty regarding technology and its application to scholarship, research, and daily life.

The arrival of the 'digital native' generation of students has begun. To ensure they are well-served by the College the Technology Department is inviting representative digital native students to discuss what on-line services and cultural changes would best serve their needs and digital lifestyles as they pursue their educational goals. The result of these conversations will be specific actionable initiatives designed to create a suitable environment of computing and digital resources and services for digital natives.

Open Source Communities- The open source community movement built tremendous momentum through the development and refinement of the Unix operating system that resulted

[11] Woolsey, K. et al. (2007). The Horizon Report. Boulder, CO: Educause-NMC. (p.12)

in the opening and 'communitization' of many other products. The open, free Apache web server is the most utilized web server software in the world. Oracle/Sun and several other major commercial computing companies have provided significant support for the expansion and growth of the community-based open systems model.

It is only fitting that there are now so many major college-related undertakings in the open community model, as the open source model originated in higher education. These major projects and communities include: Sakai, Kuali, Curriki, Linux, and the various Java-based communities. The College's technology leadership team strongly supports the open systems philosophy, participates in several of the major initiatives, and employs open source or open interface solutions whenever possible. The availability of high quality open source solutions is constantly improving and the trend is expected to accelerate over the next few years.

The Experience Economy- The concept of the 'experience economy' was introduced by Pine and Gilmore in their 1999 book of the same name.[12] It is based on the belief that as services become commoditized the experience of the service becomes a vital part of the value proposition for the customer or service consumer.

The experience as a value-added element of the transaction or relationship was introduced in the 2002 strategic technology plan and served as the driver for much of the systems development work that has occurred since that time including the introduction of personalization and Web 2.0 interactivity.

Marketing and branding guru Andrew Zolli has advanced the idea that as the customer's exposure to an organization is, in ever-greater frequency, with its systems (web sites, automated telephone navigators, etc.) the systems become the de-facto brand of the organization.[13] He advocates a close relationship between marketing and technology to ensure the creation and defense of strong and desirable brands.

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[12] Pine, J. and Gilmore, J. (1999). The Experience Economy: *Work is Theater and Every Business a Stage*. Boston: Harvard Business School Press.

[13] Zolli, A. (2004, March 7). *Marketing and Branding in the Experience Economy*. Computerworld Premier 100 Conference. Palm Desert, CA

The effects of the experience economy are deepening and the trend will continue. The result is a continuous ratcheting up of expectations on the part of customers (students, faculty, the greater community, et al).

The College will continue to focus on the quality and consistency of the user experience and the close collaboration of marketing and technology staff to leverage its reaction to the experience economy into a competitive differentiator. The technology team will also continue to evaluate best practices as well as engage in innovative systems and process designs to enrich the users overall experience with the College's systems.

Environmentalism- The attention being drawn to global warming and related environmental issues will result in a new green awareness throughout the general public and will most likely generate significant action-oriented groups and behaviors in the cause for environmentalism. This is a trend likely to present challenges for colleges that lack environmentally responsible behaviors, infrastructure, and/or operations.

Although it is difficult to predict the scope or veracity of such movements, it is prudent to be prepared to respond to inquiry and to incorporate environmental concerns into the planning decisions being made today. The technology leadership team will be examining environmentally friendly computing and infrastructure as it engages in its planning activities and will recommend environmentally sound courses of action whenever practicable.

Political and Economic Trends

Rising Costs- Anyone who has any experience in the technology environment understands the increasing cost of doing business. In many cases this has resulted in technology organizations and their leaders being preoccupied with the business of cost cutting. In a July 2006 survey of CIO's conducted by CIO Magazine, 40% of respondents reported cost cutting to be a primary focus.[14] Although responsible stewardship of technology and fiscal resources s a given in the management of technology, it is unfortunate that so much attention is placed on pure cost containment.

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[14] Rosenbaum, D. (2006, July 1). *Cost Cutting. Again?* CIO Magazine. p.10

The philosophy of technology leaders at the College is to define technology, and all that it does, as a value creation engine. In such a model the focus is on creating value and ensuring positive value propositions for the College. This approach results in a richer computing environment that is fiscally responsible but still extremely innovative. The trend of increased costs will continue, the value creation focus in the technology department will also continue and should serve the College well over the next several years.

Reduced Resources- The evil twin of rising costs is the general shortage of resources that is so prevalent in higher education, particularly public higher education. It is anticipated that resource shortages, limitations of funds, staff, and facilities, will continue. The most effective strategies for dealing with this trend will continue to be the multi-faceted approach that includes; focusing on value creation, increasing market space/share, improving cost-effectiveness and efficiency of operations, fundraising to secure private funds, political action and lobbying to secure more public funds, and the creation of new revenue sources.

The College is engaged in this full range of activities and the technology team will continue to support each of them to the extent possible. Additionally, technology leadership will constantly pursue innovative strategies for providing extremely efficient technology services including a comprehensive sourcing strategy.

Competition- The business of higher education has become highly competitive, this trend will continue and will result in the failure of many institutions to maintain their status and/or economic viability. The College has experienced strong competition in its markets over the past few years and has responded well.

Technology's role in addressing this trend is to ensure, on a continuous and sustainable basis, that the user experience is of the highest quality, that all systems create and defend strong positive brand, and that technology creates value for the College and its constituent communities. It is the deliberate intent of the technology team to empower the College through the provision of systems and technologies that produce competitive differentiation and enable market domination.

Timelines

The following figures present three distinct timelines. They are 1997 through 2002 (Strategic Technology Plan 1), 2002 through 2007 (Strategic Technology Plan 2), and 2007 through 2012 (Strategic Technology Plan 3). They show the significant historical events related to technology over the past ten years and the forecasted significant events of the next five. These timelines, like the preceding trend discussion, are not intended to be all-inclusive; rather the intent is to highlight those things of greatest significance to the bigger picture of computing at the College.

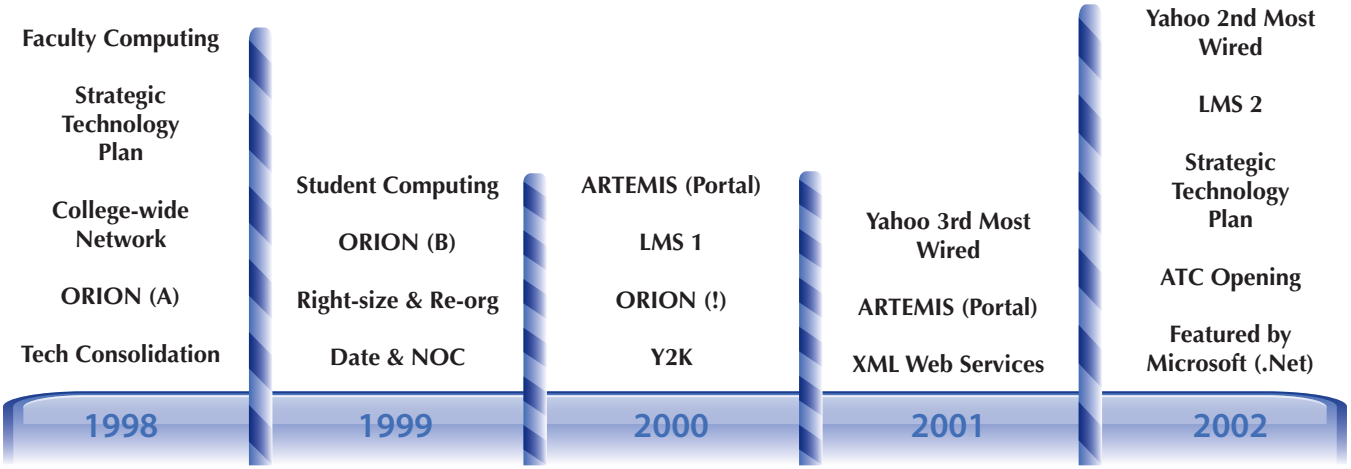

Figure 1.1 [Strategic Technology Plan 1 - Five-Year Timeline of Significant Events]

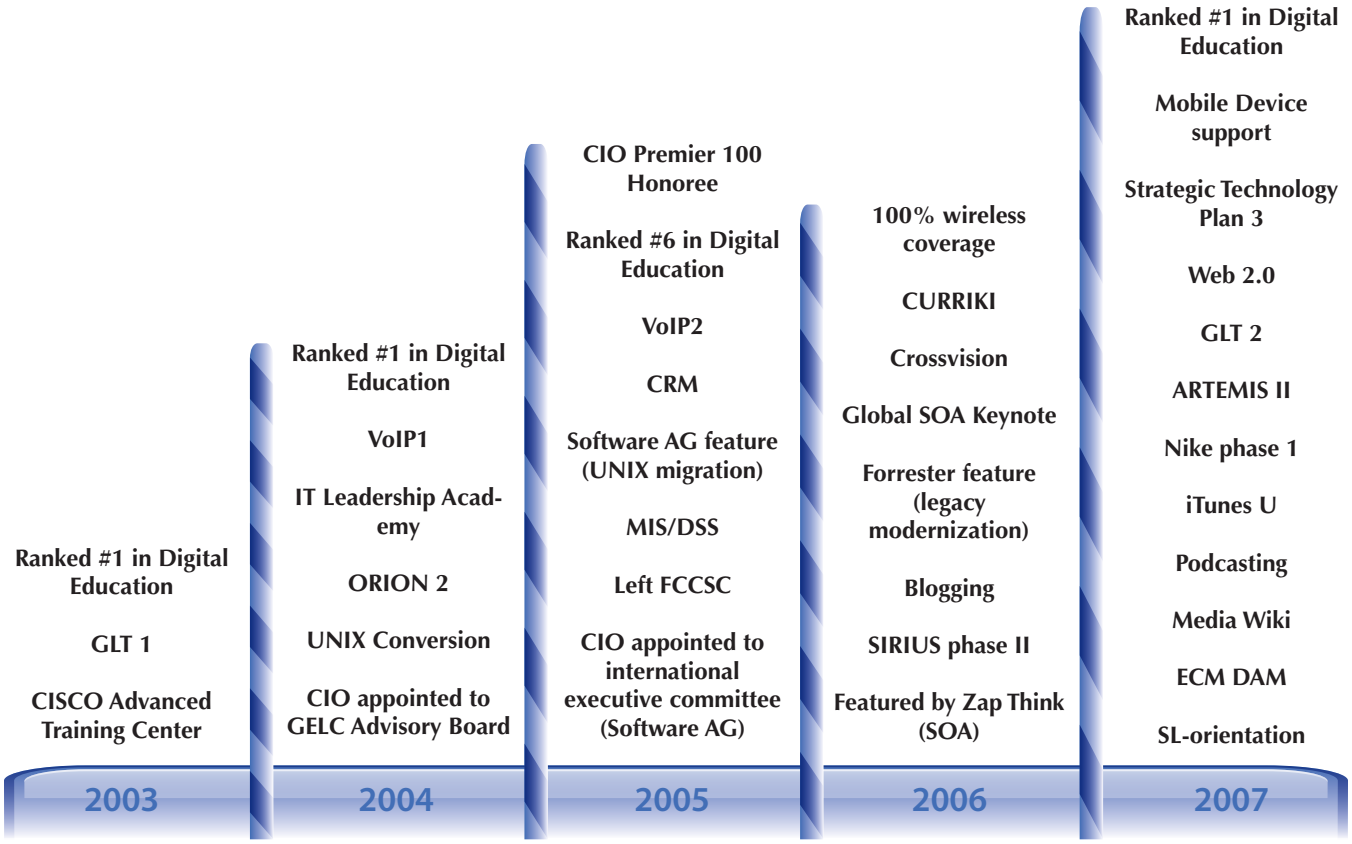

Figure 1.2 [Technology Plan 2 - Five Year Timeline of Significant Events]

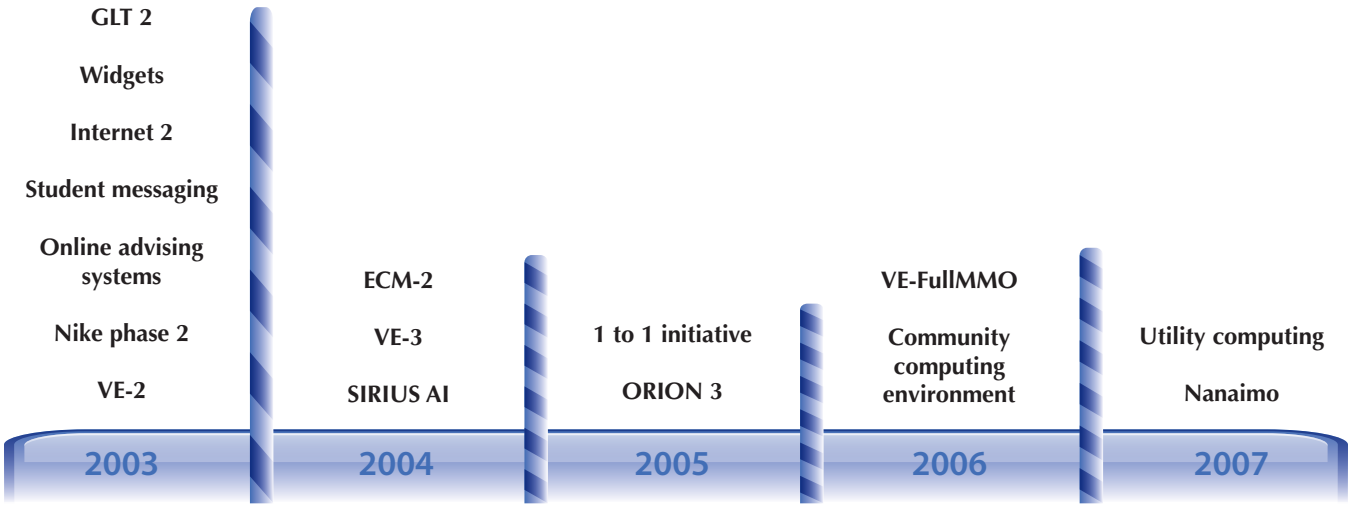

Figure 1.3 | Strategic Technology Plan 3 - Five Year Timeline of Significant Events

Conclusions

The trends and forecasted futures discussed in this chapter are those expected to have the most significant effect on the College and which have had the greatest influence in the technology decisions presented in this plan. There are many others that have been researched and for which strategies have been developed that are not included in this discussion.

CHEMA, in its report on the future of higher education cited the most significant threats to the future of higher education as identified in a 2006 survey of a broad range of higher education leaders:

- Resistance to change 55.8%
- Lack of resources 43.7%
- Increased costs 34.7%.

Other factors of concern included complacency (21.1%) and insufficient leadership (17.9%) and just slightly more than a third of respondents believe their institutions are prepared to capitalize on change.[15] While the threats of resource shortages and increased costs are obvious and understandable, the issues of resistance to change, complacency, lack of preparedness to capitalize on change, and insufficient leadership are particularly disturbing as they are evidence of systemic dysfunction.

These three items are unnecessary challenges that represent a failure on the part of colleges and universities to demand excellence from their leaders and inability to manage organizational culture. Although the College most certainly shares the concerns relating to reduced resources and increased costs, it is unencumbered by the dysfunctional threats to a successful future.

The technology team at the College is extremely future-focused and innovation driven. The fairly accurate interpretation of environmental scans, the full consideration of exogenous and endogenous influences, and the paying of particular attention to technology and social change have resulted in plans that have been extremely successful.

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[15] Goldstein, P. (2006). The Future of Higher Education: A View from CHEMA. (p.6).

This success, or high hit rate, of technology selection, early adoption of emerging technologies, and architecture development has resulted in the technology leadership position the College currently holds. It is genuinely hoped, and believed, that this trend too will continue. If it does not, it will not be due to a lack of effort on the part of the technology leadership team or staff.

CHAPTER 2

Technology Strategy[16]

"Possunt quia posse videntur. Audentis fortuna iuvat."

("They can because they think they can. Fortune favors the bold.") -Virgil

Purpose

The primary purpose of this section of the strategic plan is to introduce a strategy, and its underlying philosophy, for the planning and deployment of technologies to ensure the continued success of Florida State College in the higher education market-space. Further, it is intended to meet the demands of the ever more competitive higher education market: the emergence of digital natives and the ever-growing requirements for advanced multimedia, interactive, and user-friendly computing experiences.

Perspective

Dilenschneider, in Moses: CEO, Lessons in Leadership, observes that, "our world is global, information-driven, and uncertain."[17] We find ourselves in the midst of what MIT's Lester Thurow has termed the brainpower era. This is fortunate for many reasons, not the least of which is the ever-present Internet, the web, cyberspace, the net, it. And it is all around us. The cyber age is here and many organizations, including Florida State College, are applying this age's trademarked tools and processes for competitive advantage in their markets.

The web has developed into a predominant venue for the transaction of business and the business of transactions. This development is neither regional nor national; it is not bounded by industry type or level of capitalization. It is a pervasive and continuous movement to new economic and business models. It has mass and velocity and, most importantly, it has relevance. Seventy percent of North America is on the Internet and growth in use of the Internet has been

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[16] Rennie, R. (1999, November) A Technology White Paper: A Strategy for E-Commerce at *Florida State College* and Wallace, S. & Rennie, R. (2000, March 6). *The Case for the E-volution of the Community College*. Community College Week. p.4

[17] Dilenschneider, R. (2000). Moses: CEO, Lessons in Leadership. (p.154) Beverly Hills, CA: New Millenium Press.

recorded at over 200% for the six year period from 2000 to 2006 and the U.S. represents 20% of worldwide Internet users.[18]

Estimates are that over 1.09 billion people currently access the web, an increase of five times from 2001 to 2006.[19] According to the U.S. Census Bureau, in the U.S. alone, there are 45 million people between the ages of 15 and 54 years with in-home connection to the Internet. These facts clearly indicate continuously growing global and national markets that are web-based and composed of higher education's target demographic group.

In Business at the Speed of Thought, Bill Gates describes the nature of this era by contrasting its characteristics with those of previous eras. He states, "Previous economic eras were marked by long periods of stability followed by short periods of wrenching change, a concept known to evolutionists (and biologists) as punctuated equilibrium."[20] Gates goes on to describe the current environment as an "era of punctuated chaos" where the pace of change is unsettling and constant upheaval is visited with only brief respites.[21] John Seely Brown and Paul Duguid note, in The Social Life of Information, "The importance of disturbance and change makes it almost inevitable that we focus on [them]."[22]

All of the change, turmoil, evolving markets, dynamic customer base, and technological innovation create tremendous opportunities for organizations and individuals to redefine themselves. But it also converges on individuals who must live, learn, and work in an ever-changing, uncertain world. Colleges, particularly community colleges, are society's enabling agents for these individuals as they try to survive and succeed in this challenging environment.

To be successful, individuals, now more than ever, must be educated, trained, skilled, and otherwise prepared to deal with the characteristics of the new economy, a new world order, and their place in them. Waterman, Waterman, and Collard defined these qualities as career

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[18] www.Internetworldstats.com. Internet World Stats.com December 1, 2006

[19] www.Internetworldstats.com. Internet World Stats.com December 1, 2006

[20] Gates, W. (1999). Business at the Speed of Thought. (pp.411-412). New York: Warner Books.

[21] Gates, W. (1999). Business at the Speed of Thought. (pp.411-412). New York: Warner Books.

[22] Brown, J. & Duguid, P. (2000). The Social Life of Information. (p.138). Boston: Harvard Business School Press.

resilience. They suggest that "successful employees will be those who are dedicated to continuous learning and ready to reinvent themselves to keep pace with change."[23] Computerworld's Don Tennant wrote the cautionary message to IT professionals, "Good morning: The world and your profession have dramatically changed. You are competing against the best and brightest from all over the world…"[24] Futurist Ray Kurzweil has predicted "[in] 2019 most adult human workers [will] spend the majority of their time acquiring new skills and knowledge."[25] These are the primary drivers of the career and workforce education initiatives and restructured funding models being developed in America's educational systems.

In composite, the characteristics of the new era, availability of enabling tools, requirements for personal success, and the successful experiences of pioneering organizations lead to some reasonable conclusions:

[23] Waterman, Waterman, & Collard. (1994, July/August). *Toward a Career Resilient Workforce*, Harvard Business Review.

[24] Tennant, D. (2007, January 15). *A Wake-up Call*. ComputerWorld Magazine. p.16

[25] Kurzweil, R. (1999, November). *Spiritual Machines: The Merging of Man and Machine*. The Futurist Magazine. p.18

1. Internet access has become ubiquitous and is a powerful content delivery and transactional business force.

2. Technology and business skills will change fast and often. Therefore, virtually all workers will be forced to go back to school periodically for skill development and/or enhancement.

3. The rapid pace of change will continue. Expectations of time-efficient "when I want it" convenient access to services has become the norm but the 'digital native' population will significantly increase the expectations for technology and service.

4. Choice-of-provider (college, vendor, etc.) market conditions will continue to force colleges to provide high quality product at competitive prices with exceptional customer service or they will, and should, fail.

These four issues result in an imperative for change, a demand for a new model of service provision. Unfortunately, many institutions lack the requisite vision, willingness, awareness, and/or resources to take advantage of this opportunity and guarantee themselves a successful future.

Three Traps

There are many reasons for organizations to fail in these challenging times. For higher education there are three critical traps that constitute what might be termed a nature to fail.

First among these traps is what Szent-Gyorgi refers to as syntropy, a drive towards greater order. Although those of us in higher education often profess ourselves, and sometimes are, unencumbered by a sense for order and able to embrace chaotic systems, our collective selves, in the form of institutions, seek order. As organizations we like things neat, clean, precise, and in knowable measure. The problem though is that this is completely incompatible with the new technologies, the web and the models that result from it. John Kao has said "the Internet culture is a jamming (as in jazz) culture, it is non-hierarchical and center-less."[26]

[26] Kao, J. (1996). Jamming. (p.131). New York: Harper Business.

In The Minding Organization, Rubenstein and Firstenberg point out that "the Internet forces us to rethink what is necessary to make a system work."[27] They go on to describe Hardin's concept of an ecolate filter, the premise of which is that organizations (organisms) never just do one thing because everything is connected to everything else; therefore the entire effect must be assessed (filtered).[28]

Failure to apply this filter has resulted in a long history of unintended consequences that have caused a need for greater order and a commitment to the status quo. The fear of unintended consequences and the perceived pain of change paralyze organizations and result in missed opportunities and ultimately failure.

Trap two is that colleges tend to be averse to taking risks. Adopting extreme new technologies, particularly disruptive technologies, is perceived (and to a great extent actually is) as a high risk venture. Many new tools and processes are disruptive technologies. These new tools and processes are considered disruptive in that the value they provide is not a discrete factor within systemized measures that are recognizable and accepted in the existing industry model.

For example, high-touch has been a core value in many colleges. Consequently, a large number of measures have been developed to assess the level of service provided in terms of personal, face-to-face interactions with students. Technology-based, do-it-yourself, initiatives do not fare well under such measures even though students may receive higher levels of convenient service.

But still, we as organizations have a particular fondness for our known measures. We use them for accreditation, funding, and justifying our very being. Disruptive technologies will never look successful under old measures. This makes it extremely difficult for innovators to risk even though the rewards can be extraordinary.

Harvard's Clayton Christensen found that firms that led in launching disruptive technologies (products and services) logged revenues twenty times greater than those that entered markets

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[27] Rubenstein, M. & Firstenberg, I. (1999). The Minding Organization. (p.196). New York: Wiley & Sons.

[28] Rubenstein, M. & Firstenberg, I. (1999). The Minding Organization. (p.196). New York: Wiley & Sons.

later.[29] Steve Wozniak, the engineering half of the Jobs-Wozniak dynamic duo that founded Apple Computer, said "The only way to come up with something new - something world-changing - is to think outside the constraints everyone else has."[30] "You can't follow the crowd. You have to ignore the crowd."[31] This should be instructive for colleges as well as businesses. Still, colleges rarely take risks.

The third major trap that leads to colleges' nature to fail is what Guy Kawasaki calls death magnet #9. Death magnets are Kawasaki's principal causes for business failure. He introduces them in the book Rules for Revolutionaries. Death magnet #9 is entitled Our Product Sucks Less. And is defined as deluding oneself by comparing current products and services to prior offerings and those of competitors. This, says Kawasaki, "results in the feasible solution being the optimum and prevents the optimum solution from being feasible."[32]

Taylor and LaBarre address the issue as follows: "…(for) companies that compete on the originality of their ideas. It isn't enough for leaders to challenge the prevailing logic of their business; they also have to re-think the logic of their own success."[33]

Colleges constantly compare themselves to themselves and each other. This is inherently success-avoidance behavior, especially when done without a clear vision for achieving excellence beyond the known, the experienced, and the so-called tried-and-true. Colleges can, and have, compared and measured themselves right into mediocrity and insignificance.

Syntropy, risk-aversion, and death magnet #9 are part of our organizational nature. They are also three great reasons to fail. To be successful, colleges must avoid their natural instincts and push themselves into the unknown horizons of new technologies and new ways of conducting the business of higher education.

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[29] Christensen, C. (1997). The Innovator's Dilemna. (p.132). Cambridge: Harvard Business School Press.

[30] Wozniak, S. & Smith, G. (2006) iWoz (p. 290). New York: W. W. Norton

[31] Wozniak, S. & Smith, G. (2006) iWoz (p. 289). New York: W. W. Norton

[32] Kawasaki, G. (1999). Rules for Revolutionaries. (p.96). New York: Harper Collins.

[33] Taylor, W. and LaBarre, P. (2006) Mavericks at Work (p. 28). New York: Harper Collins.

Initiatives-Based Planning: Empowerment, Technology, and Innovation

One way to increase the chances for success in technology initiatives is to empower the individuals in an organization to pioneer. Ideally, an organization's technology strategy would be compatible with its business plan. Current planning and budgeting models, though, often make it difficult to foster the creativity that results from successful innovations. The Internet (the web) and related technologies are network models. As such, their principles and characteristics are more like biological systems than like linear models by which businesses and colleges have historically been defined.

Typically, colleges have a business plan that lives in the form of an educational master plan. This master plan is usually complemented by a series of subordinate plans for facilities, technology, and budget. Organizations work very hard to produce volumes of paper detailing the findings of environmental scans and the history that has served as the basis for the budget (and usually why it should stay roughly the same as it has always been).

To some extent these activities are designed to provide a sense of control, but they generally fall short. Shapiro points out, in The Control Revolution, that "Learning to distinguish the illusion of control from the real thing is another crucial part of achieving a balanced (organization)."[34] In Fall 1998, Florida State College, to begin to shed itself of this out-of-date ineffective practice, moved from classic master planning to an initiatives-based model. As Jack Welch put it, "winning is about reaching the destination you choose."[35] This model is intended to assist the College in reaching its chosen destination.

With nearly ten years of history it has become very clear that this highly autonomous, empowerment-rich model encourages and funds pioneering. This model has provided for the development of many programs, systems, and processes at all levels in the organization. In this model, potential value is assessed relative to the College's global direction rather than on the basis of predetermined objectives or outcomes. Most importantly, though, funding is provided outside of the normal budget process. In this model, anyone's good idea has a chance to succeed.

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[34] Shapiro, A. (1999). The Control Revolution. (p.181). New York: Century Foundation.

[35] Welch, J. and Welch, S. (2006). Winning: The Answers (p. 261). New York: Harper Collins

Strong support for innovation and creativity is a necessary element in the development of technology initiatives. One good idea can reshape the future of an organization. Empowered people think.

Technology Rich Environment: The Enablement Model

Implementing an effective strategy for innovative solutions requires a compatible strategy for the deployment of supporting technologies. In a network model, ubiquitous access to technology creates value. At Florida State College ubiquitous access is achieved through a technology enablement model.

Based on the premise that people who have access to tools figure out really creative and valuable ways to use them, the technology enablement model puts the best possible technology that an organization can afford in the hands of its workforce. It then provides training, support, and connectivity and lets value be created by its use.

An Agile Architecture: Multiple Platforms

William Graves, in Katz and Associates' Dancing with the Devil, stated a philosophy of information technology and its mission in a college: "Information technology is a strategic asset that should be utilized by the entire faculty, staff, and student body to increase the productivity of mission-critical academic programs and the administrative services that support those programs."[36]

Consistent with this statement of mission and purpose and through implementation of the technology enablement model the technology functions at Florida State College are operated under a broad mandate to create a powerful, ubiquitous, and highly reliable technology environment. This mandate is framed by values that are expressed through statements of mission, vision, and charge.

The convergence of the forces of a competitive market, rapidly changing technology, and the economics of higher education forms an environment in which this mandate can only be met through a flexible, multiple platform architecture. The College's technology architecture is based

[36] Katz & Associates. (1999) Dancing with the Devil. (p.95). San Fransisco: Jossey-Bass

on the deployment of three primary enterprise platforms. Each platform has a core function for which it is primary.

Between these three platforms are leading-edge shared resources, storage, and other subsystems that are flexibly assigned to each platform and based on demand. Extending from this core configuration is an extensive system of robust networks. These networks provide connectivity for every space on every campus and center as well as provide 100% wireless coverage for student and staff computing.

This robust, yet flexible architecture creates a platform for successful technology initiatives. It also serves as a model for the development of organizational agility in other areas of the College.

Strategy Simplified: Ten Points that will Drive Success

The development of an effective technology strategy is what VanGundy would classify as an ill-structured problem. It is ill-structured in that there is little available information to assist in closing the gap between what is and what should be.[37] due to the absence of a dependable model for strategy development in this new and challenging (ill-structured) area, and the general complexity of strategy development, a new model called spatial planning was created. Spatial planning is based on the development of focus areas called planes and initiatives referred to as vectors, these are formed to pursue one or more global directions or points of emphasis.

Although the detailed technology strategy being employed at Florida State College, and the plane and vector planning model upon which it is based is comprehensive and technologically complex, its results are presented in terms of its ten basic points of emphasis. They are:

[37] VanGundy, A. (1988). Techniques of Structured Problem Solving, 2nd Edition. (p.4). New York: Van Nostrand Reinhold.

1. Technology will serve as a value creation engine and source of differentiation.
2. Computing resources will be based on multi-level heterogeneous, and flexible technology environment.
3. An individualized portal will serve as the primary interface for students, faculty, and staff.
4. The foundation of systems and services development will be business process management (BPM).
5. Software will be developed and implemented within a SOA-based architecture.
6. Quality-of-service (QOS) will be the key measure of all systems.
7. MIS & Decision Support systems will be designed to reinforce a data-driven culture.
8. The provision of digital academic and administrative resources will be viewed as a primary service.
9. The creation of on-line communities will be used as a vehicle for the expansion of the student-faculty computing experience.
10. Technology-based instructional design, delivery, and communications will be the primary purpose of the infrastructure.
11. The focus of technology initiatives will be to enable instructional programs that prepare students for success in a technology-driven world.

The various strategies employed and major technology initiatives developed are based on these ten points of emphasis and will continue to provide Florida State College and its constituents with a first-class technology environment, tools for individual success, and maintain the College's position as a technology leader.

Summary of Strategy

The dynamic marketplace and ever-changing technological world in which we live results in significant challenges and a critical need for colleges to develop effective strategies for survival in their environments. Jim Collins, in Good to Great, described the technology challenge in a unique fashion: "People don't know what they don't know and they're always afraid some new technology is going to sneak up from behind and knock them on the head. [People] don't understand technology and many fear it."[38]

Wozniak states the issue this way: "...the vast majority of people, practically everybody you will ever meet. - just think in black-and-white terms. So a new idea - a revolutionary new product or product feature - won't be understandable to most people because they see things so black-and-white."[39]

With these challenges, though, are tremendous opportunities. Jack Welch stated "...strategy is just a winning value proposition..."[40] Florida State College has developed, and is implementing, a comprehensive technology strategy that includes just such a winning value proposition.

[38] Collins, J. (2001). Good to Great. (p.155). New York: Harper Business Press.

[39] Wozniak, S. and Smith, G. (2006) iWoz (p. 289). New York: W. W. Norton

[40] Welch, J. and Welch, S. (2006). Winning: The Answers (p. 106). New York: Harper Collins.

CHAPTER 3 | TECHNOLOGY VISION

"Leadership is the capacity to translate vision into reality." -Warren G. Bennis

The comprehensive vision for technology at Florida State College is based on primary philosophical tenets that emphasize enablement, agility, optimization, stewardship, professionalism, and above all, excellence. These principles are communicated through vision, mission, and charge statements combined with general technology goals.

Vision Statement

Florida State College will be viewed as a technological leader providing superior access to the resources of scholarship and career preparation through the application of advanced technologies. The 2007-2012 vision will be focused on three major issues: an environment for digital natives, provision of first-class academic computing, and flexible and agile delivery models.

Mission Statement

The Mission of the Technology Team is to provide the highest quality technological resources possible to the College to support achievement of the College's mission, vision, goals, and objectives.

CIO's Charge Statement

The Technology Team at Florida State College will pursue every technological advancement of promise for the improvement of the educational process, engage in continuous improvement of quality of services provided to clients, and conduct business in a professional and instructionally-focused manner.

Florida State College's comprehensive technology vision will be realized through the achievement of three general goals:

Technology Goal 1: Achieve and Maintain an Educational Focus

This goal is achieved by deliberately directing all resources toward students, their transactions and interactions with the College, and the processes that most directly affect them. In Driving

Customer Equity, Rust, et al, remark, "understanding the customer is more than listening to the customer…[it] requires an understanding of the factors that motivate [them]."[41] This is instructive as strategies and methods for achieving focus are developed.

This focus includes emphasizing the lab and classroom computing environments but also includes faculty computing, instructional software, courseware, and individualized portal development. Additionally, this goal requires effective resource stewardship that ensures cost effective and efficient solutions that optimize the resources available to the College.

Continuing a reduced emphasis on administrative systems is necessary to provide the resources, management, and technical attention needed to meet the demands of instructional systems, new methodologies, and the arrival of digitally advanced students. Ultimately, exceptional execution of high quality plans will determine the degree of success in achievement of this goal.

41 Rust, R. Zeithaml, v. & Lemon, K. (2000). Driving Customer Equity. (pp.53-54). New York: Free Press.

Figure 3.1 | Generic Industry Value Chain

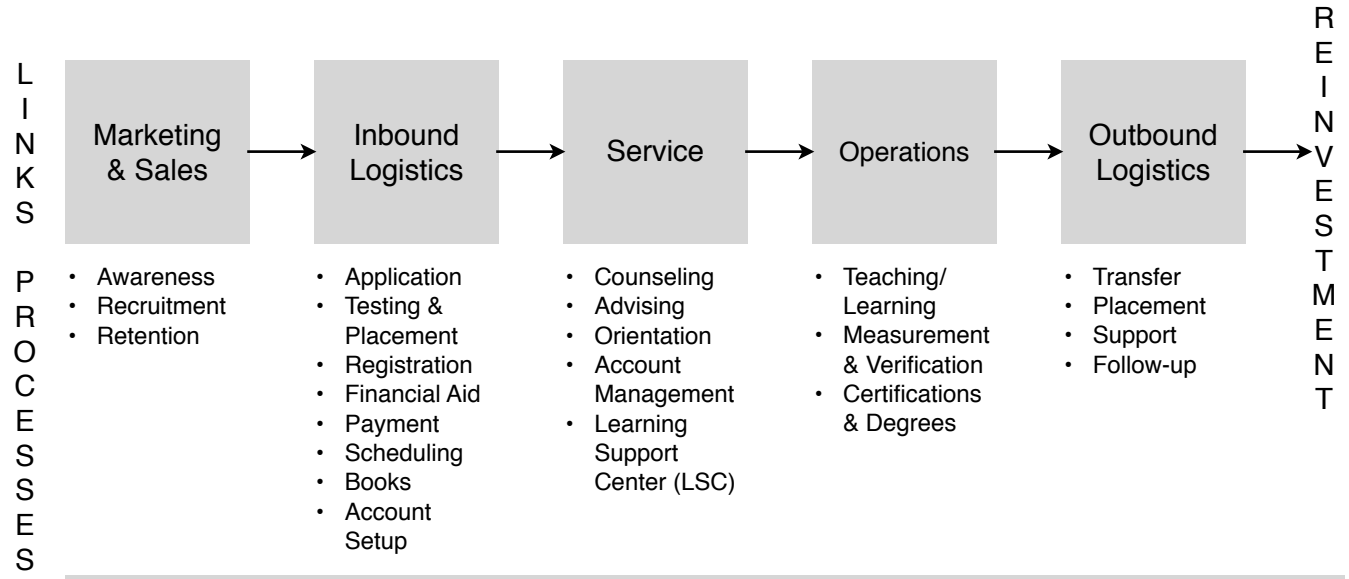


Figure 3.2 | Higher ed value chain **Rennie**

Technology Goal 2: Technological Leadership and Value Creation

Technological leadership is achieved through the application of technology as a value creation engine. This includes the enrichment of business processes in the higher education value chain, the enablement of new business through advanced technology capabilities, and direct

support of organizational advancement through early adoption of significant value-creating technologies.

The following represents a fairly typical industry value chain. Links are essentially major systems or areas in which processes are organized.

Higher education, though, can also be expressed in the same general model as follows:

Applying this lens to the business of higher education we see that the systems in each of the value chain processes present an opportunity for value creation and strengthening of brand.

Technology Goal 3: Technological and Organizational Agility

The extremely rapid pace of technological change and the similarly fast churning development of technology dependent educational delivery systems and educational methodologies results in an environment in which, to be successful, technology organizations must become adaptable agile enterprises. Agility is best achieved through the establishment of an overall architecture that provides a manageable level of platform/solution independence, rich platform selection, and a workforce based on intellectual horsepower rather than specific skills.

DIMENSION	PALEO	MESO	NEO
IT Role	Support transactions and keep records	Support processes and integrate functions/ organizational alignment	Create value, new products, new business
Enablement of Organization	Volume, speed of work	Integration	Differentiation/Competitive advantage
Managements Focus	Functional capability	Cost containment	Value creation
IT Perspective/Profile	Monastic - unknowable	Fringe player - misunderstood outside/ inside	Chameleon (Insidious) key player
Processing/Capability	One size fits all	Scalable	Utility (on demand)
Storage	Specific	Share/Partitioned	Virtualized
Hiring Profile (Developers)	Specific skill (project type/ toolset based)	Skill breadth & depth (Tech Environment Based)	Raw intellectual horsepower
Development Environment	Factory	Boutique	Independent professionals
Org Expectations of IT Staff Employment	Hire & keep	As long as we want them	Free agency
Access	People go to where access is (Constrained)	Access goes to where people are (Ubiquitous)	Access everywhere (Pervasive)
Access Mode	Limited wire	Plentiful wire	Wireless
Small Apps	Custom	Off-shelf	Commodity
Big Apps Source	Custom	Homogeneous packages	Best of breed mix
App Integration State	Poorly Integrated (if at all)	Integrated (forced fit)	Seamless integration (SOA)

Figure 3.3 | Technology Evolution: Stages of Maturity

This architecture creates an environment wherein the selection of a particular solution need not be constrained by the nature of available resources. This approach describes a mature (Neo-level) technology enterprise. Tapscott described the essence of this approach in The Digital Economy, "...what counts is that software and information are portable, not so much who controls the evolution of products."[42]

[42] Tapscott, D. (1996). The Digital Economy: Promise and Peril In the Age of Networked Intelligence. (p.109). New York: McGraw-Hill

The College has aggressively pursued achievement of a 'Neo' maturity level. The model of technology evolution in figure 2.3 demonstrates three primary maturation levels. It is critically important to recognize that currency and agility can only be maintained through aggressive research and pursuit of emerging technologies, new processes, and methodologies. Implementation of new technologies of any kind must be achieved through an integrated systems approach that results in high-quality, fully integrated and well engineered solutions.

Summary of Vision

The vision, mission, CIO charge, and technology goals presented are designed to provide focus. They are also intended to maintain and enhance the overwhelming positive technology culture developed over the past nine years. A culture that embodies the principles of professionalism and educational focus, emphasizes intelligence and creativity, and leverages team work to the benefit of the College.

Hardware and software are critical elements of any technology endeavor. Ultimately though, the realization of a technology vision is most dependent upon the quality and performance of the carbon-ware (human resources) employed in its pursuit.

CHAPTER 4 | TECHNOLOGY ARCHITECTURE

"As long as you're going to be thinking anyway, think big." -Donald Trump

Enablement Model

The College's technology architecture is built on a foundation formed by six distinct models. The first of these models is the technology enablement model.

Based on the belief that value is created through technology use, the enablement model provides for ubiquitous access to the best available computing resources and the creative development of applications that arrives from it. Represented in figure 4.1 the enablement model emphasizes six principles:

- Provide the technology, applications evolve from access and use.
- Faculty need to be served first, then students.
- Reasonable livable standards are essential to provide a balance of flexibility and adequate support.
- User self-sufficiency is critical as support demands will out-strip resources if this is not achieved.
- Solid support and training must be readily available and relevant to the environment.
- Best available tools should always be viewed as the minimum standard.

Figure 4.1 depicts the relationship of the major components of the enablement model employed at Florida State College. A solid foundation of clearly understood operational requirements and client needs combined with an accurate assessment of external factors is essential to the proper functioning of this model. The strategic and tactical information technology initiatives level is the glue which binds specific solutions to the requirements of the organization. It is at this level that this plan serves as the organizing construct as well as the reference for Collegewide initiatives and projects related to technology.

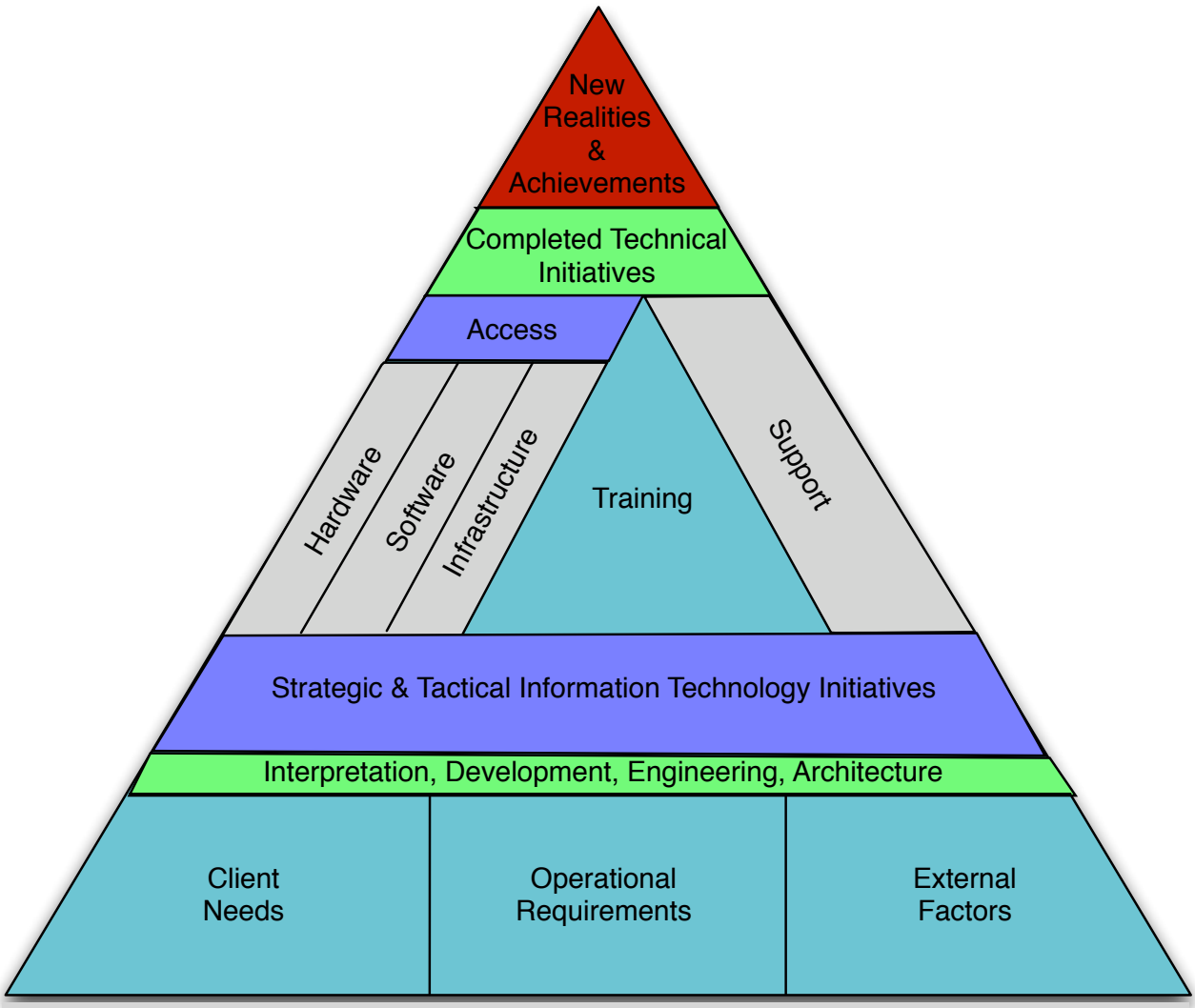


Figure 4.1 | Technology Enablement Model

Information Levels and Functions Model

The second core element of the technology architecture is the information levels and applications model depicted in figure 4.2. Note that the back-end, or transaction engine, serves as the base upon which all information levels and attendant functions and applications are built. Applications are designed and implemented with specific characteristics based on the level and function of information being presented. Aggregate decision-making data, for example, is presented in highly graphical and comparative forms while the drill-down detail beneath the aggregate information is presented in traditional transactional style

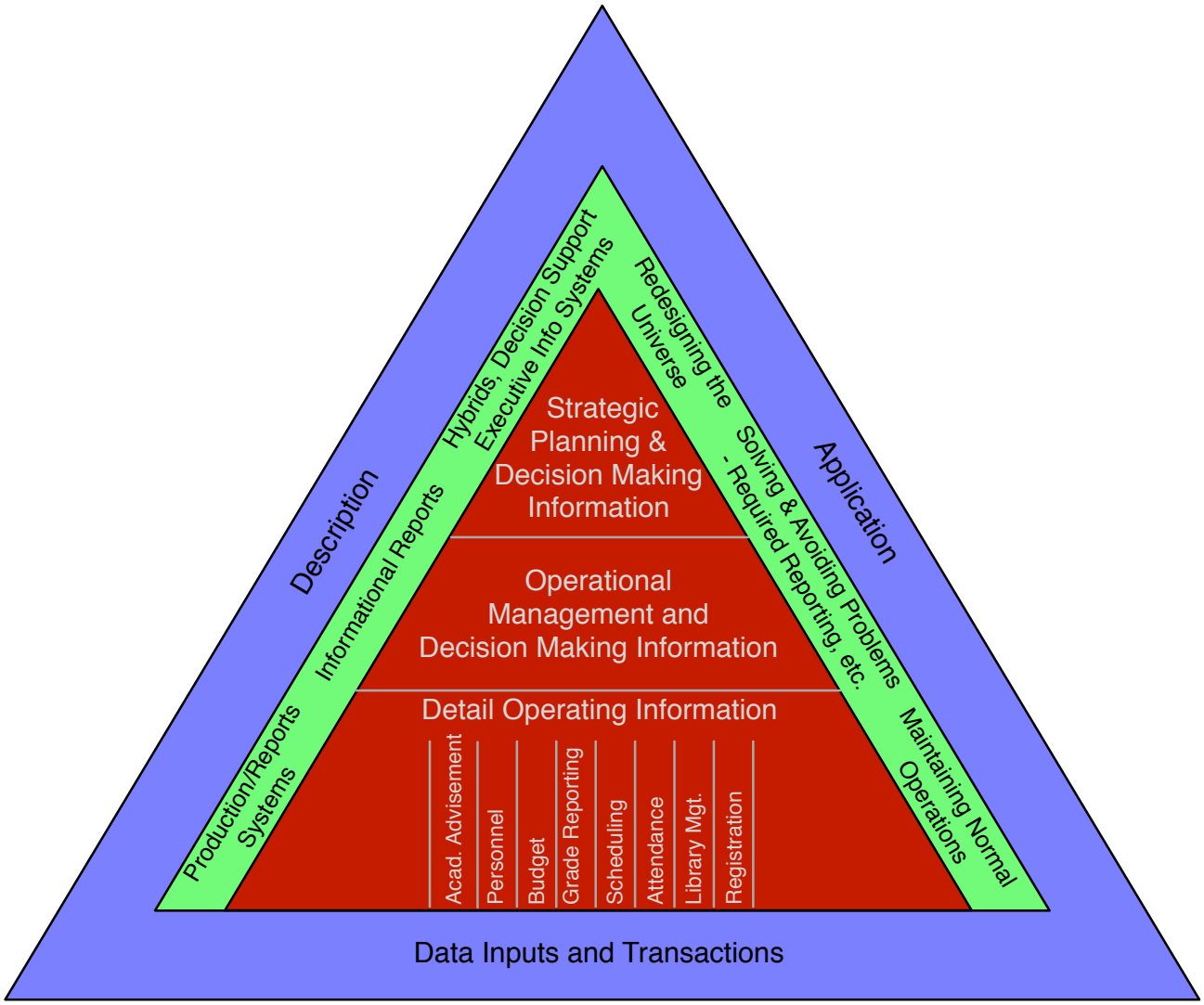
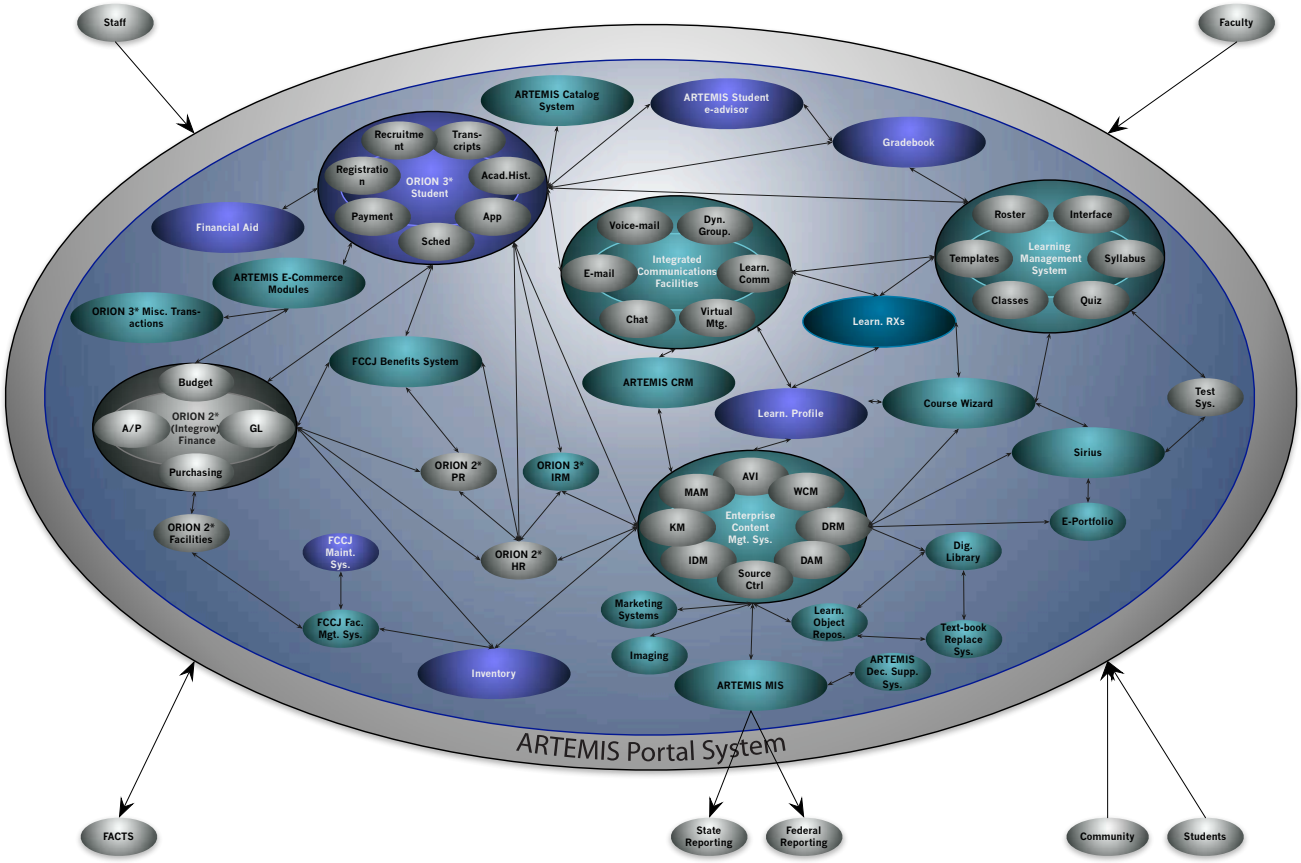


Figure 4.2 | Information Levels and Functions

Comprehensive Technology Vision

The comprehensive technology vision visual integration map is presented in figure 4.3. As the third of the six foundation models, its purpose is to provide a visual representation of the integration points in the global application architecture. Further, this model demonstrates the portal as single point of access philosophy employed in the architecture. This model also employs the portal as an insulating layer between the continuous change occurring at, the application level and the users accessing those applications.



RJR/CMW
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Figure 4.3 | Comprehensive Technology Vision: Integration Map

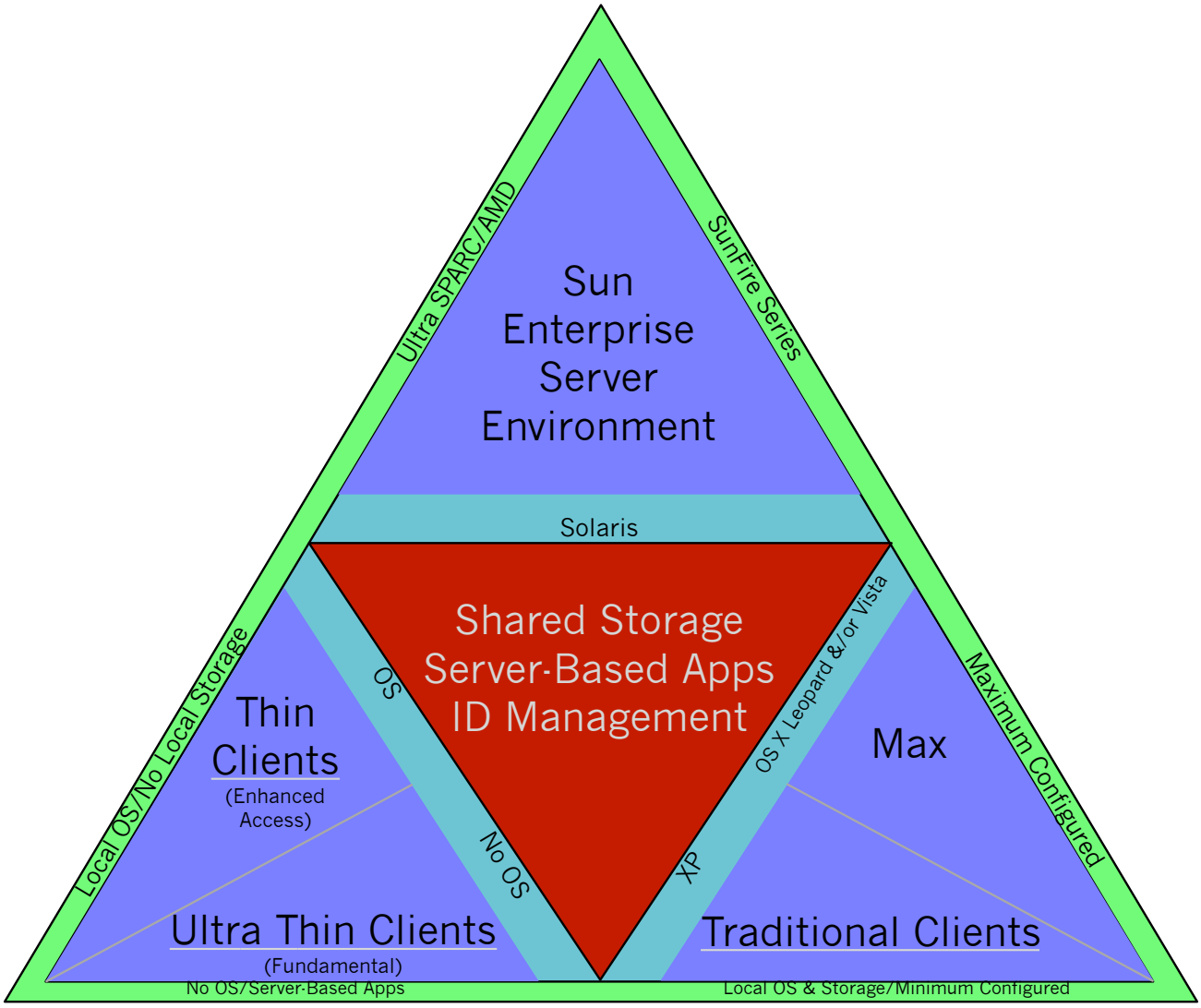

Figure 4.4 | Next generation technology multi-level architecture

Next Generation Technology

The fourth foundational element of the architecture is the multi-tiered device (platform) model depicted in figure 4.4. Note that it is a three platform architecture with shared resources/ peripheral systems that are reconfigurable based on dynamic load assessment and profiles.

The platforms in this technology architecture are not necessarily application or function specific. The lower corner tiers represent workstation levels of different configurations based on functional and processor requirements. The thin and ultra-thin clients are to be deployed in environments where access to server-based and Internet resources are sufficient to meet

requirements. The 'fatter,' and more traditional workstations of the lower right corner are intended to provide the richest available tool sets for content development as well as access to local applications that are workstation-specific. The upper corner tier(s) represents the Oracle/Sun Enterprise server environment upon which the College's ERP and learning management (LMS) systems run.

SOA Architecture

Figure 4.5 presents the College's Service Oriented Architecture, the fifth of the six models. This model represents the implementation of applications, data integration, and business process management through standards-based services or SOA.

The College was very early to adopt a services-based framework based on XML and SOAP, subscription based resources and utilities, and the implementation of a unifying ESB or enterprise services bus. This position made early adaption of comprehensive services oriented architecture (SOA) a very natural position for the College. Primary to this architecture was the adaption of the Software AG crossvision product suite.

Next Generation Technology Deployment Model

The sixth, and final, model, (depicted in figure 4.6) represents the configuration and deployment of the next generation computing environment. Each tier represents a higher level of processing capacity and functional capability. The labels on the left of the tiers represent the target environment for the next generation workstation implementation. The labels on the right identify the functional capabilities that are added to each tier. This is the deployment model relating to figure 4.4, the next generation technology multi-level architecture.

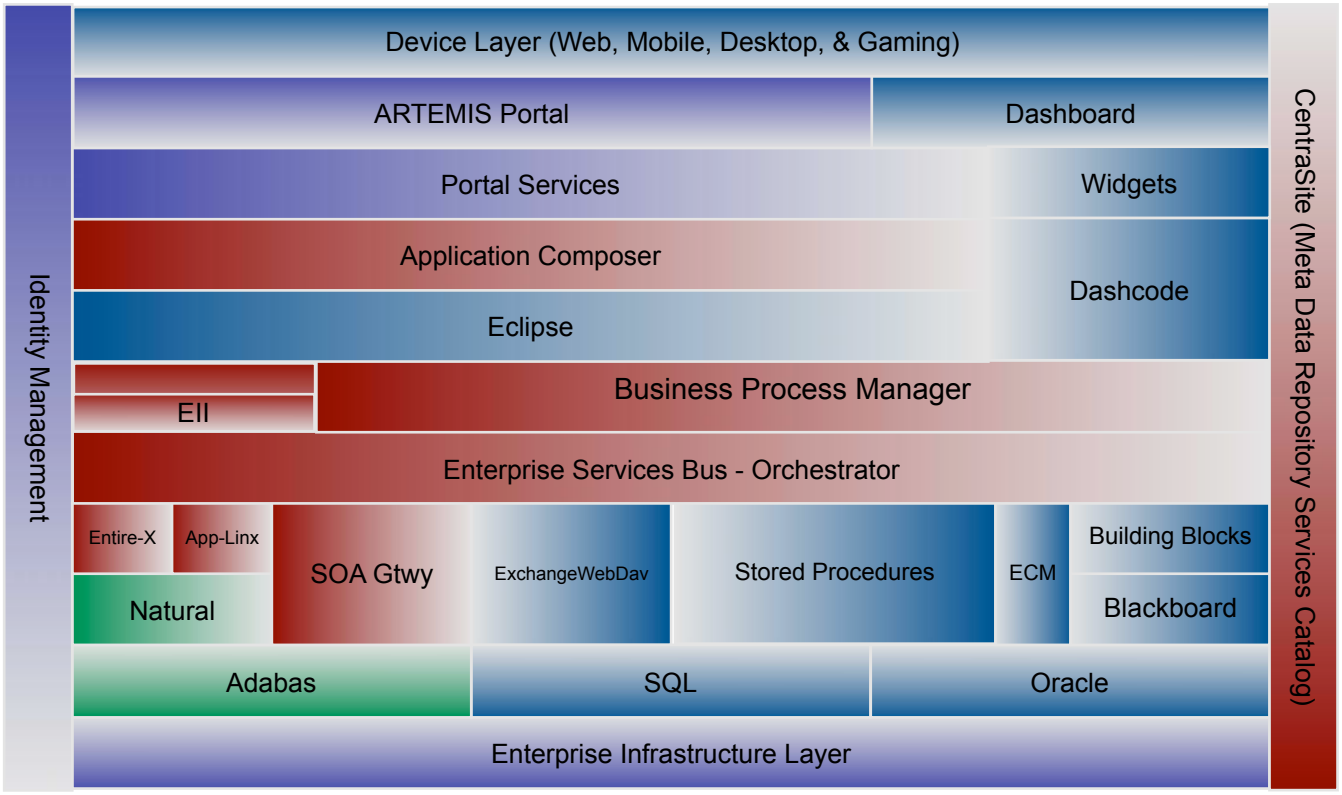

Figure 4.5 | Integrated SOA Architecture

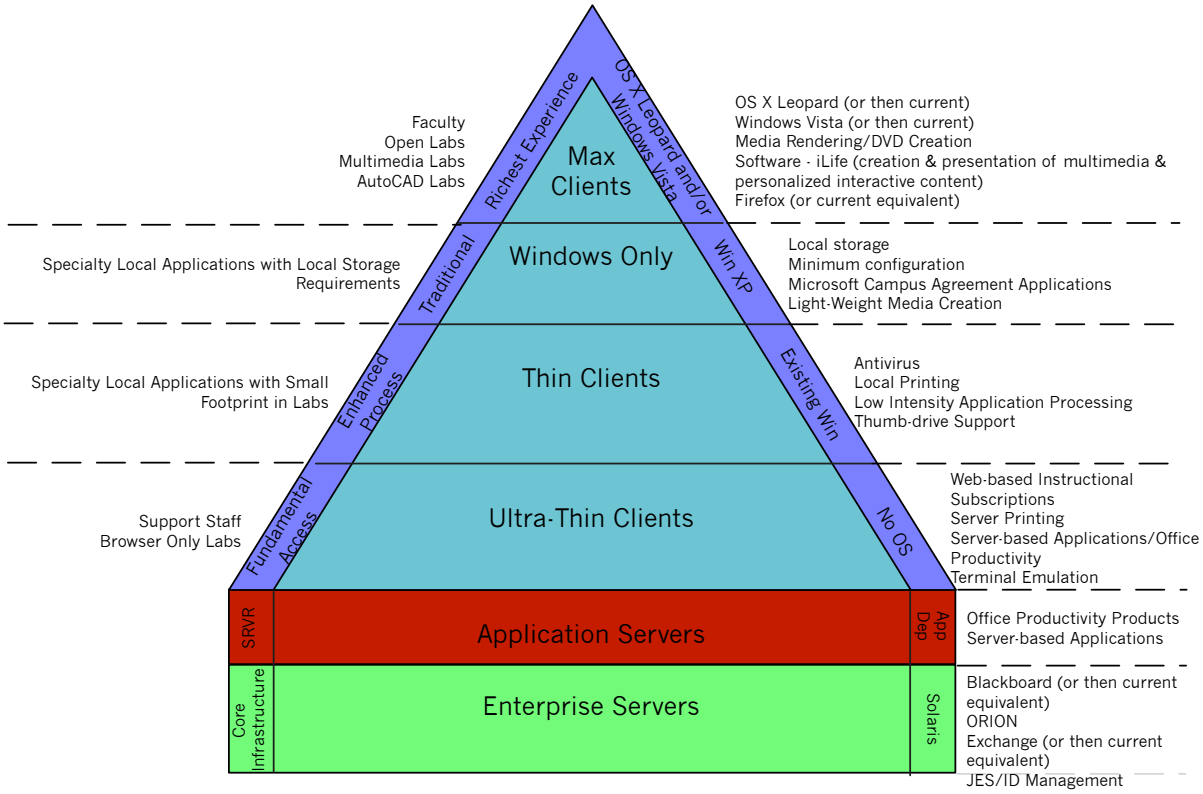

Figure 4.6 | Next generation technology deployment model [apps/functionality]

CHAPTER 5 | MANAGEMENT AND STRUCTURE

"The fact is, being a leader changes everything." -Jack Welch, Former CEO-GE

The organization structure employed in the Technology Department of the College is what Mintzberg would refer to as a professionalized bureaucracy in divisionalized form. In other words, it is a fairly flat professionally-focused structure divided by major functions.

The chart of the organization structure (figure 5.1) demonstrates reporting relationships and position titles within the technology organization proper (centralized or core technology staff only, not campus and center-based staff). Deliberate efforts to reduce and refine the size and shape of the structure through transfers, reductions, reassignments, and reorganization have resulted in a lean and very talent-rich organization that is considerably smaller than would be typical for the scope and complexity of technology systems, operations, and initiatives at the College.

In addition to the descriptions of the organization, and roles and responsibilities found in this chapter, Appendix A contains the technology related position descriptions of the College. These descriptions have been developed to incorporate the national information technology skill standards established through the Northwest Center for Emerging Technologies (NWCET) in Bellevue, Washington.

CIO's Office

The Vice President, Technology & CIO serves, as the title implies, as the College's Chief Information Officer. As such, the incumbent is responsible for executive leadership of all technology at the College.

Primary areas of responsibility are the creation and realization of a technology vision, the development of strategies for achieving the technology vision and completing Collegewide initiatives, and the research and application of new and emerging technologies.

Key activities include design of the technology architecture, advocacy for technology needs, approving standards, and the allocation of resources. Additionally, the VP/CIO is responsible for

establishing a future focus, developing external relationships and partnerships, advising College leaders and the Board on technology and other issues.

As a cabinet-level leader, the VP/CIO is further charged with the management of initiatives, expected to serve as an agent of change, and to provide general leadership as appropriate. The VP/CIO is minimally involved in operational supervision with such duties being the responsibility of the Associate Vice Presidents and Directors.

Educational Technology and Research

The Associate Vice President of Educational Technology provides leadership and stewardship to the functional groups contained within the division.

The Educational Technology Division is composed of three distinct teams: Learning Innovations, Emerging Technologies, and Data Accuracy and State Reporting.

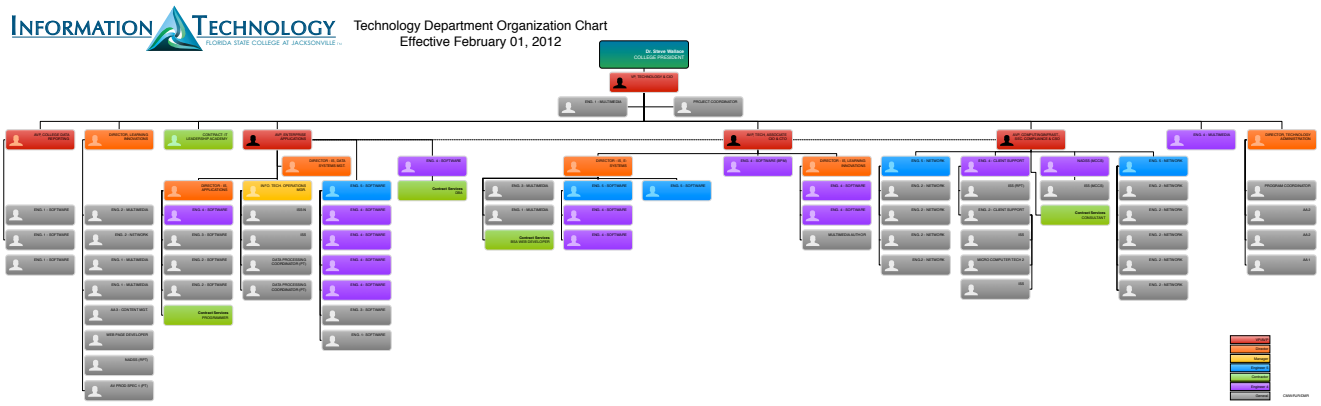

Figure 5.5: Technology Department Organization Chart

The Learning Innovations team is primarily responsible for the provision and support of the College's learning management systems (LMS) and related products. Additionally, Learning Innovations operates Television Production and related operations of the College as well as providing instructional design and survey research services.

The Emerging Technologies team is responsible for the creation and life cycle management of systems and digital content. This includes enterprise content management, animation, learning

object creation, digital media authoring, gaming-engine based development, and research into new technologies.

The Data Accuracy and State Reporting team ensures the completeness and accuracy of the College's official numbers as well as ensuring timely submissions of all reporting requirements.

The AVP of Educational Technology also acts as Chief Financial Officer (CFO) of the Technology department. As the CFO, the AVP is charged with developing and managing the Technology Department's financial and budget operations, planning, forecasting, and reporting.

The functional areas contained within the Educational Technology Division include:

Learning Innovations

The mission of Learning Innovations is to ensure the provision of high quality learning management systems, the creation of multimedia materials, and to assist faculty in the development of skills related to courseware design and delivery. Through its Courseware Support function, Learning Innovations strives to ensure the availability and quality of the on-line learning environment. Roles and responsibilities of Learning Innovations include:

- Provision and support of Learning Management and related systems including systems administration.
- Researching academic technology and software for adaption and implementation at the College.
- Management of the College's TV and media production operations and facilities.
- Providing consulting for technology-enhanced instruction Collegewide.
- Fostering and supporting innovation in all areas related to academic technology.
- Reviewing project requirements and recommending solutions..
- Brokering resources to assist in project completion.
- Assisting with traditional on-line and hybrid course/instructional design and devleopment.
- Supporting broadcast operations of Open Campus.
- Managing Production/Preparation of Ancillary Materials and Learning Objects.
- Conducting Survey Research on all matter of subjects.
- Providing One-on-one assistance with on-line courses and Learning Systems for faculty.

- Developing training programs related to LMS and Instructional Design.
- Improving the Delivery of Content through On-line Platforms.
- Developing communities and enhancing communications on academic and technology matters.

Emerging Technologies

The Emerging Technologies' mission is to provide high-end audio and video content for use in on-line instruction, and other technology-enhanced multimedia instructional delivery. Explicit to the roles and responsibilities of the Emerging Technologies team are:

- Development of high-end digital content (learning objects and applications).
- Implementation and operation of content management systems and processes including Enterprise Content Management (ECM).
- Creation of gaming-engine-based content and courseware.
- Development of high end 3-D (animation planning, modeling, texturing, rendering, and/or integrating 3-D stills and animations into projects).
- Training of staff and faculty as necessary to assist them in achieving their multimedia systems integration goals.

Data Accuracy and State Reporting

The mission of the Data Accuracy and State Reporting team is to ensure accurate, timely, and dependable information is available for organizational planning and decision making and to ensure accurate and timely adherence to all reporting requirements, particularly state reporting.

Specific roles and responsibilities include:

- Interpretation of and compliance with reporting requirements.
- Quality assurance of data reporting accuracy and timeliness.
- Facilitation of systematic delivery of MIS and Decision-support data.
- Development, communication, and training relative to data accuracy and reporting processes and systems.
- Serving as the single authoritative source for all FTE and state reporting data.

Management Information Systems/Decision Support (MIS/DSS)

The Associate Vice President of the MIS and Decision Support (MIS/DSS) Division provides management and supervision of the functional areas as defined within the information technology organization structure. MIS/DSS includes three functional areas: Application Systems; E-Systems; and Data Management. Additionally, the AVP, MIS/DSS serves as the College's Chief Technology Officer (CTO) and, as such, is responsible for the development of the College's computing and applications architecture and standards. The CTO is also responsible for research and development of new technologies and implementation strategies for the adoption and roll-out of new technologies on a Collegewide basis.

Enterprise Applications Systems

The enterprise applications group is responsible for providing programming services, maintenance, and support for the Collegewide enterprise system (ERP), known as ORION 2. ORION 2 provides automated utility across various functional areas, including:

- Credit & Collections
- Payroll
- Human Resources
- Financial Aid
- Accounts Payable
- Purchasing
- Finance
- Budget
- Student
- Facilities
- Grade Reporting
- Scheduling
- Academic History
- Inventory
- IRM (Instructor Resources)
- Registration

ORION 2 is written in Natural, a 4GL programming language, and runs on Software AG's Adabas database. A staff of programmers and analysts is constantly updating and improving ORION 2. The next generation of this system, ORION 3, will be a replacement for the current system. It will be created using BPM technology and Software AG's crossvision suite of products. The result will be a digital business architecture-based system that is web-enabled and capable of supporting advanced business logic and processes not currently supported in ORION 2.

The Director of Enterprise Applications has primary responsibility for supporting the ORION systems, ensuring availability and functionality as defined in appropriate service level agreements (SLA) and consistent with priorities established in the IT Governance process.

The following are typical roles and responsibilities of the applications group:

- Upgrade, enhance, maintain, and support the ORION systems.
- Develop web services for SOA-based deployment.
- Manage applications related budgets.
- Supervise transaction tracking and logging.
- Prepare computer related reports and self-service modules.
- Supervise creation of ad-hoc reports.
- Support College user groups.
- Research and schedule enterprise team training.
- Supervise and ensure data integrity and security.
- Maintain enterprise systems security.
- Facilitate the IT governance process.

E-Systems Technology

E-Systems Technology is responsible for advanced web and portal development and enterprise systems integration in the support of College goals and initiatives. Java, Microsoft .NET, and crossvision products are the languages and methodologies used in the development of web and systems integration components.

Development focuses on SOA enablement with a web interface serving as the primary front-end. This framework supports the development and integration of secure web services (using encryption and/or authentication) for remote application execution and data retrieval. This methodology allows for the deployment of rich applications to a variety of interfaces and devices with consumers running web browsers, Java applets, Flash, etc. Application classes have been developed to integrate with the enterprise system (ORION) using Software AGs crossvision suite. The SOA architecture allows seamless integration into other system environments and applications. This includes integration with products such as OSX and VISTA, and into

courseware/e-learning systems such as BlackBoard and iTunes University. Additionally, the web services model allows integration with Java-based components, Enterprise Content Management Systems (Stellent) and integration with the College's Management Information System (MIS)/ Decision Support System (DSS) and a variety of dashboard systems.

The ARTEMIS web portal provides single point of entry for all transactions including schedule search, transcripts, registration, payment (including check and credit card), financial aid, grade reporting- input and viewing, instructor and personal schedules, grading performance and distribution analysis, class rosters, paid vs. unpaid enrollment, program of study evaluation, degree audit profile maintenance and personal information update, open class search, on-line College catalog, mileage reimbursement, IRS 1098T reporting, MIS reports, etc. By basing this development on SOA, these applications are accessible through many different types of devices (including web browsers, mobile phones, PDAs, and IP telephones).

E-Systems Technology includes three distinct groups: E-Systems Development and Integration, Multimedia Design, and Data Management.

E-Systems Development and Integration Group

The E-Systems Development and Integration group is responsible for the design, coding, testing, and implementation of all Collegewide e-systems and the provision of high-level programming support for all areas of the Technology organization of the College. This team provides advanced language scripting in support of various projects as well as systems integration, portal development and maintenance, and dashboard systems.

Specific responsibilities of the E-Systems Development and Enterprise Integration group include:

- College student and employee portal development and support (ARTEMIS).
- Web application development and support.
- Management information system, decision support, and dashboard systems.
- Systems integration for all systems within the comprehensive technology vision.

Multimedia Design Group

The Multimedia Design group is responsible for the design, development and implementation of multimedia content in support of College technology initiatives and projects. This group provides advanced authoring of multimedia content for E-Systems projects.

Responsibilities include, but are not limited to:

- Development and maintenance of multimedia systems and content.
- Development of web-based content.
- Design and creation of rich client interfaces.
- Evaluation of multimedia development tools.
- Support to E-Systems Integration team for the development of software products.

Data Management Team

The Data Management Team is responsible for the design, specification, development, and integrity of all systems related databases. The team manages the database environment for all technology systems and ensures proper integration among all databases.

Specific responsibilities include, but are not limited to:

- Database Design.
- Database Administration.
- Database Backup and Recovery.
- Data Integrity.
- Data Management Standards.
- System Tuning.
- Reporting of Utilization and Performance.

Technology Operations

The AVP, Technology Operations provides the day-to-day management of the College's Enterprise Computing Environment, including the submission and monitoring of chron and batch style jobs from all areas of the College and appropriate backup and recovery of enterprise data.

The functional role of the enterprise support section of the operations team is to provide enterprise systems access Collegewide, process batch jobs, run backups and keep the off-site library current for disaster recovery. Technology Operations also documents procedures and changes, assists programmers, tech support, database administrators, users and helpdesk staff, with operations issues as needed. Additionally, Technology Operations is responsible for all telecommunications and network services in the College.

Telecommunications Support is primarily administrative in nature and includes managing the billing for telephony services, including voice, data, and wireless technologies. Additionally, Telecommunications Support manages the VoIP network.

The Network Design and Support Team at the Network Operations Center is responsible for installing, configuring, and maintaining centralized applications and data servers, domain servers,

and the communications systems. This team provides research and evaluation of new technology for possible integration into the existing technology infrastructure. This team designs, implements and maintains essential Collegewide computing systems and services for staff, faculty and students including direct management of the campus-based computing, server, and network environment..

Responsibilities of the Technology Operations Team include:

- The research and evaluation of new technology for possible value and integration into our existing data/voice/video networking infrastructure.
- Operation of the Data Center and Enterprise Computing Environment.
- The design, implementation, and maintenance of essential Collegewide computing systems and services for staff, faculty, and students.
- Provide physical computing resources (enterprise and application servers, operating systems storage, and peripherals.
- The provision of documentation and training related to areas of responsbility.
- Ensure performance to service level agreements.
- Manage computing inventory, software licensing, and computing contracts.
- Responsible for all security, audit compliance, business continuity and disaster recovery.
- Management of outsourced operational services and related contracts.
- The provision of top level (tier 3) technical assistance for data/voice/video networking issues, to call center (tier 1) and campus (tier 2) technical support.
- Management of infrastructure operations, maintenance, service, and related contracts.
- Coordination of campus-based computing services and support.
- Implementation of technology migration, transitions, and refreshment.

Management and Structure Summary

The management and structure of the Technology Department is designed to ensure the necessary human capital and role definitions are in place to provide effective and efficient operation of the College's technology environment as well as enabling innovation and value creation through technology to improve the College's performance, service, and value to its community. The technology department views human resources differently from most

organizations. In the pursuit of the so-prized intellectual horsepower necessary to early adaption and creative systems development, technology leaders are constantly scouting new talent; meeting what Taylor and LaBarre termed the 'acid test' of being serious about discovering and attracting the best talent, "...searching for talent independent of current openings or immediate plans...ahead of need."[43] When we find really smart people, we figure out how to hire them. Additionally, the management and structure is based on eight core principles designed to ensure a leadership position in technology and retention of high-quality technology professionals.

These principles include:

- Excellence in leadership: inspire, innovate, create value.
- Intellectual horsepower: intelligence as the primary attribute of staff.
- Average simply is not good enough: a vacancy is more valuable than an average employee.
- High expectations for all: high expectations represent the highest degree of respect for professionals.
- Initiative and creativity are valued: risk tolerant, go big or go home environment.
- Leaders create the environment where talent flourishes and success is realized: hire smart, creative people, charge them with big responsibilities, support as needed - let them amaze us all.
- Right size: smaller, flatter, and better, not bigger.
- Agility: flexibility, problem solving, judgement, creativity, and skill acquisition are critical to success.

This structure is designed to ensure quality leadership, effective and efficient management and supervision, and responsible stewardship of the College's technology staff and resources. It is, therefore, reflective of the priorities, missions, and challenges present at any point in time. Reorganization, restructuring, and re-assignment are part of the nature of an agile organization in a dynamic environment. This structure is altered as necessary to ensure the organization is appropriately staffed and responsive to the then current needs of the department and the College.

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43 Taylor, W. and LaBarre, P. (2006). Maverick at Work (p. 211). New York: Harper Collins.

CHAPTER 6 | STRATEGIC TECHNOLOGY INITIATIVES

"...we are actively looking for new cliffs to jump off..." -Albrecht of HBO

The College's Strategic Technology Plan will be operationalized through the completion of five strategic technology initiatives. Each of these initiatives has been presented to the Board of Trustees on multiple occasions with regular status reports made to the Board, College President, and Chief Academic Officer.

The five strategic technology initiatives are:

- Next Generation Computing Environment
- Global Learning Technologies
- ARTEMIS II
- SIRIUS
- ORION 3

The first major initiative is the creation of the College's Next Generation Computing Environment. This initiative has been discussed in various forums over the past several years, primarily through the Collegewide Technology Committee's early futures work completed in Academic year 2004-2005 and has been enriched and advanced through significant new emerging technology announcements starting in Academic Year 2005-2006 with availability on the near horizon.

This comprehensive initiative includes the following:

- Maintenance and upgrade of the Oracle/Sun Enterprise Server Environment.
- Mid-range server consolidation.
- Storage consolidation, stratification, and virtualization.
- Federated Identity Management.
- Profile-Based Computing.
- Thin Clients/Server-based Apps.
- Richer Fat-Client Experience.

Maintenance and upgrade of the Oracle/Sun Enterprise environment includes demand-based acquisition of additional processors, servers, and storage compatible with the existing installed environment. All significant work related to this component has been completed and there are no outstanding acquisition requirements at this time. However, as the need arises emerging requirements will be dealt with in the operational planning and budget processes and will be consistent with the currently installed architecture-hardware, software, and services.

Mid-range server consolidation and upgrades will require acquisition of approximately 100 Apple and Oracle/Sun servers over the next two to five years.

Storage consolidation, stratification, and virtualization is necessary to accommodate the need for anytime/anywhere access to files and objects. This will require the acquisition of SAN and RAID devices and arrays including EMC, Apple, and Oracle/Sun storage subsystems.

Federated identity management and profile based computing are inter-dependent projects that provide for personalized/individualized computing and enhanced security. Currently, the projects' products (Oracle/Sun's JES stack) are in the College inventory. However, there is an outstanding requirement for services and training necessary to complete this project.

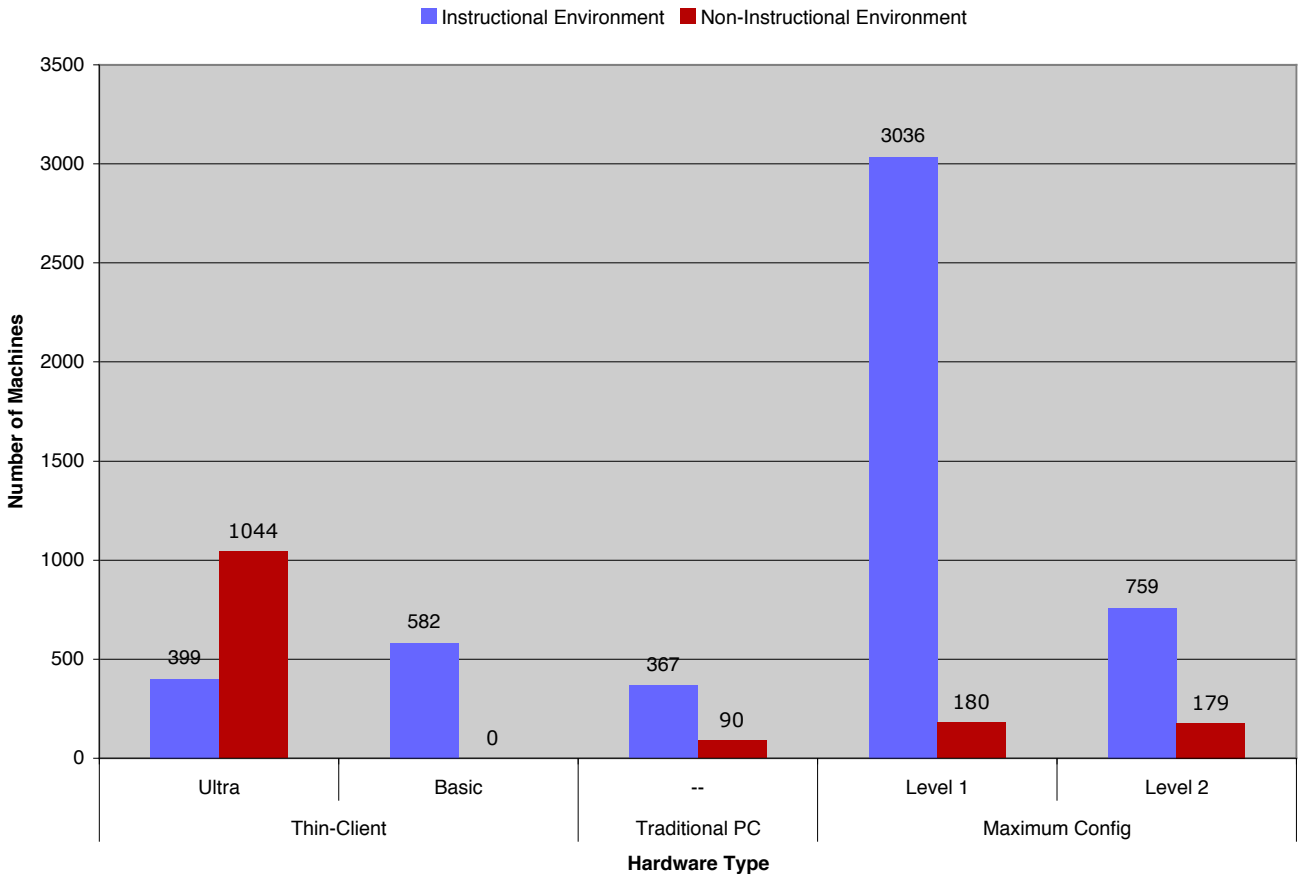


Figure 6.1 | Potential Collegewide Technology Distribution Category Estimates

The new academic and support computing environment is represented by the thin-client/fat-client components of this initiative. This involves the replacement of the current workstation architecture with the new model described in Chapter 4. Potential distribution targets are displayed in the following figures.

The first phase of this project replaces the existing inventory of 6636 computers as depicted in figure 6.1. It can be completed over a variety of time frames but a one-time replacement 'all at

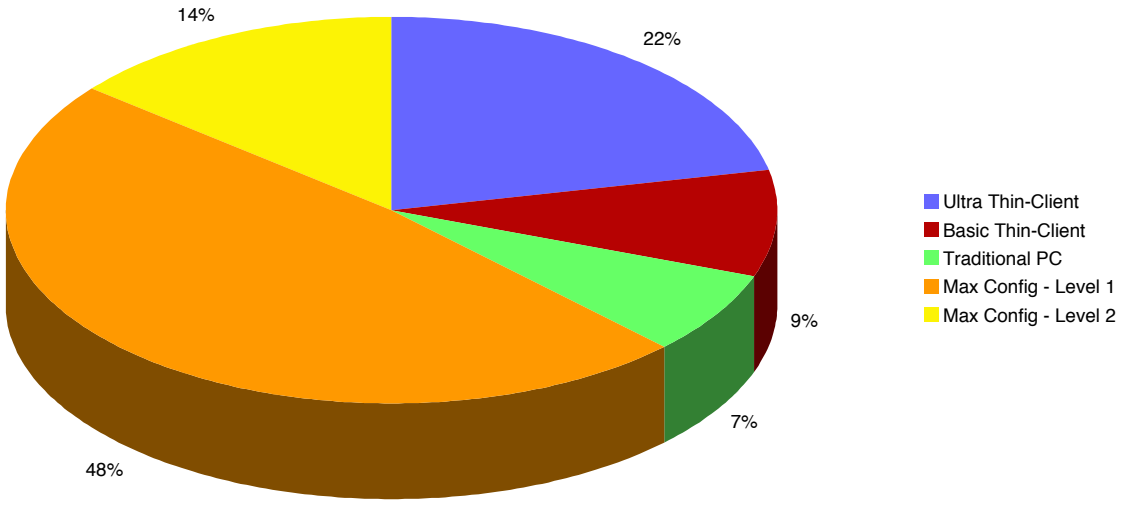


Figure 6.3 | Potential Collegewide technology upgrade by category

	Thin Clients		Traditional	Max Client	
	Ultra	Basic		Windows Vista	OS X Leopard
APPLICATIONS					
Web Browser	●	●	●	●	●
Server-Based	●	●	●	●	●
Local			●	●	●
AutoCAD				●	
iLife					●
STORAGE					
Web	●	●	●	●	●
Server	●	●	●	●	●
Thumb-Drive	●	●	●	●	●
Local			●	●	●
PRINTING					
Remote	●	●	●	●	●
Local		●	●	●	●
MULTIMEDIA					
Creation & Presentation of Multimedia			○	○	●
Personalized Interactive Content			○	○	●
Scanning			●	●	●
Rendering/DVD Production				●	●
Core Audio, Core Video, Core Animation					●
LIFE-CYCLE (Years)	10	7	5	5	5

once' is strongly recommended.

FIGURE 6.4 | NEXT GENERATION COMPUTING DEVICE MATRIX
● FULFILLED
○ CAPABLE BUT NOT INCLUDED IN NATIVE OPERATING SYSTEMS

Hardware Type	Potential Qty	Percent of Total	Life Cycle Years
Ultra Thin-Client	1443	22%	10
Basic Thin-Client	582	9%	7
Traditional PC	457	7%	5
Max Config - Level 1	3216	48%	5
Max Config - Level 2	938	14%	5
Desktop Hardware Totals	6636	100%	---

Figure 6.2 | Collegewide technology: category, percent distribution and life cycle estimates

The potential percentage distribution by category of device is shown in figure 6.3.

The new architecture is designed to provide the optimum computing environment for all faculty, students, and staff with emphasis on integrated multimedia object creation and distribution for multiple formats and form-factors, ubiquitous access to resources, self-sufficiency, and generally robust computing power that naturally integrates with the enterprise architecture including Global Learning Technologies.

The major shift included in this initiative is the move from the Microsoft Operating System on commodity PCs as the standard to a hybrid model emphasizing thin-clients for server-based computing wherever possible and the richer Apple Macintosh-based Mac OS X as the standard for workstations.

The previous tables and pie-chart include estimated purchases for computers and thin-clients that are currently recommended. Device detail estimates can be found in Appendix A for total anticipated quantities over the course of this plan.

The following configurations will serve as the standard for each category. The intent is to acquire Macintosh computers and Oracle/Sun (and/or Dell) thin-clients, however there will also be continued acquisition of commodity and upgraded PCs from Dell or equivalent manufacturers as specific circumstances dictate.

The second major initiative is the Global Learning Technology platform, which is aimed at enhancing the current learning management system and provides faculty and students with a comprehensive courseware system. The benefits for the College derived from having a single LMS include: (1) support, (2) maintenance, (3) training, (4) student familiarity and use, (5) content distribution, and (6) integration of ARTEMIS and other systems to a single learning management system. The procurement and installation of the software and hardware has been completed with testing and roll-out occurring during the time between Summer and Fall of 2007.

This procurement and installation of software and hardware includes the following:

- Upgrade to Blackboard Enterprise suite 7.0.
- Training of faculty, tech staff, and Learner Support Center personnel.
- Integration with ORION and ARTEMIS.
- Migration of existing courses from WebCT and Blackboard 6.x.
- Implement new functionality including e-Portfolio & Learning Object Repository Content Serving.
- Applications and Database fail-over.

The Technology Team has requested additional staff and contracted services for support of this initiative.

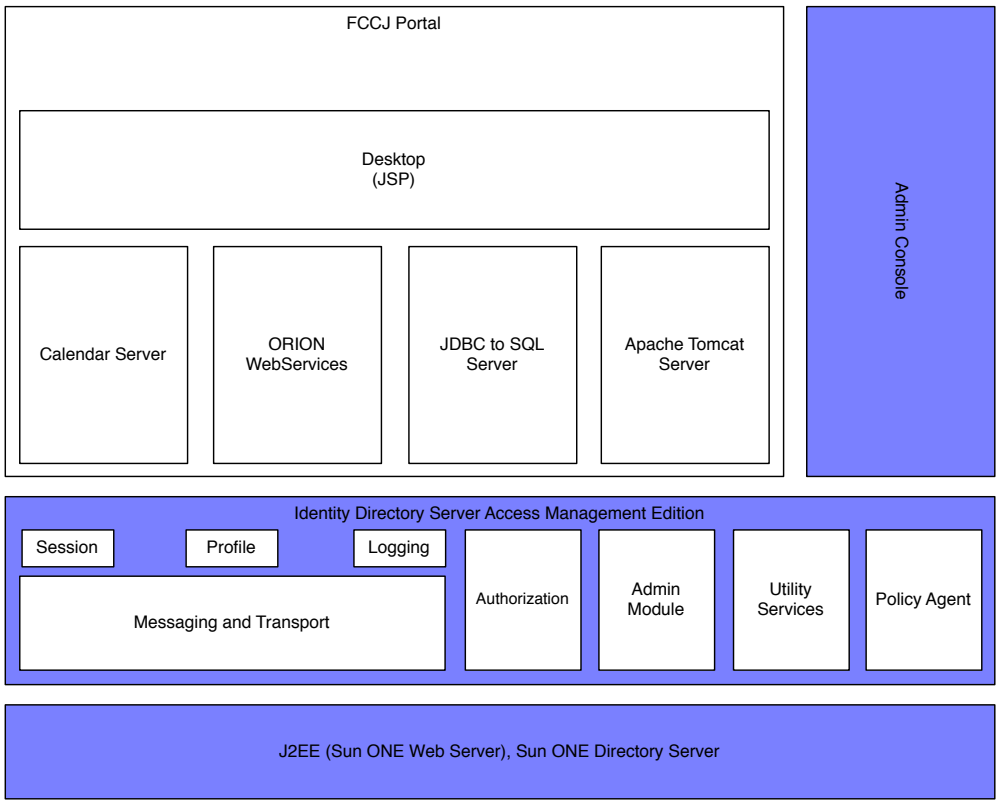


Figure 6.6 | Portal Architecture

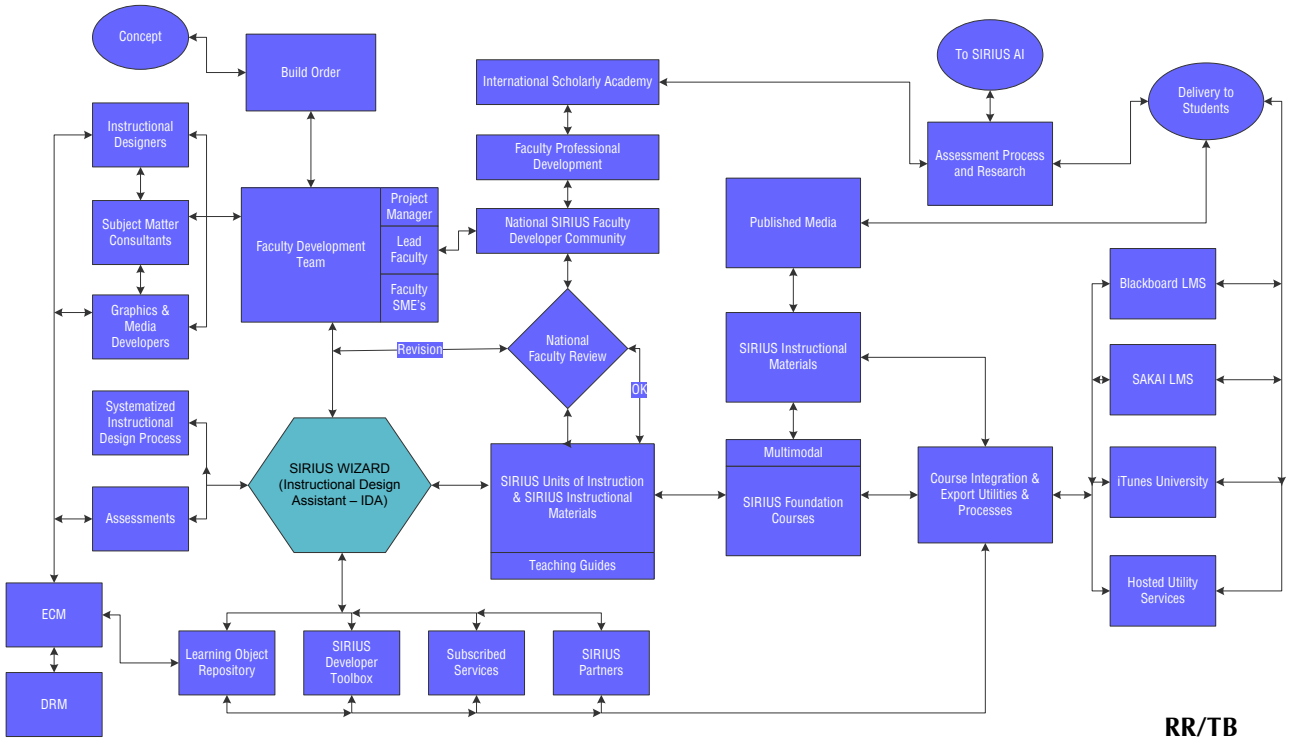


Figure 6.7 | SIRIUS Academics™ Wizard ida process flow

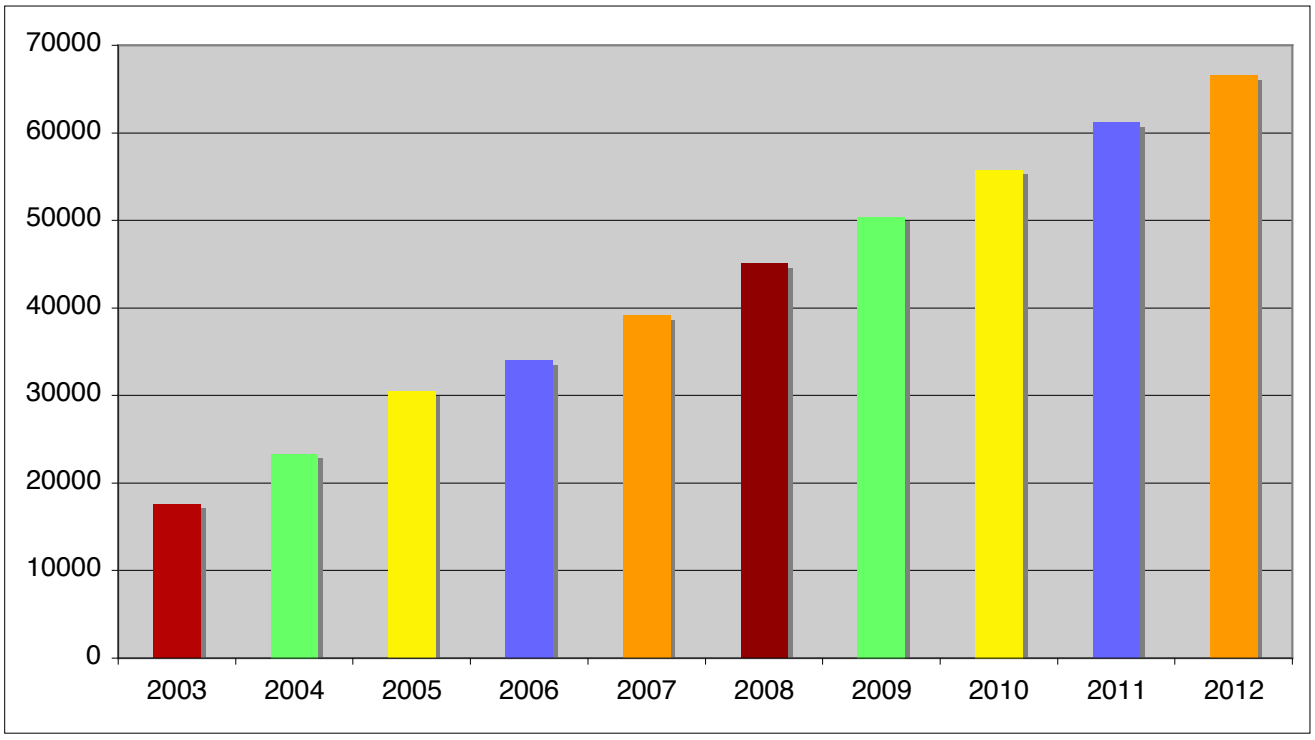


Figure 6.5 | growth of on-line

This initiative is critical to support ever-increasing on-line student enrollment as shown in figure 6.5.

The addition of another 45,000 students due to recently acquired contracts with the U.S. Navy and the expanded use of learning management systems in traditional courses create even greater demand for an extremely robust, highly available learning management system such as will be delivered through completion of this strategic initiative.

The third major initiative is the development of the ARTEMIS II portal. This project provides increased student services capabilities enabling greater access, transactions, and communication resulting in elevated customer services. The first phase development of the new portal has been completed with testing and training commencing in January, 2007. This initiative includes the following (see Chapter 10: Environment for a features matrix):

- Installation, Configuration, and Support of the Oracle/Sun JES Suite of Products.
- ID Management Integration.
- Development of ARTEMIS Modules:

    - My Advisor
    - Degree Planner
    - My Calendar
- Migration of Existing ARTEMIS Modules.

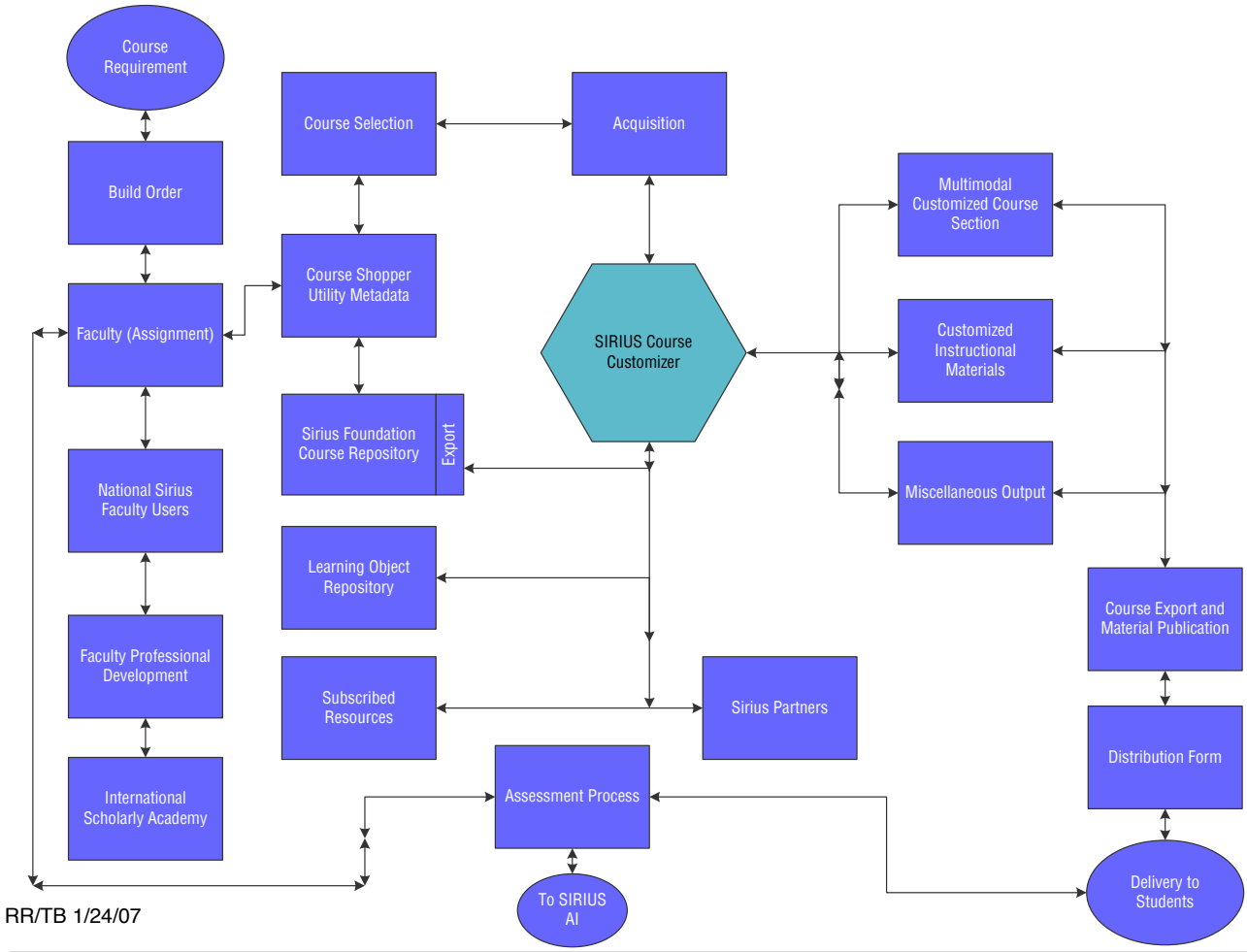


Figure 6.8 | SIRIUS Academics™ Course customizer process flow

The fourth major initiative is the SIRIUS project. Phase II of this project is nearly completed and includes enhancements to the Instructional Design Assistant for calendaring, assessment, syllabus enhancements, and integration with Blackboard. Design of the customizer began in Winter 2006 and development will commence Spring 2007. Additional funding for the final phases of SIRIUS will be requested.

The final phases include the creation of the artificial intelligence (AI) engines that will create dynamic tags resulting in a learner-style and learning object type ontology designed to systematically match requirements (as in competencies) to objects with the highest efficiency ratings for a particular learning style and delivery modality.

The first two products from the SIRIUS project are the SIRIUS WIZARD IDA (figure 6.7), an instructional design system that provides for the development of pedagogically sound courseware and the SIRIUS Course Customizer (figure 6.8) which provides for the customization of foundation courses created through the WIZARD and then certified for quality.

Student	**Finance**	**Personnel**
• Encoding • Application • Registration • Maintain Program of Study Maintain Overrides • Degree Audit Display Redesign • View Student Test Scores	• Requisitions • Disbursements • Cashiering • Approvals • Purchase Orders	• Demographics • Payroll • IRM
Financial Aid	**Facilities**	**Miscellaneous**
• Financier • Web-Based Fnancier • Maintain Awards • Maintain Scholarships • Maintain VA • Loans • Disbursement Requirements • Academic Information • Demographic Information • Application Requirements	• Room Scheduling • Maintain Facilities	• E-Mail System Linkage • Push/Pull Search on Host System

Figure 6.10 | ORION 3

Concurrent to product development, twenty-four SIRIUS courses are in development for delivery through the various SIRIUS partners involved in the project.

The last strategic initiative is ORION 3 web enablement/legacy modernization of ORION (ORION 2). This initiative enhances the critical transactional interface elements in ORION to the web, a much improved and efficient client interface which will enable quicker and higher quality customer service and self-service performance. This initiative includes the following projects:

- My Advisor - web enablement of counselor & advisor screens
- Event Management System
- Non-credit system committee projects.

Analysis to completely web-enable the ORION system (using the process driven approach to legacy modernization) is in progress.

The Technology Team has requested that a Senior Systems Analyst Position be funded. To further reduce the development time for this project, the Technology Team requests $300,000 (annually) for three years for programming services.

The approach being applied to this project is to redefine systems through process analysis and review, and then to proceed development using a Business Process Management (BPM) tool. This software tool enables graphical depiction of processes and links the tasks in the process to applications (code) in the runtime environment. The College has procured Software AG's crossvision suite for this purpose. The tools that will be used to implement ORION 3 are identified and described in table (figure 6.9). This approach provides the capability to graphically manage and monitor processes that are being implemented as part of this initiative.

Applications Team	
Software AG Crossvision Suite*	
Business Process Manager (BPM)*	Used primarily for the conversion of existing business processes into system-based processes through the use of discrete services in a GUI mapping tool.
Legacy Integrator (EntireX Communicator)	Direct exposure of legacy modules via XML Web Services. This provides real-time integration with the Enterprise Datasets. (Webification)
Enterprise Information Integrator (EII)*	Combines multiple data sources (Adabas, SQL, Oracle, Web Services) to provide a single-view via XML Web Services.
Service Orchestrator*	Create, manage and expose services throughout the Enterprise. College's current BPEL (Business Process Execution Language) editor.
Application Composer*	Compose rich Internet-based applications using existing services that are governed through Centrasite.
Centrasite*	Repository used for the compilation of meta-data that defines and describes the Service Oriented Architecture for the College. Centrasite also serves as the governance for SOA based artifacts.
Applinx*	Direct exposure of Natural maps using ApplinX.
Natural Productivity Pack	Remote development (Windows Desktop) Natural development environment.
Natural for Unix	Development language for the Enterprise Resource Planning System.
Microsoft Project	Used for the creation, modification, and management of project plans.
Adabas	Enterprise database used for support of the ERP Solution.
Natural Engineer	Tool used to assist in the restructuring and redesign of complex business applications.
HummingBird Emulator/FTP	Tool used to establish communications/sessions between the workstations and the development/production environments of the ERP.
VI	Unix based script editor.

Figure 6.9 | ORION Applications toolset

Projects that have been identified for development as part of this initiative include: My advisor - web enablement of counselor & advisor screens, event management system, non-credit system committee projects (membership application, encoding), time and attendance, academic appeals, and web-based Financial Aid services. (figure 6.10) lists the primary ORION systems and subsystems (applications) scheduled for web development as part of this initiative.

Further analysis to completely web enable the ORION system (using the process driven approach to legacy modernization) is in progress. This will result in a completely web-accessible ERP that is SOA-based.

CHAPTER 7 | COLLEGEWIDE INITIATIVES RELATED TO TECHNOLOGY

"Be a yardstick of quality. Some people aren't used to an environment where excellence is expected." - Steve Jobs

Goal One: Prepare Students for Distinctive Success in the Global Information Age

1.02.06 | Management Information System (MIS) and Knowledge Management Systems Development

Description: The dynamism of the community College environment is evident in increased competition, sophistication of student needs and demands, employer and community expectation inflation, and extensive legislative involvement in academic matters. The leadership challenge is to continuously improve and recreate the College as the market and the needs of students and employers change. Meeting this challenge requires proactive planning and decision-making coupled with honest, critical, and fact-based assessments of performance.

These leadership, planning, management, and evaluative functions demand comprehensive, timely, accurate, and useful information on all aspects of the College and its most relevant external systems/factors/entities. This information is provided through the implementation of MIS (management information systems). The College's MIS initiative includes the following basic tenets:

- ORION will serve as the operational layer.
- External data will be incorporated into the model.
- A systems architecture will be developed first, then layered with the best-suited software products for each element.
- A consistent philosophy of knowledge management will serve as the basis of MIS design and will create the integration model between MIS and other initiatives and processes.
- Management and District Board of Trustees information will be delivered via the Web.

These systems will provide the tools and information necessary to successfully meet the demands of our complex and rapidly changing environment.

Status: The MIS system development is now complete. Additional report and dashboard development will be ongoing.

1.02.18 | Course Management System

Description: The College recently consolidated its learning management systems to a single Blackboard platform hosted internally on the College's Oracle/Sun enterprise server environment. This system will be fully integrated with the College portal (ARTEMIS), content management, and ERP (ORION) solutions.

Status: The full Blackboard academic suite of software has been loaded onto College servers and will be released to faculty and student over Spring term 2007.

1.02.20 | Technology Leadership

Description: The College is in an excellent position to facilitate the development of a technology leadership program to assist in the development of executive education programs for technology leaders aspiring to become chief technology officers (CTO) or Chief Information Officers (CIO). The need for such a program to serve northeast Florida has been clearly identified through discussions with local technology leaders and the conduct of research on technology leadership. The program will be modeled on the best practices of nationally recognized programs but developed with a regional focus.

Status: The ITLA (IT Leadership Academy) has been operating successfully and has a full year operating fund reserve. The program offerings continue to attract senior IT leaders from Fortune 500 companies and leading global organizations and assessments of the programs have been extremely positive.

1.02.22 | Virtual Reality Environment

Description: The advancement of courseware and virtual experiences for the study of various subjects has progressed to the point where high quality and affordable applications exist for the virtual reality experience platform. The purpose of this initiative is to investigate and pursue the development of a VR environment for use in a variety of disciplines.

Status: The initial concept was to create a virtual cave environment. However, software has advanced to the point where individual simulation environments can now be created using gaming-based engines. IT staff are currently engaged in the research and testing of a variety of platforms for use at the College.

1.02.27 | Imaging

Description: This initiative represents the replacement and enhancement of the College's aging and outdated imaging system. The new system will be designed to take full advantage of open standard file formats. The current system uses a proprietary format and will integrate with the College's planned enterprise content management system.

Status: This initiative has been completed. The Accorde imaging system has been upgraded and outsourcing of systems management, administration and support is scheduled for Spring/ Summer 2007.

1.02.29 | Business Continuity and Disaster Recovery Planning

Description: The purpose of this initiative is to extend the College's current, very limited, disaster recovery plan into a more complete business continuity plan. This plan would provide the best possible assurance that the College would be able to maintain its operational capacity relative to technology and applications systems in the event of a disaster.

Status: The full plan has been developed and tested. An information item presenting this plan will be shared with the Board in Spring 2007.

1.02.30 | Sun Center of Excellence (COE)

Description: The purpose of this initiative is to extend the College's current leadership position in technology through designation as a Oracle/Sun Microsystems Center of Excellence for K-20 technology. COE is an exceptionally well respected and difficult to achieve status that will establish the College as a world class showcase of educational technology.

Status: This initiative is complete. Oracle/Sun featured the College in its series of excellence publications in Spring 2006 for mainframe re-hosting.

1.02.31 | Restructuring of Institutional Research

Description: The purpose of this initiative is to restructure the College's institutional research function to facilitate the integration of MIS, state reporting, and decision support in a new comprehensive model that optimizes the College's technology resources for the improvement of state reporting and supports the implementation of the institutional effectiveness model.

Status: The department of institutional research was eliminated in Spring 2006. The functions related to reporting, decision-making, and analysis were incorporated into existing IT divisions while academic research and institutional accreditation were moved to the instruction and student success department.

Goal Two: Optimize Access to and Participation in College Programs

2.67 | Learning Management System Enhancements

Description: The College's Blackboard system will be upgraded to the latest version of the full academic suite.

Status: This project has been completed within the technology department and the new system will be released on a phased schedule through Spring 2007.

Goal Three: Elevate "Customer Service" to a Level Unsurpassed in Higher Education

3.16 | Value-added Services for Members of the College Community

Description: The College has moved toward a membership model for the College community. A key element of this model is the establishment of a lifetime relationship between the College and individual members of the College community. This, we hope, will result in Florida State College being the first choice of members for their lifelong professional and personal development, training and educational services. One feature of lifetime membership is the opportunity for continuous communication and permanent access to the resources of the College. This initiative provides for e-mail and Internet connectivity that would be available to all members of the College community on a permanent basis.

Status: The IT management team is continuing to enhance methods for provision and support of these services to the College community.

Goal Four: Respond Quickly and Effectively to the Human Resource Needs of Employers

4.36 | Employer Satisfaction Survey Instrument

Description: The College goal to respond quickly and effectively to the human resource needs of employers requires a feedback process to monitor and assess employer satisfaction with the College program graduates. A design team has been created to develop an employer satisfaction survey instrument for the Office Systems Technology programs. This team consists of members from the program faculty, the Institutional Research Office, Workforce Development Office, and the Campus Academic Administration leadership. The survey instrument was developed and sent to identified employers in the College's service area. The completed surveys were analyzed by the team, and recommendations on the use of the gathered information and the effectiveness of the survey process were completed in August 2001. The survey was piloted with OST programs. The areas that were measured included general employer satisfaction with graduates' basic academic, technical, and employability skills. The principal objective of the survey process was to increase graduate mastery of workplace competencies for successful job placement and retention by local employers. This will have the additional benefit of improving the College's overall performance-based funding position within the state.

Status: This initiative is complete. The employer survey will be conducted on an ongoing basis.

Goal Five: Enhance Institutional Performance and Accountability

5.04 | Institutional Effectiveness Indicators Model

Description: During the decade of the 1990s there was an increasing call for accountability by public educational providers. In the wake of the call for accountability, most accreditation agencies now mandate effectiveness reporting for Colleges and universities. The College's accrediting agency, the Southern Association for Colleges and Schools (SACS), has this mandate. Institutional effectiveness reporting is tied directly to the College's mission and goals. It serves as a

venue to measure the progress on meeting the mission and accomplishment of goals. Traditional examples of institutional indicators are rates for graduation, facility usage, job placements, FTE, and transfer of students. The College is beginning a new phase of identification of institutional effectiveness indicators and undoubtedly many of the traditional measures will be identified. However, measurement of non-traditional indicators such as employee productivity, the loyalty return rate, and financial viability are being explored.

A list of 15 institutional effectiveness indicators was reviewed and confirmed by the President's Cabinet and a presentation of the College's performance on each presented to the Board. Linked to the five Collegewide goals, these indicators reflect program completions, transfer student performance, graduate employment, pass rates on professional and licensure examinations, market penetration, enrollment, student satisfaction, active memberships, employer satisfaction, budget reserves, and level of investment in innovation. Eleven community colleges across the country have been identified as possible institutions for comparison with the College on its indicators of effectiveness.

As part of the strategy for improving institutional effectiveness, the goals contained in the 2001-02 CPR plans were also linked to Collegewide goals, while expected outcomes were linked to particular indicators of institutional effectiveness.

In addition to confirmation of the institutional indicators, the President's Cabinet reviewed a model designed to help accomplish systematic department level planning, measurement of expected outcomes, and use of results to improve effectiveness throughout all areas of the College. An Academic Planning Conference was designed and conducted during the 2002 Fall Convocation to introduce faculty and administrators to the departmental planning and measurement concepts.

Status: Institutional effectiveness indicators were developed and provided the basis for an initial draft of institutional performance in a presentation to the Board. While they continue to be fairly stable, slight modifications have been made since that time and are being incorporated into the College dashboard system. Final release of the indicators is scheduled for Fall 2007.

5.49.06 | Information Technology

Description: This initiative served as the basis for recommendations for modifications to the State funding model regarding allocations for technology. The College has advocated for the use of PECO funds for maintenance and enhancement of the distance learning infrastructure and data network. This resulted in an analysis of IT costs in comparison to other Colleges.

Status: This initiative is complete and resulted in recommendations for changes to State funding practices.

CHAPTER 8 | SECURITY, BUSINESS CONTINUITY, AND DISASTER RECOVERY

"How much pain have cost us the evils that never happened." –Thomas Jefferson

Security is and has always been a necessary responsibility within the College computing environment. The world we live and work in is now based in computing environments with sensitive virtual data. With this increase sensitive information being stored and transmitted virtually, there becomes a heightened vulnerability for a system to be compromised and for that sensitive data to become unsecured. As a public agency and business institution, the College must ensure the privacy and security of its users(students, faculty, and staff) and the data associated with its users and business practices. Protecting the integrity of the College's data and computing systems is an unalienable responsibility of the College.

Time Frame	Benefit Description
Before A Disaster Event	Reduce dependence on key personnel Improve necessary documentation Decrease potential threats and exposures Lower the possibility of a disaster event
During A Disaster Event	Minimize disruptions to critical and essential services Protect faculty and students Safeguard critical assets Minimize confusion and delays Minimize decision making during a disaster
After A Disaster Event	Reduce potential financial loss Decrease potential legal liability Ensure organizational stability and an orderly recovery Adhere to legal, statutory and regulatory requirements

Critical/Essential Applications and Technology Infrastructure
Enterprise Communications
▸ Email
▸ Telephone
Administrative Systems
▸ Payroll
▸ Accounts Payable
▸ General Ledger

Critical/Essential Applications and Technology Infrastructure
▸ Property Accounting
▸ State Reporting
▸ Credit and Collections
✓ AR/Billing
✓ AR/Collections
✓ Financial Aid Disbursements
✓ Retiree Insurance
✓ Student Books
✓ Student Refunds
✓ Cashiering
✓ Hope Scholarship/Non-resident alien
▸ Purchasing:
✓ Purchase orders
✓ Purchasing cards
Student Systems
▸ School Administration (ORION)
▸ ARTEMIS
▸ Financial Aid (Financier/ORION)
▸ Imaging (Accorde by Optica)
▸ iTunes University
▸ Enterprise Content Management
▸ Blackboard

User side security is an essential part of any security infrastructures or policy. Users have a tendency to drift into a 'comfort zone' while using technology and unknowingly let their guard down. The user is usually the most vulnerable access point for a security breach. User IDs and passwords given to co-workers that need temporary access to systems, the practice of writing it on a piece of paper, sharing passwords or systems information in e-mail or on the phone are examples of high-risk user behavior.

Strong password policies are essential and are enforced to protect the College's systems and user data. Policies specify the length and types of characters, and are required to meet complex criteria.

Passwords must be changed every 180 days, are not reusable for two years, must contain at least six characters, not contain any resemblance to the user's name or account ID, and as a minimum meet at least three of the following standards:

- Contain at least one uppercase character
- Contain at least one lowercase character
- Contain at least one numeric digit
- Contain at least one non-alphabetic character (such as #,*, &, %, @)

Basic security knowledge is an area of concern which is addressed through the security awareness program. This program includes varying information distributed regularly as a reminder of the importance of security practices. Monthly security awareness tips and messages are posted on the College portal site. Topics include College-related security issues as well as common practices for all computing activities.

The IT Business Continuity Plan Introduction

This IT Business Continuity Plan (BCP) has been developed to document the guidelines, support, and resources to be employed should a disaster impact the College. The BCP will be activated when an emergency beyond the scope of standard operating procedures occurs. The BCP is designed to reduce confusion created during a disaster, and provides a framework for recovery and restoration of critical systems, voice/data communications, business processes, and facilities.

The BCP will be tested periodically and will be modified regularly based upon test results, as well as changes to hardware, software, applications, procedures, personnel, and the organization structure. The BCP documents are saved electronically, backed up and stored off-site, and made available in printed and electronic form to authorized individuals.

Business Continuity Plan (BCP) Development and Implementation

Risk Assessment and Reduction: The first step in the planning process identified the areas of highest exposure to the organization. The most probable threats and vulnerabilities of the organization were identified and analyzed. This process also included evaluating existing physical and environmental security and controls, and assessing their adequacy relative to the potential threats to the organization. Although the exact nature of potential disasters or their resulting consequences are difficult to determine, the risk assessment identified various threats that can realistically occur. This process has addressed issues to minimize or eliminate exposures that have the possibility of creating a disruption or interfering with the recovery.

Business Impact Analysis: The business impact analysis identified the critical business processes, and determined the impact of not performing the processes beyond the maximum acceptable outage. All business units were involved in developing the business impact analysis. The critical and essential business processes and their related software applications were identified throughout the College. Based on the analysis, the related infrastructure requirements were identified and prioritized.

Recovery Strategies: Important aspects of BCP were to determine recovery strategies and develop written agreements related to the most feasible alternative(s). Numerous unpredictable and often unpreventable hazards can endanger the organization. Because of these threats, recovery alternatives for critical equipment, processes, and facilities were evaluated. The results of the business impact analysis and risk assessment process were used to determine the most cost effective recovery strategies for each consideration. This phase of the process focused on identifying cost-effective recovery strategies for critical resources.

Recovery Plan: The contents of this plan follow a logical sequence and are written in a standard and understandable format. The BCP, which is brief and to the point, is written to reduce

the time required to read and to understand the procedures. This conciseness and clear instruction should provide improved team performance if the BCP has to be implemented. The BCP documents the initial actions necessary to assess the damage or impact of an emergency situation and the activities required to maintain control and recover from the disaster event.

Training and Testing: Training is being provided for all technology team members and other necessary personnel. In addition, this plan is periodically tested and is fully evaluated at least once a year (and more frequently when systems or process change. Procedures for testing are documented in the BCP testing plan. These tests provide the organization with the assurance that all necessary steps are included and that they work as specified.

These tests provide, in addition to information regarding any further steps that may need to be included, changes in procedures that are not effective and other appropriate adjustments. The BCP will be updated to correct any problems identified by these tests.

Co-location Site: A co-location site is needed to assure the integrity of critical data and facilitate business continuity. A co-location site outside of Northeast Florida was necessary. Subsequent contracts initiated to provide for off-site operations as necessary. The State-run Northwest Regional Data Center (NWRDC) was chosen because of its reliable reputation, hardened facility/service architecture, experiences, and reasonable cost.

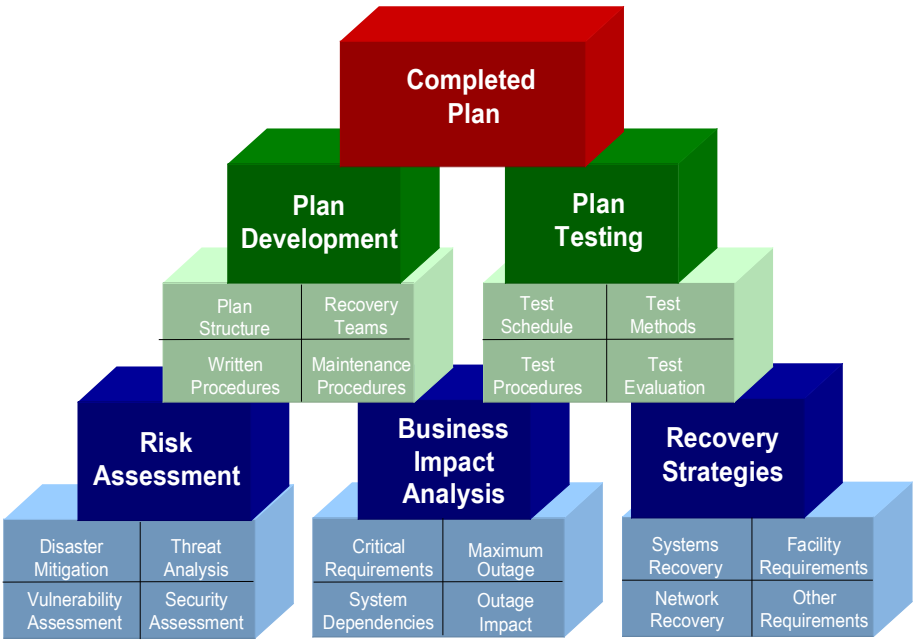


Figure 9.1 | IT Business Continuity Plan Development Process

Result

The result of the BCP was to formalize and document the business continuity policies and procedures of the College and to provide guidelines to resume time-sensitive business operations and resources. The BCP addresses the logical flow of events in responding to major disruptions in services, business processes, and technology infrastructure. Specifically, the events to:

- Continue/resume time-sensitive business operations for the critical and essential business processes.
- Activate the resumption and support of those services. The chain of command, identifying who pulls the trigger and manages the resumption support.)
- Provide ability to initiate restoration procedures of critical computer processing and data communications capabilities quickly following a declared disaster.
- Define how the College will communicate and coordinate with the recovery teams.
- Identify the staff assigned to implement resumption support (recovery teams) and their responsibilities.
- Restore critical operating systems, application systems, functions, and telecommunications according to the recovery time objectives.
- Achieve each of the above objectives in a timely, efficient, and cost effective manner.
- Return to a permanent operating environment.

Policy Statement

It is the policy of the College to maintain a comprehensive IT Business Continuity Plan to protect its technology infrastructure, information assets, assure faculty and student safety, and provide continued and uninterrupted services. The BCP provides for re-establishment of critical and essential operations that may have been disrupted due to natural or other disasters.

Recovery Team Mission Statement

The Recovery Teams are empowered to provide the organization with a rapid recovery process to assure high availability of critical operations based on faculty and student needs. The Recovery Teams are charged with maintaining, implementing, and if necessary, updating procedures and plans to:

- Gain control of problem situations early
- Minimize the impact of an operational outage
- Gather critical information into a central repository
- Reduce risks to essential information resources
- Make decisions in advance of a crisis
- Test periodically and refine the plan

Assumptions

The Business Continuity Plan is based on the following assumptions:

- Sufficient key staff are available to perform the necessary procedures described in the plan.
- Sufficient technical staff can be notified and can report to the recovery site to perform critical recovery and restoration activities.
- Modules of the overall plan can be used to recover from minor interruptions.
- Recovery services from critical vendors are available.
- Adequate financial and personnel resources will be made available each year to test the plan to assure its continuing viability.

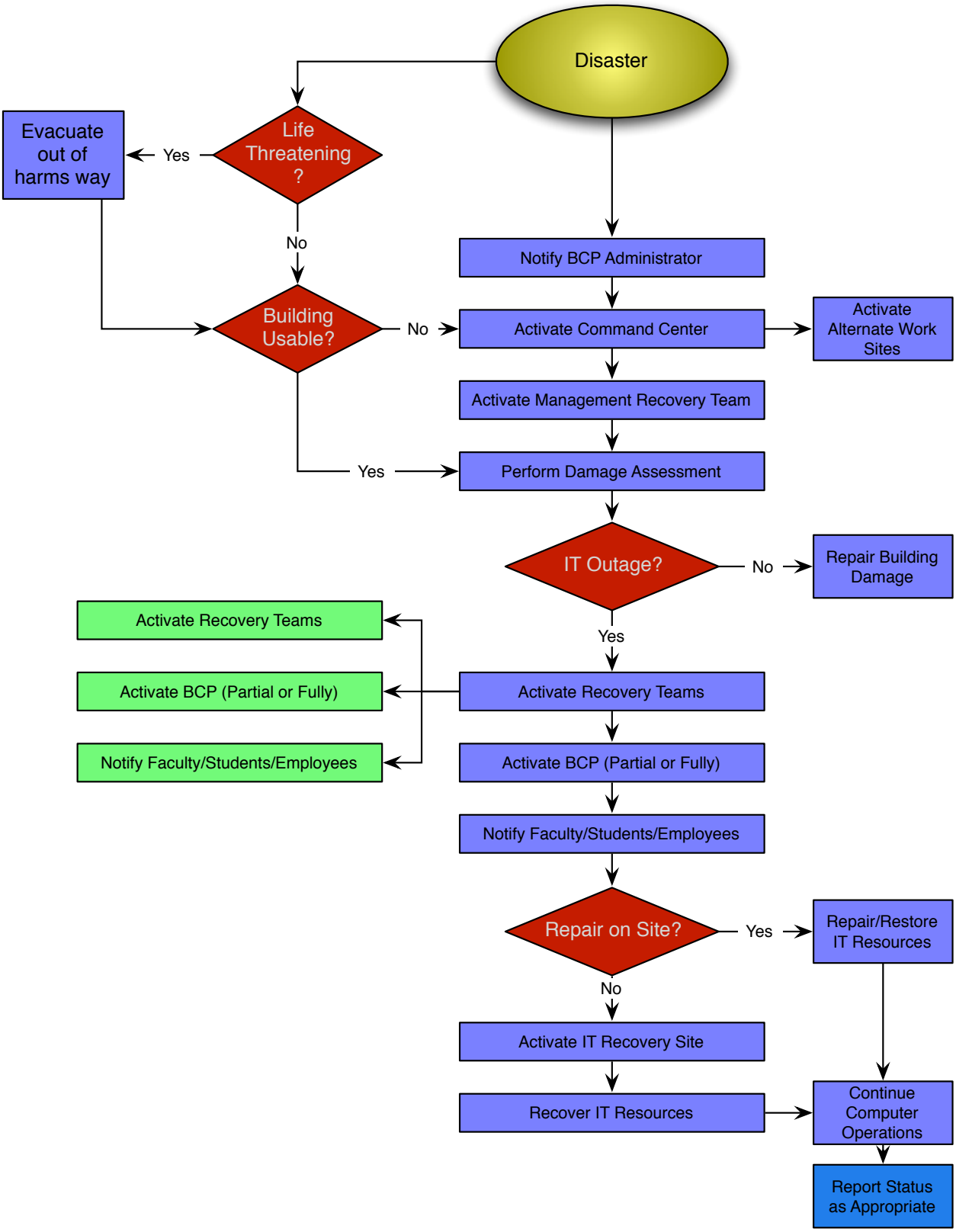


Figure 9.2 | FCCJ Business continuity plan activation chart

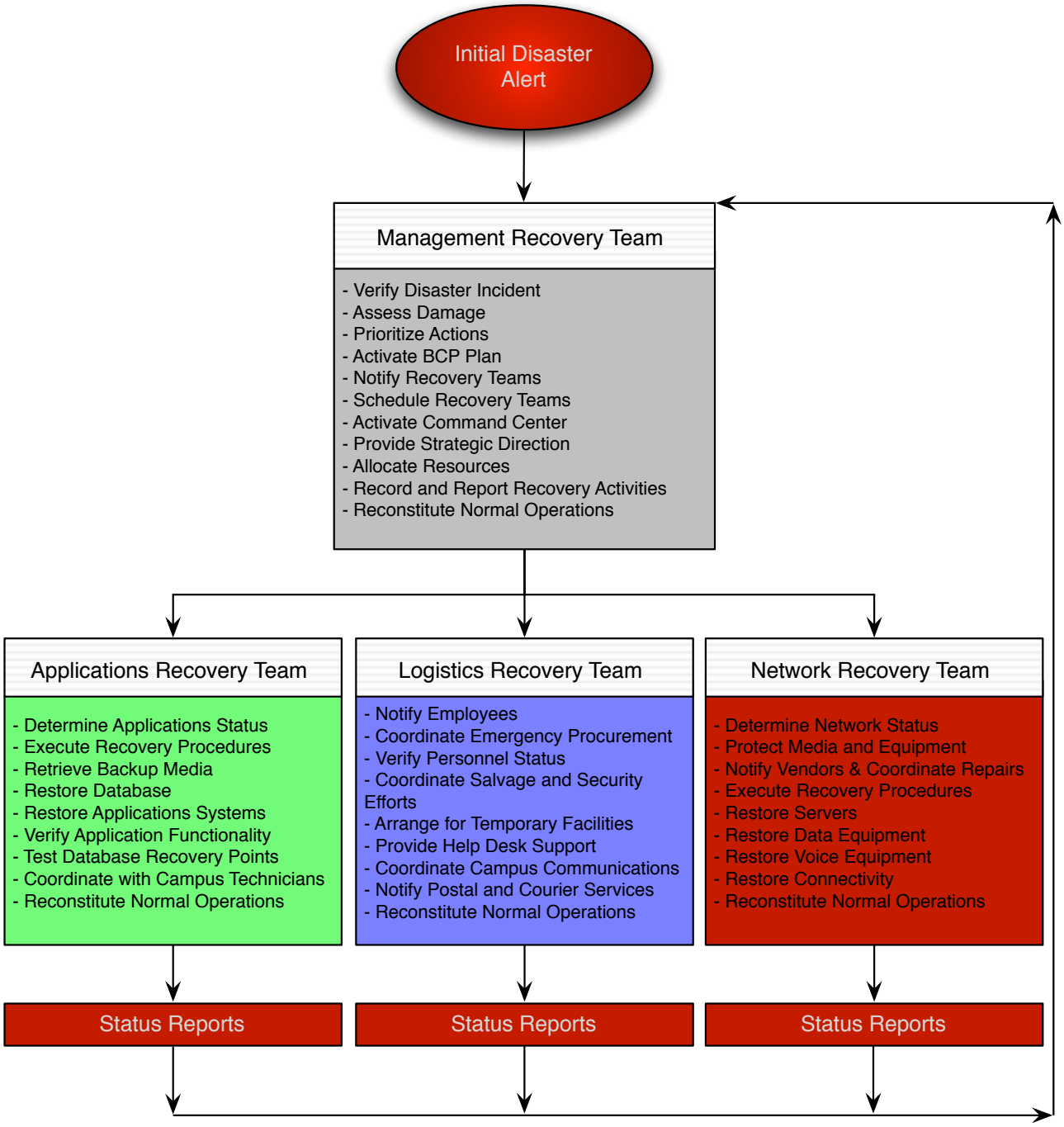


Figure 9.3 | FCCJ Recovery team structure

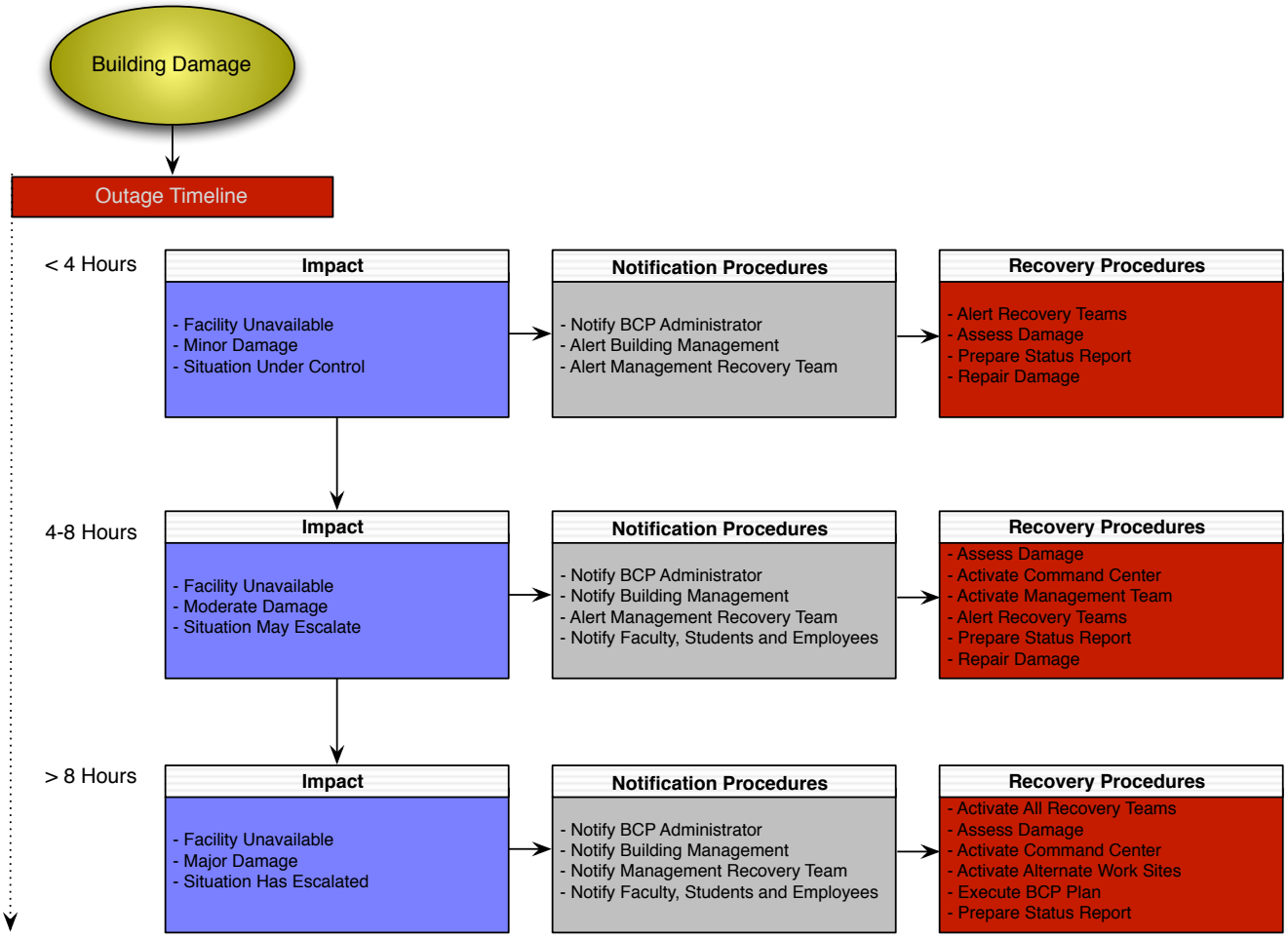


Figure 9.4 | Disaster event guidelines building damage

Maintenance and Distribution

The BCP administrator is responsible for overseeing the maintenance, distribution, and periodic testing of the recovery plan. The maintenance activities are assigned to various individuals or groups within the organization with overall responsibility for coordination of the activities designated to the BCP coordinator. Most of the components of the plan are updated on a quarterly basis. Changes that have a major impact on the plan are modified as soon as possible after the change occurs.

The actual BCP itself is a restricted document and classified as confidential due to the specific nature of the contents. Each individual with access to or a copy of the plan is responsible for security and control of the document.

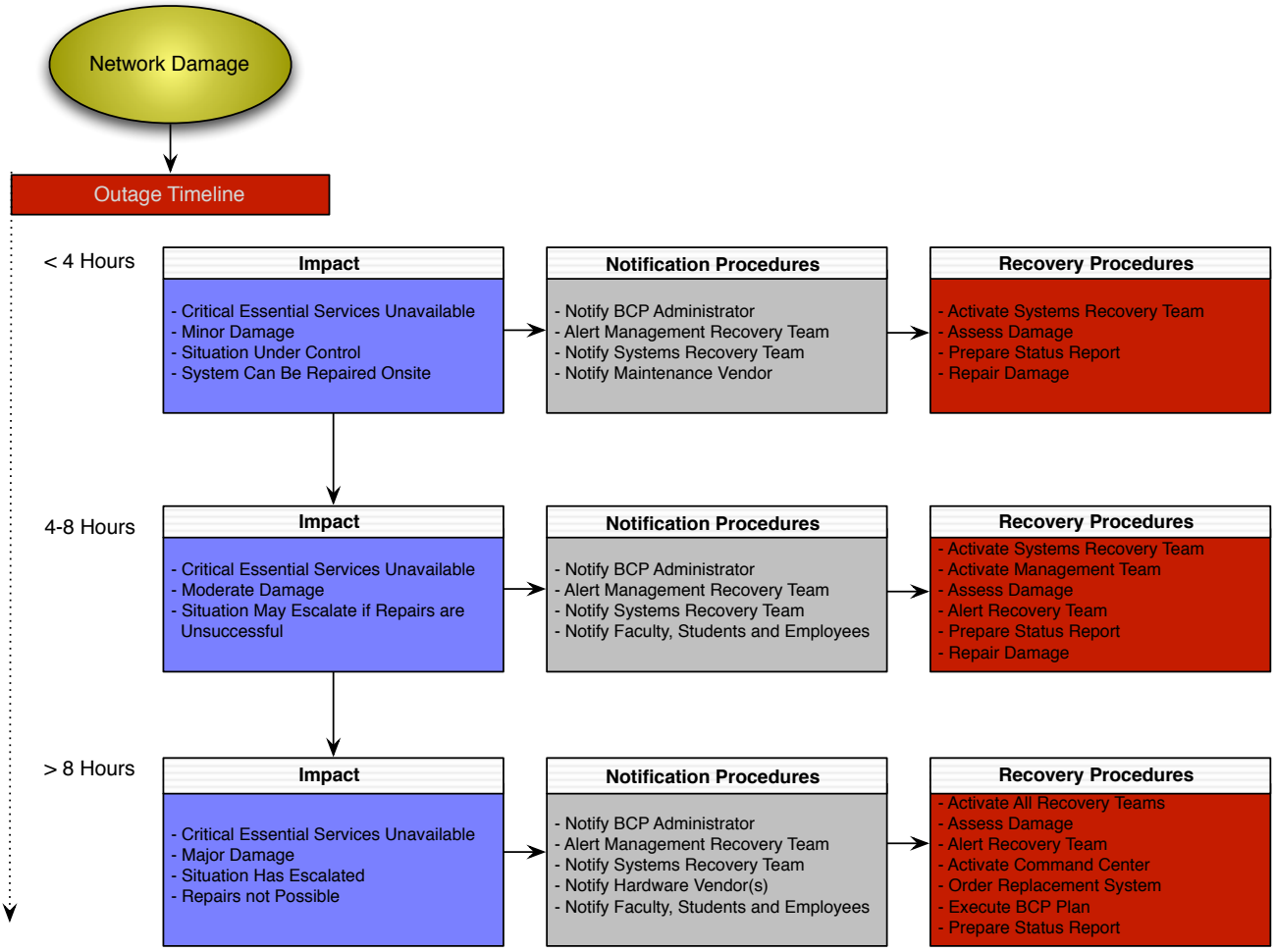


Figure 9.6 | disaster event guidelines network damage

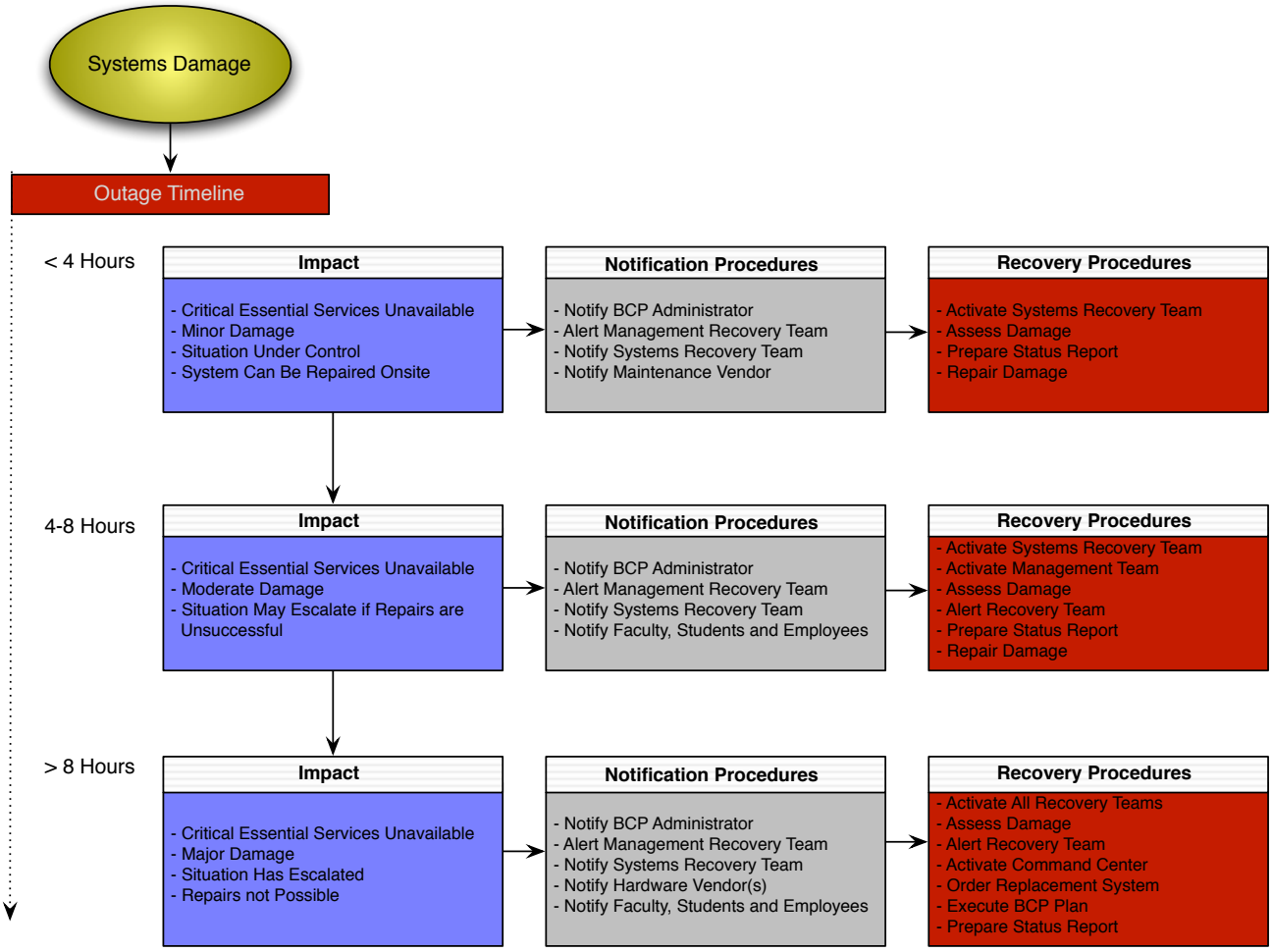


Figure 9.7 | disaster event guidelines systems damage

Communications Plan

Proper internal and external communications are critical to successful recovery from a disaster. It is important that the organization maintain specific communication policies. This comprehensive communications strategy is critical for many reasons, including:

- Effectively resolving issues that may arise in the course of recovery.
- Building commitment of the members of the recovery teams.
- Maintaining efficient exchange of information between recovery teams.
- Contacting faculty, employees, and students and keeping them informed.
- Ensuring allocation of sufficient resources to the recovery process.
- Facilitating effective teamwork and coordination of activities.

- Minimizing the time span of the recovery.
- Establishing appropriate expectations of the recovery process among the business unit staff.
- Managing media communications and interaction.

Internal Communications

Depending on the nature of the disaster, faculty and employees will require information regarding the organization's response to the disaster situation. The management recovery team will determine the type of information that needs to be provided to faculty and employees and will determine the most appropriate method of dissemination. Potential methods of internal communications will vary depending on the type of event and whether normal systems and communications channels have been affected.

External Communications

The management recovery team will be responsible for directing and approving all methods of external communications following a disaster. The management recovery team will work with all recovery teams to determine the information to be communicated, the form of communication that should be used, and the audiences that should receive it. The management recovery team has the sole authority to answer questions with predetermined limitations and to make on-the-spot decisions and arrangements necessary for proper relations.

- Student Communications

Students will need to be informed of the status of the College and the effect the disaster will have on their ability to access the College campus facilities. Distance-learning students also will be informed as to how the disaster will affect their ability to access their on-line courses.

- Public Communications

In general, the management recovery team will be solely responsible for informing the public following a disaster event. The management recovery team is responsible for gathering and disseminating timely information for external audiences during times of disaster based on the following objectives:

- Provide timely and accurate information and direction to those affected by the disaster.

- Reduce rumor and uncertainty.
- Maintain the College's credibility and minimize damage to its reputation.

Recovery Team Communications

Each team is encouraged to actively contact the other teams during the recovery effort. If a team needs to contact another team regarding the recovery effort and they are unsure who to speak to, they should contact the team manager of the desired team and request direction. Communication between teams is meant to occur in an open manner. However, each team manager is responsible for providing the primary guidance for communication for their team.

During and after a disaster event, the recovery teams have been to a special radio-telephone service.

Faculty/Employee Calling List

Faculty and employee calling lists are directories of faculty/employee contact information (e.g. home phone, work phone, pager, cell phone, etc.). These lists may be used by any of the teams to contact an individual who may need to be a resource for the recovery effort.

Intranet Announcements

This form of communication is the posting information on the College's Intranet site. If a minor disaster occurs, this is a likely communication vehicle. If a major disaster occurs, this is not likely to be as useful.

Internet Announcements

This form of communication is the posting information on the College's Internet website. As an employee communication vehicle, this is not encouraged. This site and its contents are visible to anyone with a web browser and an internet connection. The management recovery team and legal counsel are to be consulted before using this as a means of employee communication.

Email Announcements

This form of communication is the use of the email system to send an electronic mail letter to employees' work email addresses. In the event of a minor disaster, this is a likely communication vehicle. In the event of a major disaster this is not likely to be as useful. Consultation with the

systems and network Recovery Teams from a technical standpoint is a good idea to assess the availability of the technology to the area.

Voicemail Announcements

This form of communication is the use of the College's phone mail system to send voice messages to employees' work phones. If a minor disaster occurs, this is a likely communication vehicle. If a major disaster occurs, this is not likely to be as useful.

Media Announcements

This form of communication is the use of the media to get messages to employees. As an employee communication vehicle, this is not encouraged. These messages are visible to anyone. The management recovery team and legal counsel should be consulted before using this as a means of employee communication.

Ad-Hoc Announcements

There are undoubtedly other forms of communication that may not have been described in this section. The management recovery team should be consulted regardless of medium chosen to ensure the accuracy and appropriateness of a chosen communication vehicle and the content of messages desired to send.

All teams have the option to communicate with vendors as necessary. Keep in mind that communications that either imply or are related to purchases or other monetary implications should be reviewed against the emergency procurement policy. The management recovery team should be included as necessary for authorization and actual acquisition authorization as needed.

Media Communications

The Public Information Officer is the only party that should release information to the media in a formal press release. The management recovery team and legal counsel should approve the release.

When disaster strikes, the role of the media is to report the news of the event. This creates the risk that the organization may be affected by the nature of the disaster or their response to it. In

addition, miscommunication by the media can magnify the normal problems and issues of the recovery process. The key to effective media relations in the event of a disaster is following the steps outlined below:

- The Public Information Officer will field all media inquiries and respond (with management recovery team/legal counsel content approval) to media interview requests.
- All media inquiries and interview requests must be referred to the Public Information Officer.
- Gathering the facts for communication is everyone's responsibility:
  - Who is affected?
  - What happened?
  - When did it happen?
  - Where did it happen?
  - Why did it happen?
  - How do you plan to handle it?
- Develop the message:
  - Establish a few key messages, rehearse them, and reinforce those points repeatedly
- Use the media to communicate with the public.
- Protect the integrity and reputation of the College.
- Communicate news appropriately when it is known.
- ALWAYS:
  - Be honest
  - Be candid
  - Be factual
  - Be prepared
  - Be responsive
  - Be sensitive to time
- NEVER:
  - Lie
  - Guess
  - Get hostile

– Give unsubstantiated information or opinions

Recovery Teams

Because an unexpected interruption in business operations and systems may occur at any time requiring a coordinated response, each occurrence requires a managed approach that fosters consistency of effort and reduces the escalation of damage. The recovery teams are organized to address all issues related to an emergency and are authorized to make certain decisions relative to recovery efforts.

In organizing the recovery teams, each person's responsibilities are assigned based on restoring specific business processes. Team members have the authority to carry out the responsibilities within their assigned area. The team structure consists of various sub groups to facilitate the identification and resolution of systems and operational disruptions. Recovery teams have been defined to distribute recovery tasks as necessary. Members of the recovery teams are listed in exhibits that are addendums to the complete BCP.

Specific team members are assigned to manage these efforts, and the teams are also staffed with members capable of performing each task. The teams are designed to handle a specific set of tasks to be accomplished before, during, and/or after an emergency. The documented restoration procedures are intended to be in sufficient detail that in the event that specific key members are not able to participate in the recovery, other individuals who are knowledgeable in the particular operations and/or technology could, following the procedures, restore the business operations and systems involved.

The Business Continuity Plan is structured with four teams. The BCP details the procedures and specific responsibilities for each respective team. The primary team is the management recovery team, with complete functional responsibility for all recovery-planning activities. Recovery teams are operational groups responsible for specific functions. Each team has a separate BCP section, which is written and formatted for use on a stand-alone basis. The team sections include specific responsibilities and procedures to be followed in the event of a disaster, which allows for a rapid and smooth recovery process.

Recovery Teams Roles and Responsibilities

Team members have several roles. Team managers have the responsibility to assign personnel to staff the teams necessary to address emergency situations. Multiple roles are sometimes unavoidable based on available resources, emergency conditions, and time constraints. Alternates are assigned as back-ups for team manager positions and team members to reduce the possibility of a vacancy in the command chain. In addition to the establishment of recovery teams, the BCP has assigned team positions and members. Team positions include:

- BCP Administrator
- Team Manager
- Alternate BCP Administrator
- Alternate Team Manager
- BCP Coordinator
- Team Member
- Alternate BCP Coordinator

These assignments provide the necessary leadership and direction to implement the plan and carry out the necessary duties and responsibilities at the time of a disaster. The recovery team structure is illustrated in figure 9.3.

BCP Administrator

The BCP administrator is responsible for supervising and controlling recovery activities on an overall basis, and providing managerial direction to the leaders of all teams. In addition, this position is responsible for:

- Maintaining the BCP
- Distributing the Plan and subsequent updates
- BCP training
- Testing the BCP

BCP Coordinator

The BCP Coordinator is responsible for coordinating recovery activities between the management recovery team and the other recovery teams. The BCP coordinator also is

responsible for maintaining documentation relative to the recovery process. Responsibilities of the BCP administrator and BCP coordinator are further defined in the management recovery team section of the BCP.

Team Managers

Team managers are be responsible for coordinating all recovery activities of their respective teams to re-establish operations to acceptable levels within the shortest possible timeframe. These individuals will:

- Serve as the prime decision-makers for situations included and not included in the BCP
- Evaluate and critique initial disaster assessment reports and action plans
- Submit disaster assessment reports to the management recovery team
- Identify additional recovery positions needed to assist in recovery activities
- Direct and motivate the team members
- Track the actual progress/completion of recovery activities against the projected sequence of recovery events (i.e., function as a project manager for the recovery process)
- Establish with the management recovery team, progress-reporting times (hourly, every two hours, etc.) to ensure that required activities are being performed as planned
- Submit final disaster assessment reports to the management recovery team

Management recovery team

The management recovery team has the following general responsibilities:

- Receiving the initial disaster alert
- Verifying the disaster event
- Assessing the disaster event
- Activating all or part of the BCP
- Notifying recovery team managers
- Prioritizing actions and activities
- Executing recovery procedures
- Performing operations action planning
- Working with the logistics recovery team to establish the command center

- Activating the command center
- Determining if relocation may be required
- Determining immediate operating needs
- Documenting recovery operations
- Providing strategic direction to all recovery teams and personnel
- Monitoring recovery operations
- Recording and reporting all recovery operations
- Addressing legal issues
- Issuing status reports
- Reconstituting normal operations

Logistics recovery team

The logistics recovery team has the following general responsibilities:

- Arranging for alternate facilities, if needed
- Coordinating campus communications
- Coordinating salvage efforts
- Arranging for basic support services
- Obtaining office equipment as necessary
- Arranging transportation, travel and food
- Verifying personnel status
- Arranging security at the disaster site and alternate facility
- Arranging for temporary personnel
- Notifying postal and courier services
- Analyzing records retention and salvage requirements
- Coordinating asset removal
- Assessing office damage
- Providing help desk support
- Issuing status reports
- Notifying recovery team members
- Executing recovery procedures
- Monitoring operations

- Reporting status to the management recovery team
- Reconstituting to normal operations

Applications recovery team

The applications recovery team has the following general responsibilities:

- Determining system and application status
- Protecting media and equipment
- Notifying vendors
- Coordinating vendor repairs and replacement
- Restoring application systems to operational status
- Restoring system databases and files from backup copies of electronic media
- Coordinating with campus technicians to restore user equipment
- Resolving user problems
- Executing recovery procedures
- Reporting status to the management recovery team
- Reconstituting normal operations

Network recovery team

The network recovery team has the following responsibilities:

- Determining network status
- Protecting media and equipment
- Notifying vendors and coordinating repairs
- Restoring server equipment
- Restoring the data and voice communications network
- Resolving connectivity problems
- Executing remaining recovery procedures
- Reporting status to the management recovery team
- Reconstituting to normal operations

Disaster Event Guidelines

The decision to activate the plan in full or in part depends on a number of factors ultimately judged by the person(s) in charge. These factors include:

- The type of disaster incident
- The effect of the incident including the extent and type of damage
- How long critical/essential services are unavailable or inaccessible
- Whether the services are mission critical
- The anticipated recovery time

The following chart provides guidelines for the various disaster events:

Chain of Command

In the event the BCP is activated, the existing leadership structure and authority levels will generally remain in place. Realizing that one or more persons within the leadership structure may be unable to assume their duties, the following succession plan has been established:

Position
Vice President, Technology, CIO
Associate Vice President of Educational Technology, Associate CIO
Associate Vice President of MIS, CTO
Associate Vice President of Technology Operations
Director of Networks and Telecommunications

In all cases once activation of the BCP has occurred the AVP, Technology Operations is responsible for plan activities and events.

The AVP, Technology Operations has specific delegate responsibility to take all necessary actions to restore systems as soon as possible within the framework of the BCP and all applicable laws and rules. Additionally, it is the specific responsibility of the AVP, Technology Operations to ensure maintenance and accuracy of the BCP, test and enhance the plan regularly, and educate the College community on the BCP.

CHAPTER 9 | ENVIRONMENT

"Nothing quite new is perfect." -Cicero

Introduction

This portion of the strategic technology plan describes the College's current technical environment. It includes descriptions of the enterprise system, e-systems, Collegewide networks, telecommunications, and other critical elements of the College's infrastructure and computing resources.

This enterprise system environment is the implementation of the technology architecture (introduced earlier in this plan). The Technology Solutions Map (figure 10.1) depicts most of the applications/systems in the enterprise system environment. This enterprise application portfolio includes three primary systems for administrative and education technology. These systems include: ORION 2, ARTEMIS, and Blackboard.

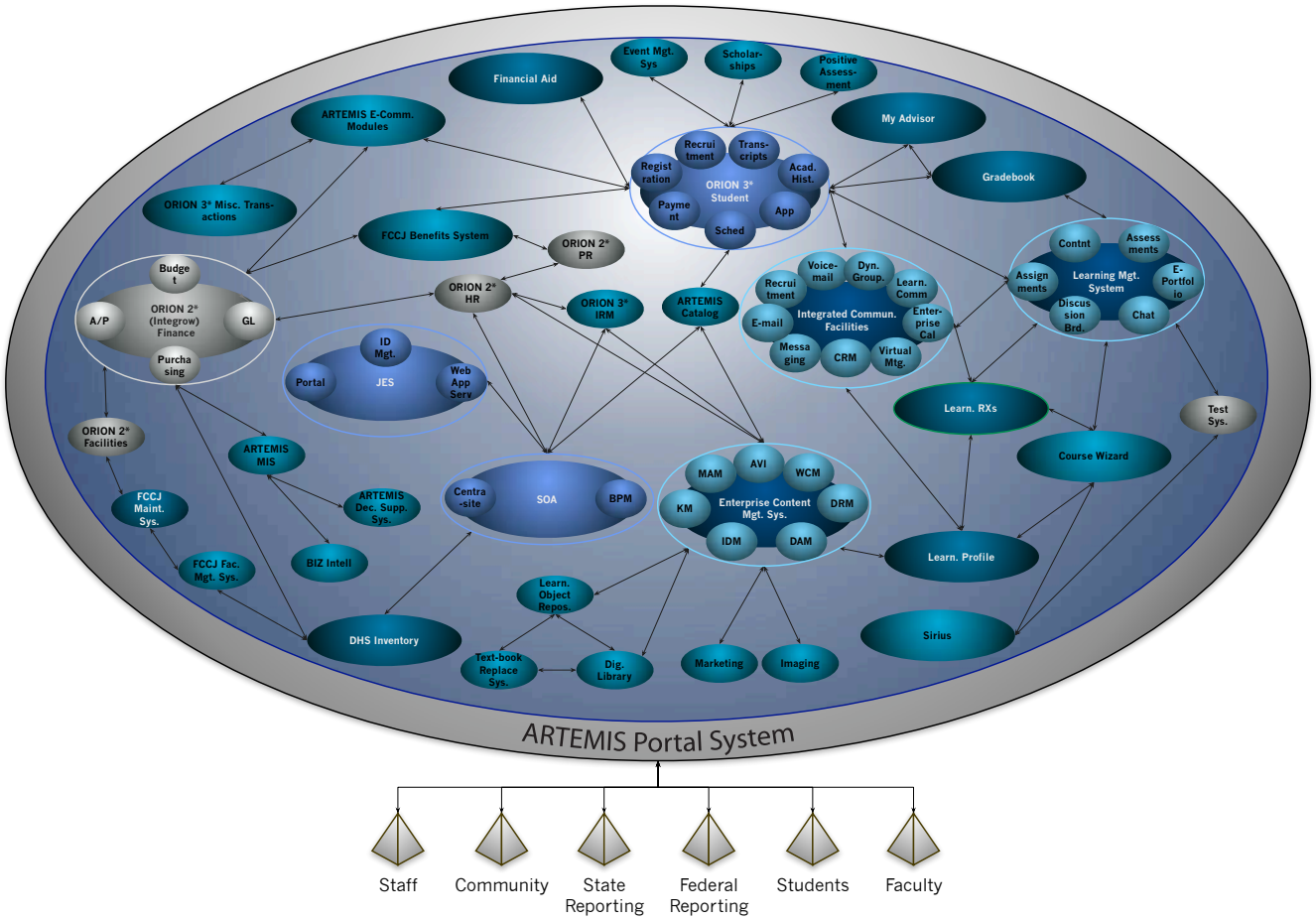


Figure 10.2 | ORION 2 Major Functions

ORION 2

The vast majority of data is maintained in the College's enterprise software system, ORION 2. This system provides automated support for student records, human resources, payroll, purchasing, finance, financial aid, facilities, and the like. The majority of application modules and functional subsystems are shown in the table below.

Major Functions	
State Reporting	State reporting
Per/Pay	Personnel, Payroll, and IRM
Students	Admissions, Advisements, Registration, Curriculum, Student records, Fees & tuition, and Degree audit

Major Functions	
Finance	General ledger, Accounts payable, Purchasing, Credit & collections, and Approval system
Facilities	Facilities
Security	Security
Utilities	Batch submission and Generic code tables
Financial Aid	Financier

The applications team is responsible for providing development, maintenance, and support for ORION. The ORION system is hosted in a Oracle/Sun Solaris environment running on a Oracle/Sun F-12k. This system was developed using Software AG's Natural, a 4GL programming language. The data is stored in Software AG's ADABAS due to its capability of handling high volumes of data.

The applications team has many tools at their disposal to rapidly and efficiently develop modules of the ORION system. These include:

ORION Applications Toolset:

Applications Team	
Software AG Crossvision Suite*	
Business Process Manager (BPM)*	Used primarily for the conversion of existing business processes into system-based processes through the use of discrete services in a GUI mapping tool.
Legacy Integrator (EntireX Communicator)	Direct exposure of legacy modules via XML Web Services. This provides real-time integration with the Enterprise Datasets. (Webification)
Enterprise Information Integrator (EII)*	Combines multiple data sources (Adabas, SQL, Oracle, Web Services) to provide a single-view via XML Web Services.
Service Orchestrator*	Create, manage and expose services throughout the Enterprise. College's current BPEL (Business Process Execution Language) editor.
Application Composer*	Compose rich Internet-based applications using existing services that are governed through Centrasite.
CentraSite*	Repository used for the compilation of meta-data that defines and describes the Service Oriented Architecture for the College. Centrasite also serves as the governance for SOA based artifacts.
Applinx*	Direct exposure of Natural maps using ApplinX.
Natural Productivity Pack	Remote development (Windows Desktop) Natural development environment.
Natural for Unix	Development language for the Enterprise Resource Planning System.
Microsoft Project	Used for the creation, modification, and management of project plans.
Adabas	Enterprise database used for support of the ERP Solution.
Natural Engineer	Tool used to assist in the restructuring and redesign of complex business applications.
HummingBird Emulator/FTP	Tool used to establish communications/sessions between the workstations and the development/production environments of the ERP.
VI	Unix based script editor.

Figure 10.3 | Orion Applications Toolset

ARTEMIS

ARTEMIS is the College's portal that provides web-based services to students, faculty, and staff. The table below depicts the current and planned services provided through ARTEMIS.

ARTEMIS Functions	
Current Features for Employees	
Communication Tools	College messages, College calendar, College alerts, Exchange calendar, College email integration, and Integrated communications/ messaging (Subscription services, Faculty communications, and Integrated student/employee calendaring)
Resources	College Catalog, Financial Markets, Demonstration/Training, Travel Mileage Chart, Instructor Schedule Help, and Integrated communications/messaging (Learning management system integration, File management/sharing, Podcasting, SIRIUS course management systems, Artificial intelligence, Enhanced online grade book and attendance services, and Widget development)
Instructional Tools	Instructor Schedule, Grade Input, Class Rosters, Drop for Non-Attendance, Grade Change, and Blackboard Single Sign On/ Integration
Administrative Tools	Personal information display, Student accounts administration, Veterans processes, ORION 2 batch monitor, Scholarship administration, Time and attendance, Scholarship reports, Organization hierarchy View/Manage, Employee view of student integration, IT service request ,Transcript request administration, MIS/Dashboard framework, My advisor-student advising (Scheduling, Degree audit, Registration status, Comment redesign, Holds, POS, College application, International student application, and External transcripts), and Integrated communications/messaging (Online grade book integration, Business process management, Advanced reporting-ad-hoc reporting, Portal replacement, ORION 3, and Real time reporting)
MIS	TBA reports, Grade analysis, Room utilization, Student mailing, Registration tracking, Dean's list, Enrollment analysis, Room inventory, Student demographics, Student progress report, Program objective exceptions, Cancelled classes, Class cost analysis, Schedule efficiency, Student success, Cumulative hours/degree audit, and Dual enrollment
Dashboard	FTE, Student withdrawals, Enrollment (History and Term based), Efficiency measures, TABE scores report, 75% competition, How students pay, Financial aid, Recorded grades, Student evaluation of instruction results, Student tracking and retention report, Student prospects, Technology status, Human Resources (Employee listing and classifications, Leave balance reports, and Fulltime/Adjunct ratio), and Key performance indicators (Market share, Conversion, Productivity, Growth, Student persistence, Summative experience, Instructional quality, Employer satisfaction, Efficiency-Cost per completer, Collaboration, Student/Employee ratio, Average class size - credit and non-credit, and Scheduling efficiency

ARTEMIS Functions	
Current Features for Students	
Communication Tools	College messages, College calendar integration, College alerts, Personal calendar, College email integration, Integrated alerts, Advising assistance, and Integrated communications/messaging (Subscription services, Video lecture archives, and Integrated student/employee calendaring)
Resources	College catalog, Membership application, Search for open classes, Keyword-based open class search, The College class schedules, Evaluation of instruction, Final exam schedule, Student preferences, Browse/apply scholarships, College library, Student computing resources, Buy/pay books online, Academic calendar, Registration dates, Positive assessment experience, Student degree planner, Career portfolio, integrated with co-curricular transcripts, Career exploration about working, Career employment services, Pre-advising and orientation, Student communities, and Integrated communications/messaging (Learning management system integration, File management/sharing, Interactive orientation, Podcasting, iTunesU integration, Enhanced financial services, and Online advising)
Administrative Tools	View/change personal information, Change password, Add/drop classes, Transfer major change, Enrollment status, View student schedule by term, View grades by term, View transcript, Request official transcript, Degree audit/shopping, Pay online by credit card, Pay online by personal check, Installment payment plan, Financial aid (Status, Survey, and Book check status), Graduation status, Registration wizard, Learning support, Finance (1098T form, view student bills, view student receipts, view student obligations, view student bank, and view student coverage), Admissions tracker, Student records improvements, My academic plan, and Integrated communications/messaging (Business process management, Internship management, Student activities management, Portal replacement, and Membership process redesign)

Figure 10.4 | ARTEMIS Major Functions

The E-Systems technology team is responsible for advanced web-development and enterprise system integration. ARTEMIS 1 was implemented in the Microsoft .NET framework. Web services are created as the integration points with ORION and other solutions and consumed by portlets for display in a web interface. The e-systems team is migrating the web services and deployment framework to operate within the Oracle/Sun JES Environment. This migration results in having a supported platform for delivering high value services via the web.

ARTEMIS integrates with ORION through a series of middleware products that are selected based on the needs/specification of the solution.

Similar to the Applications team, the E-Systems team has many tools at their disposal to develop, maintain, and govern modules and SOA artifacts in the development and runtime environment. These tools are listed below.

ARTEMIS Applications/Integration Toolset:

E-Systems Team	
Software AG Crossvision Suite*	
Business Process Manager (BPM)*	Used primarily for the conversion of existing business processes into system-based processes through the use of discrete services in a GUI mapping tool.
Legacy Integrator (EntireX Communicator)*	Direct exposure of legacy modules via XML Web Services. This provides real-time integration with the Enterprise Datasets. (Web-ification)
Enterprise Information Integrator (EII)*	Combines multiple data sources (Adabas, SQL, Oracle, Web Services) to provide a single-view via XML Web Services.
Service Orchestrator*	Create, manage and expose services throughout the Enterprise. Colleges current BPEL (Business Process Execution Language) editor.
Application Composer*	Compose rich Internet-based applications using existing services that are governed through Centrasite.
CentraSite*	Repository used for the compilation of meta-data that defines and describes the Service Oriented Architecture for the College. Centrasite also serves as the governance for SOA based artifacts.
Software AG ApplinX*	Direct exposure of legacy Natural maps via XML Web Services. (GUI-fication)

Software AG SQL-Gateway	Exposes Adabas data using SQL Queries. SQL Gateway is used mainly at the College for database reads
Microsoft Project	Used for the creation, modification and management of project plans.
Java Technologies	Programming language for Web-based and systems integration applications.
Microsoft .NET Framework	Environment for Web-based and systems integration applications.
SQL Server	Enterprise database used for data warehouse, systems integration management, and portal control data.
Oracle	Enterprise database used for instructional support.
Adabas	Enterprise database used for support of the Enterprise Resource Planning (ERP) solution.
3D Studio Max	Design and development of visually appealing 3D graphical user interface elements.
Adobe Suite	Graphics design and production.
Macromedia Suite	Graphical and user interface element production.
Oracle/Sun Studio Suite	Supports the development of Java based portlets and the portal environment.
MyEclipse	Supports the development of Web-based and systems integration applications.
Visual Studio	Supports the development of .NET based applications.
Chart FX Studio	Creates graphical elements used for the display of charts, graphs and reports.

Figure 10.5 | ARTEMIS Applications Toolset

Learning Management System

The College continues to have an increasing enrollment in distance learning, hybrid and traditional courses supplemented by web-based/LMS content.

Learning Management System	
Tools/Products	
The Blackboard Academic Suite 7.1	The Blackboard Academic Suite 7.1 is an integrated set of products for e-Learning including Course Management, Content Management, and Community Building through a Portal server. Blackboard uses a system of Building Blocks (standards-based, open APIs) to customize Blackboard software. Nearly 200 Building Blocks (commercial, free and open source) are available from Blackboard's online catalog.
Respondus	Respondus 3.5 is a tool for creating and managing exams that can be printed to paper or published directly to Blackboard and other e-Learning systems.
Blackboard Content System	A software application that enables institutions to store and manage content while increasing collaboration. The Blackboard Content System contains powerful capabilities that can be used to manage and share files, use e-Portfolios to evaluate student development, and categorize and share high-quality learning materials.
Wimba	A set of voice tools integrated with Blackboard that personalize online courses using threaded voice boards, voice-enabled email, embedded voice within course pages and live group discussions and debates.
ePortfolio	E-Portfolios are a valuable learning and assessment tool, encompassing a collection of artifacts, including demonstrations, resources and accomplishments. E-Portfolios can be used by individuals, groups or institutions to manage and organize work, as well as to control access to that work.

Figure 10.6 | Learning Management Tools

Blackboard Academic Suite 7.1	
Features	
Communication Tools	Communication within Blackboard is facilitated by the following tools: Discussion Forums, Discussion Management, File Exchange, Internal Email, Online Journal/Notes, Real-time Chat and Whiteboard.
Productivity Tools	Productivity Tools include Bookmarks, Calendar/Progress Review, Searching Within a Course, Work Offline/Synchronize and Orientation/Help.
Student Involvement Tools	Tools to facilitate student involvement include Groupwork, Community Networking and Students.
Authentication	Blackboard authenticates through a single sign-on solution, and authenticates through LDAP.
Registration Integration	Registration Integration links to ORION. All courses, students and faculty are auto-populated into Blackboard.
Course Delivery Tools	The key Course Delivery Tools in Blackboard include the following: Multiple Test Type Options, Automated Test Management and Support, Online Marking Tools, Online Gradebook and Course Management.

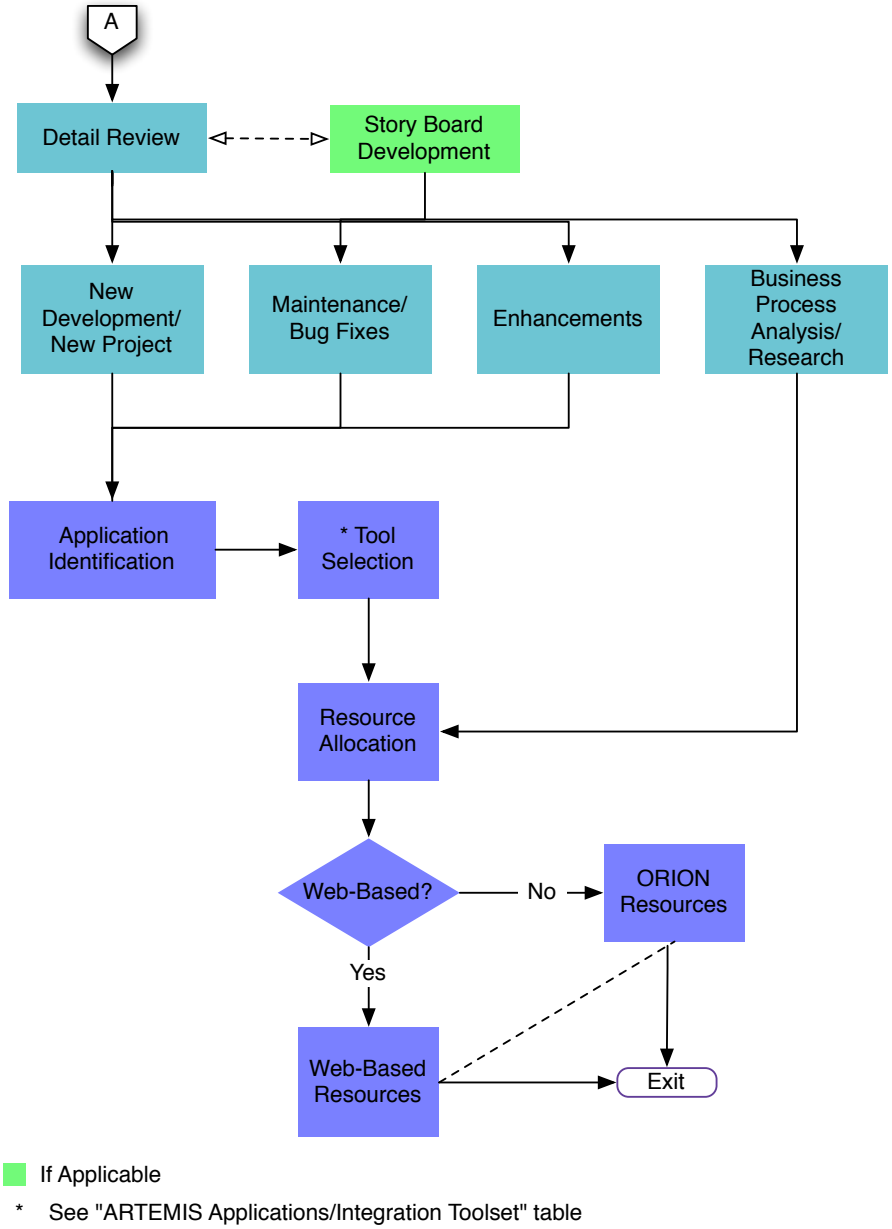


Figure 10.9 | Development Process

Content Development Tools	The following are the Content Delivery Tools accessible through Blackboard 7.1: Accessibility Compliance, Content Sharing/Reuse, Course Templates, Customized Look and Feel.
Instructional Design Tools	Instructional Design Tools include both linear and nonlinear learning sequences using a content library, as well as information, tips and tutorials on Instructional Design.
Instructional Standards Compliance	The Blackboard Academic Suite 7.1 is SCORM 1.2 and 1.3 compliant.

Browser Access	Compatible browsers for Windows 2000 include IE 6.0, Netscape 7.1 and 8.0, Firefox 1.0. Compatible browsers for Windows XP include IE 7.0, and Netscape 7.1. Compatible browsers for Mac OS 10.2 and 10.3 include IE 5.2, Netscape 7.1, Firefox 1.0, Safari 1.0, 1.1, 1.2, and 2.0.

Figure 10.7 | Blackboard Major Functions

Governance

Research and development begins through a formal request process. Requests are submitted through Web-form to the team directors. The directors review the request and moves it through the process depicted in figure 10.8. Dependent upon the length of the request, it traditionally will move through the governance process for prioritization. This process ensures that the requests are linked to state/federal requirements (Compliance Framework), Collegewide Initiatives, promoting high quality customer service (direct or indirect), and to maintain the College's leadership position in Technology.

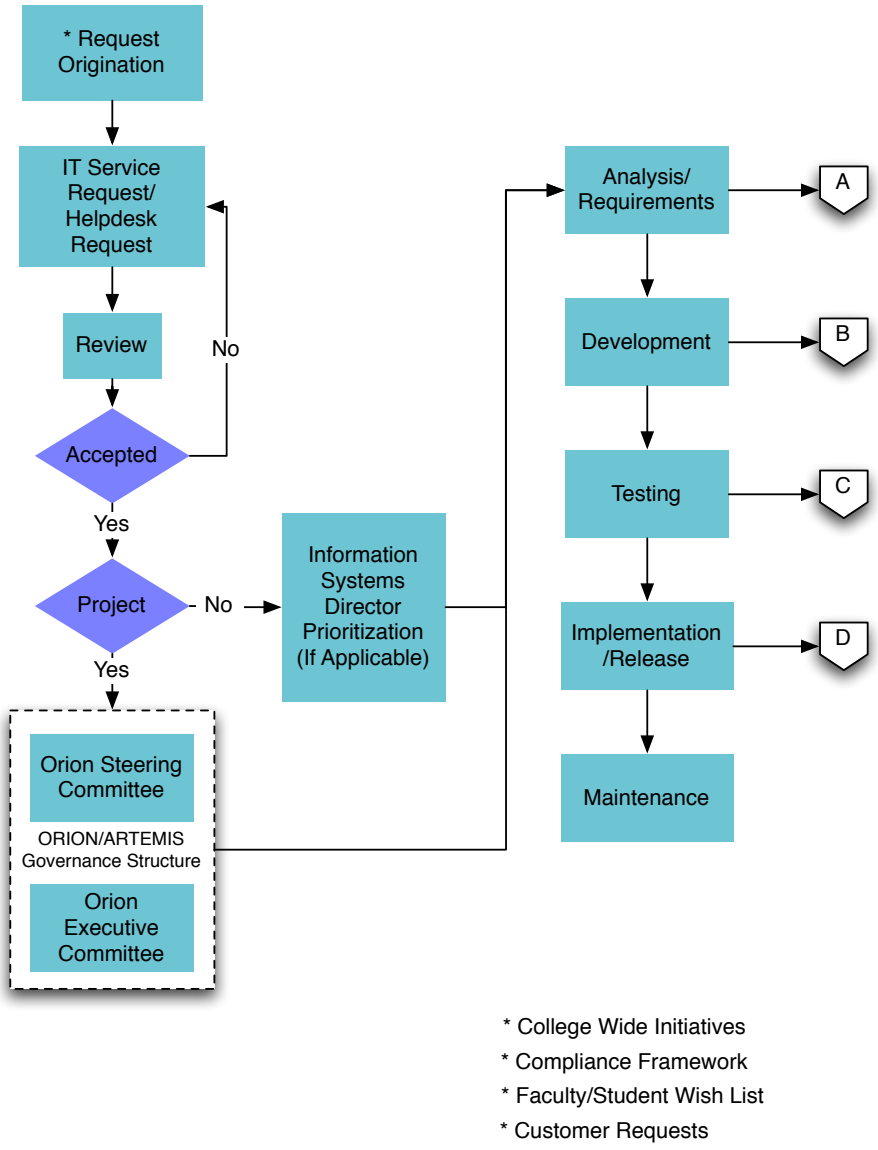
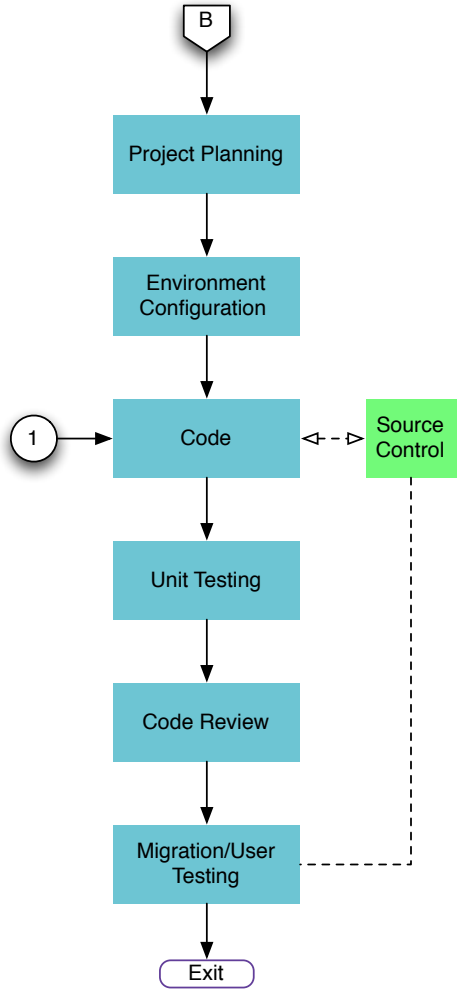


Figure 10.8 | software Development process

The Analysis and Requirements phase of the Software Development process is illustrated in figure 10.9. The process starts with a detail review of the submitted request and may or may not include story board development. Each project request is reviewed and categorized as New Development, Maintenance, Enhancements or a Research project. Once that is complete the appropriate tools are selected and resources are assigned. There are many projects that involve resources from both the E-Systems team and Applications team.



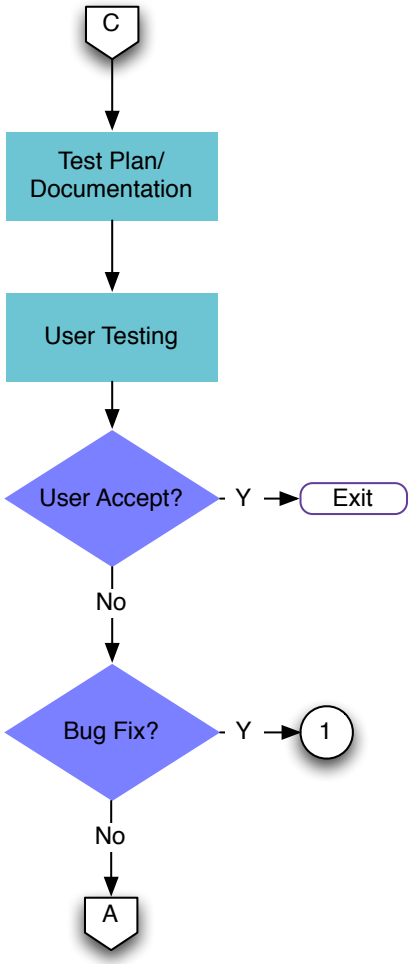


Figure 10.10 | Development PRocess - Development

Figure 10.11 | Development PRocess - Testing

Figure 10.10 represents the Development phase of the request cycle. Project planning is generally accomplished through the evaluation of the specifications provided by the project owners identified in the Analysis and Requirements gathering phase (figure 10.9). Coding, unit

testing, code review and user testing are all accomplished by a development team, including the project owner(s).

Figure 10.11 represents the Testing phase of a project request. A test plan, developed by the project owner (or assigned resources) is executed to resolve any bugs (Glossary) or issues not meeting the design specification. If any bugs are found, the project request is then placed back into the development phase. Once acceptance is complete, the project request moves on to the next phase.

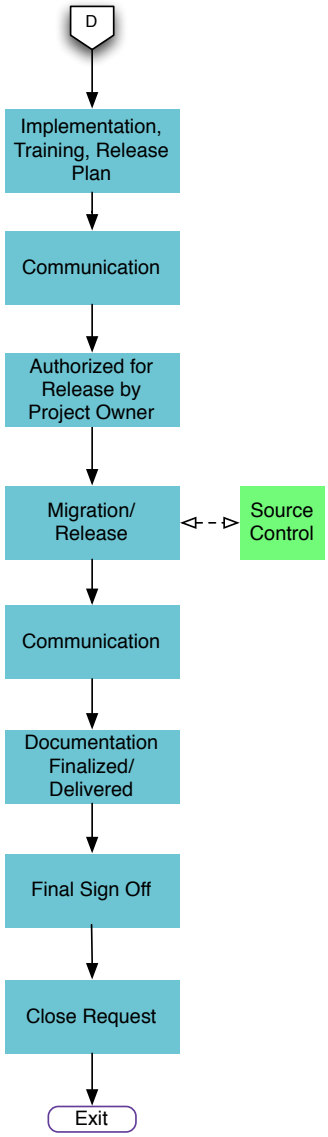


Figure 10.12 | development process

Figure 10.12 represents the Implementation and Release phase of the project request lifecycle. A full implementation plan is developed, including a training plan and a release plan. The development team works together with the appropriate project owner assigned resources to execute the implementation and release plan. The training plan is generally managed by the project owner. The implementation executes the full release to the production environment, and ends in user sign off that the product is functioning as specified. At that time, the request is closed.

Solution Selection Process

The methodology used in the selection of solution for the technology environment is depicted below.

1000 Mbps

- Does the solution already exist in the software portfolio/inventory
- Open-source
- Commodity
- Product (non-ASP)
- Integrate multiple of items 1-4
- Develop in-house

The College generally uses this approach to determine how a particular request is implemented. This approach is an extension of SOA for providing high value product through a methodology that encourages open-source solutions.

Network Architecture

Network architectures have hardware commonalities that are differentiated by geographical distance. The generic LAN, WAN, and MAN networks are described as follows:

Local Area Network (LAN)

The local area network (LAN) refers to a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (e.g., within learning lab). Usually, the server has applications and data storage that are shared in common by multiple computer users. LANs serve as few as two or three users (e.g., in a home network) or many as thousands of users (e.g., in an FDDI network).

Wide Area Network (WAN)

The wide area network (WAN) is a geographically dispersed telecommunications network. This term distinguishes a broader telecommunication structure from a local area network. An example of a WAN would be the Collegewide network.

Metropolitan Area Network (MAN)

The metropolitan area network (MAN) is a network that interconnects users with computer resources in a geographic area or region larger than that covered by even a large LAN but smaller than the area covered by a WAN. This term is applied to the interconnection of networks in a city into a single larger network (which may then also offer efficient connection to a wide area network).

MAN is also used to mean the interconnection of several local area networks by bridging them with backbone lines. The latter usage is also sometimes referred to as a campus network. The College currently has a 100 Mbps connection to the Internet at the Deerwood Center. This service is combined with a lease of 32 class C address licenses.

Server Computing Systems

Server Computing Systems provide network services to internal and external client and server systems and consist primarily of the following (in order or prevalence):

- 64-bit Intel Architecture (IA-32) single, dual and quad-processor server systems running Microsoft Windows Server Operating Systems or Mac OS X server
- 64-bit Oracle/Sun Ultra Sparc Architecture single, dual-processor server systems running Oracle/Sun Microsystems Solaris Server Operating Systems

Services provided by servers support educational delivery and administrative processes and include, but are not limited to:

- File Services
- Print Services
- Email/Groupware Services
- Web Services
- FTP Services
- Network Login and Authentication Services
- Internet Firewall/Security
- Client and Server Anti-virus Management

- Host Naming Services and Name Resolution
- Distance Learning
- E-commerce
- Document Imaging
- IP Telephony
- 3270-based Enterprise Administrative Application
- Other General Application Services

Wireless

The primary purpose of wireless is to allow staff and faculty the freedom to move about with their laptops or PDAs without having to physically connect to the Collegewide network in different locations. All campuses and centers have implemented this technology at data rates of 45 Mbps (802.11g).

Wireless carts and laptops serve to make instructional computers available for multiple classrooms.

The current College standard for wireless is by use of a Cisco 1200 series, 802.11g, and Access Point. Antennas and cabling vary by installation. The minimum specifications recommended for indoor antennas are equal to or exceed that of the Cisco 2dBi Diversity Omni-directional Ceiling Mount Antenna.

Client Computing Systems

Client computing systems (desktops and laptops) are used by faculty, staff, and students to access local applications and network-based services. The configurations are either a 32-bit Intel Architecture (IA-32) PC computer systems loaded with Microsoft Windows Client/Desktop Operating Systems or 32-bit PowerPC Architecture Apple computer systems running Apple MacOSX Client/Desktop Operating Systems. In preparation for Vista and all new Windows and Macintosh computers purchased we will utilize an Intel 64-bit platform.

Network Intrastructure

The College's instructional networking infrastructure is comprised of routers, switches, wiring systems, and remote access devices and provide common access and interconnectivity between client and server systems and services. Network connectivity at the College includes:

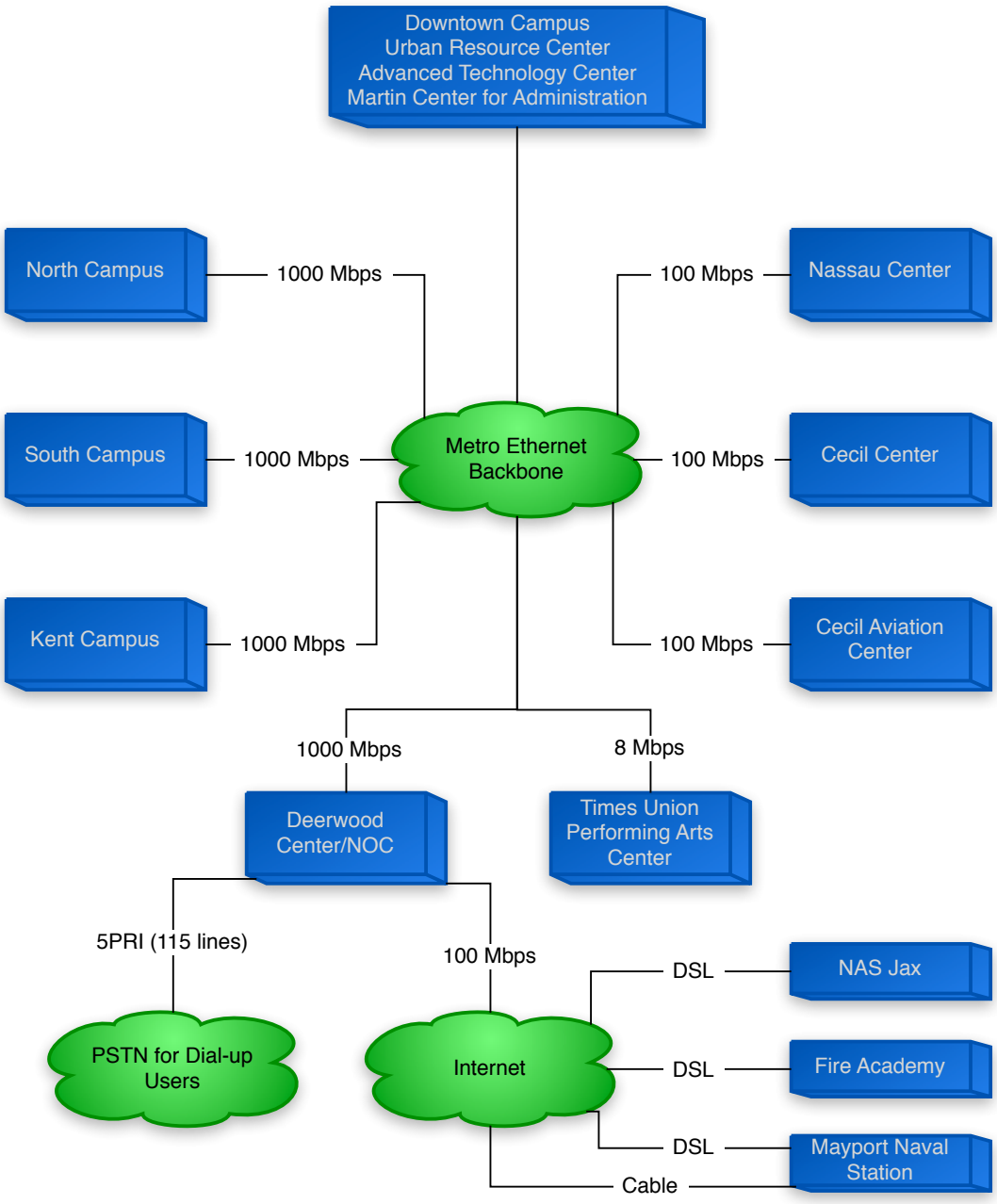


Figure 10.13 | the College data Network

- 100/1000 Mbps switched Fast Ethernet to the desktop Collegewide
- 1000 Mbps switch Fast Ethernet connections from all campus and Network Operations Center to the MAN provider's network (cloud)
- 8 Mbps Fast Ethernet to the Times Union Performing Arts Center

- 100 Mbps Fast Ethernet connections from smaller centers to the MAN provider's network (cloud)
- Gigabit (1000 Mbps) Ethernet trunks in high concentration LAN areas
- T1 (1.544 Mbps) connectivity to NOC for small centers (Navy Bases, Times Union Center and Fire Academy is being converted to DSL and Cable Modems with VPN access to the NOC
- Analog (56 Kbps) and ISDN (64/128 Kbps) remote dialup access
- 11 and 54 Mbps (802.11 b/g) wireless access at campuses and centers
- 100 Mbps (half-duplex) Internet connectivity at NOC

Telecommunications

The College has existing business relationships with AT&T/BellSouth Inc. for the majority of its telecommunications needs for voice and data services. Additionally, the College has business relationships with BTI/ITC DeltaCom for toll-free service and long distance as well as and SunCom for inter- and intra-state long distance service.

For data, the Network Operations Center (NOC) is located at the Deerwood Center. Each major campus and center is interconnected by 1000MB Metro Ethernet circuits. Each of the smaller centers (Nassau Center, Cecil Field Center and the Cecil Field Aviation Center of Excellence) are part of this Metro Ethernet cloud, utilizing 100 Mbps circuits. Outlying centers (NAS Jacksonville, and Naval Station Mayport, the Fire Academy and the Times Union Center for Performing Arts Ticket Office) are moving from T-1 data lines to DSL and Broadband Cable Modem circuits utilizing site-to-site VPN links to the Data Center.

The College maintains a modem pool for student/staff/faculty dial-up access to the network and mainframe. This modem pool is serviced by seven PRI circuits (refer to Figure 10.12 for diagram) and is being recommended for phase out.

There are ten sites presently serviced by TRI-BRI (128K) circuits utilized for teleconferencing (refer to Figure 10.13 for diagram).

The College currently has two separate but interconnected voice systems, a legacy Nortel Meridian system and a new Cisco Voice over IP system. Legacy Nortel equipment located on

three campuses (North, South, and Downtown) is maintained by a third party vendor. The Downtown Campus has an 81C PBX switch which houses Meridian Mail (voicemail) for existing Nortel phones. Campuses connected back to the 81C at the Downtown campus with one T-1 tie line each, ensuring access Collegewide to voice mail and 4-digit dialing. PBXs have two PRI installed to provide voice service, and Downtown Campus which has four PRI, for a total of fourteen PRI circuits. BTI/ITC DeltaCom is the primary provider of long distance service at the College.

Over the last few years, the College has significantly to migrate towards using Cisco's IP Telephony solution. This new technology allows IP phones to connect to the existing data network, using the desktop computer network cable therefore greatly reducing the cost of the voice infrastructure and equipment. Florida State College also performs the moves, adds, and changes with its existing support staff instead of contracting this service to a voice provider, also greatly reducing the long-term costs of the system. The College uses Cisco's Callmanager and Voice Gateway for each campus and center. Kent campus along with all six centers (Deerwood Center, Cecil Field Aviation Center of Excellence, Cecil Field Campus, the Urban Resource Center, and the Advanced Technical Center) have migrated to only use Cisco's voice over IP phones. Downtown Campus and the Martin Center for Administrative Services need to convert the fax machine and elaborate analog lines. North campus is half way through its conversion and South has just begun its conversion.

IP Video Conferencing

The College has created two methods of video conferencing. The first is the Interactive TeleVision (ITV) classrooms which uses H.320 PictureTel videoconference equipment. Each major campus has at least one of these classrooms. They use ISDN TRI-BRI connections to connect to each other in a point-to-point fashion. This allows large groups of students and/or staff to meet together in different locations and see and hear each other. Using this equipment, conferences can be made with groups outside the College as well, as long as they have a H.320 conference room with an ISDN connection.

The College also permits H.323 video conferencing to the desktop. All clients can connect to each other in a point-to-point videoconference, using various web conferencing.

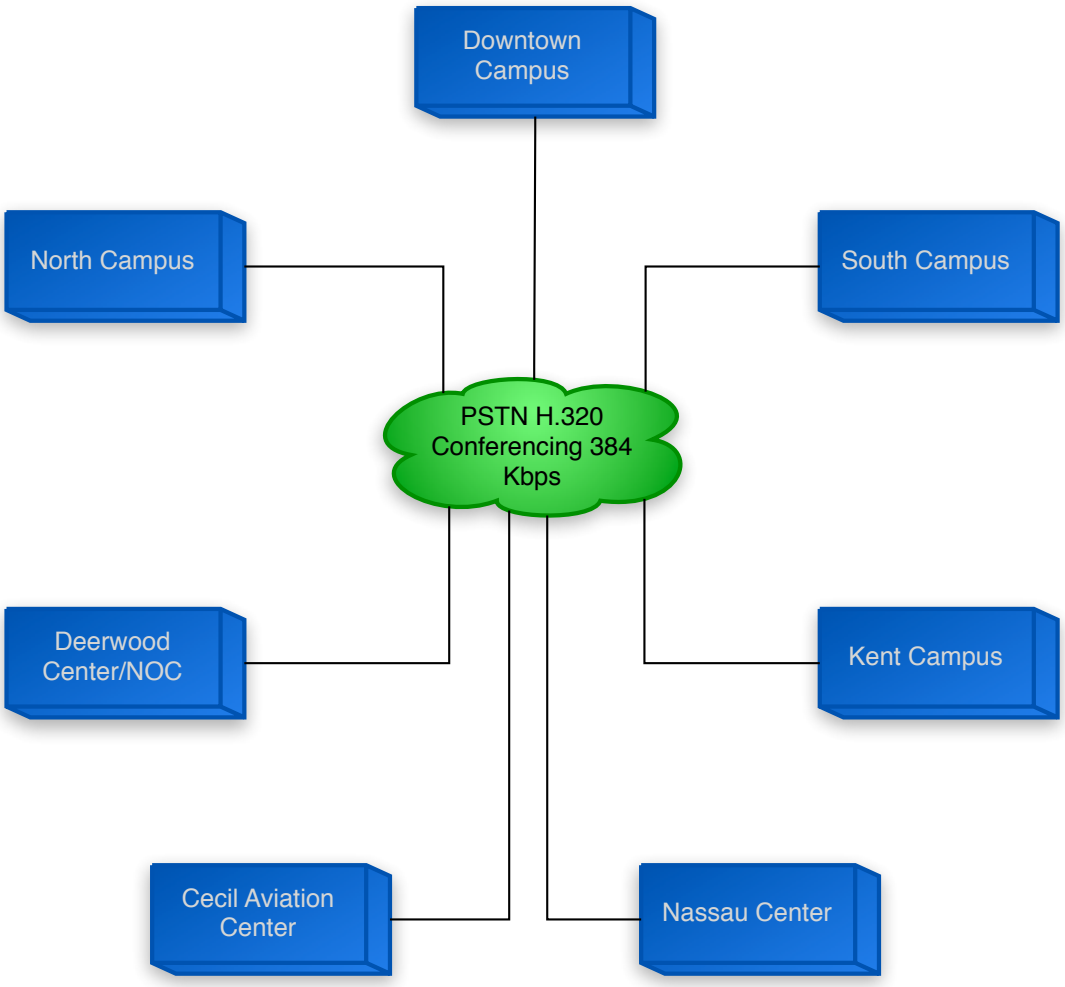


Figure 10.14 | the College Video Network

The College supports Cisco's Video Advantage product for H.323 conferencing. This automatically establishes a video conference using the Cisco phones, the conference attendees regular phone number, and desktop computer.

The College is also looking into methods of upgrading the existing H.320 CODECs to provide H.323 connectivity over the existing Data network, eliminating the need for separate ISDN lines and also allowing multipoint conferences. These plans would also include providing H.320/ H.

323 gateway services, so that the College could still hold conferences with other organizations using legacy H.320 equipment.

Smart Classrooms

The College strives to facilitate technology enhanced instruction in a number of ways, not the least of which is development and enrichment of the learning environment. The College's Smart Classroom initiative (2.02.08) is geared towards placing instructional technology for use by the faculty in on-line, Interactive TeleVision (ITV), and hybrid courses. Group training is typically provided by the Office of Professional Development, with continuing, remedial and one-on-one assistance through the Applied Center for Instructional Design (ACID). Technical support and consulting, as needed, is provided through campus technical support, the Advanced Computing Services (ACS), team the Network Design and Support team, and the Digital Multimedia Authoring Center (DMAC). The current Smart Classroom standards are identified in Figure B.01 in Appendix B.

Summary of Environment

The College's technology environment servers as the foundation for innovation and excellence in teaching, learning, and support processes. It is based in earlier adoption of advanced technologies, consistent pursuit of emerging technologies of promise, and ubiquitous access to the best tools available.

CHAPTER 10 | FISCAL RESOURCES

"Love lasteth as long as the money endureth." -William Claxton

The funding model for Florida State College was amended over the past three years in an attempt to correct perceived disparities in funding equity. Disparities were defined as the difference in percentage of actual funds received to determined need on the basis of an adequacy formula. Unfortunately, this 'regression to the mean' funding formula negatively effects Florida State College's resources base due to its calculation under the formula resulting in its being considered the best funded college in the state. Therefore, despite larger funding trends at work nationally and throughout Florida, the College's funding allocations will continue to be limited until all of the colleges in Florida have reached the parity, or equity, funding level.

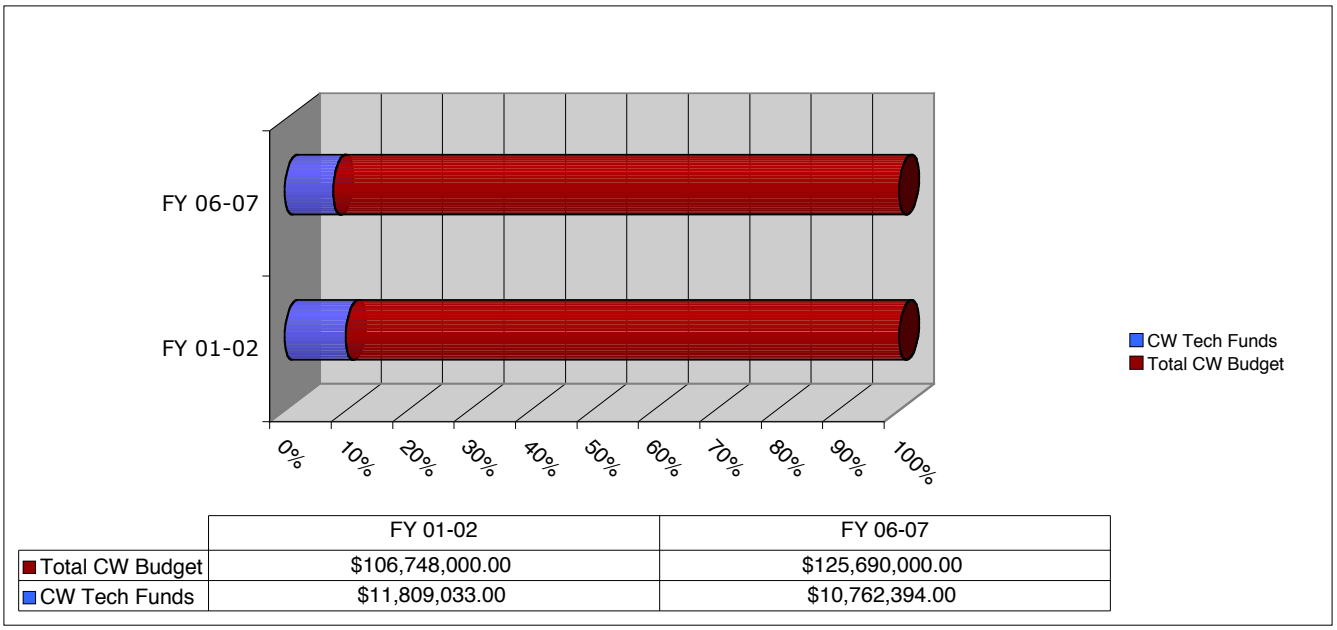
Although national and state funding is up slightly, the 'regression to the mean' penalty previously described in combination with an ever-increasing internal and external competition for resources has resulted in a significant and persistent resource shortage for technology.

The purpose of this chapter is to reflect the reality of the distribution of those resources that are available and to describe the relationship between future trends and anticipated resource requirements.

Technology (Non-Labor) Funds and the College Budget Fiscal Year 2002-2007

Approximately 11% of the College's total operating budget was dedicated to (non-labor) technology related expenditures in the Fiscal Year 2001-2002 budget. This technology includes utilities related to telecommunications and all direct and indirect expenses (except for labor costs) necessary to support the operation of instructional computing facilities and services.

Some five years later the resource allocation in the current fiscal year (Fiscal Year 2006-2007) reflects Collegewide (non-labor) funding some $1.1 million less and now constitutes 9% of the College's total operating budget. Applying the classic definitions of technology, which are much more conservative (and exclude indirect costs), would result in technology funding allocation of 5% to 6% of the total College operating budget.



	FY 01-02	FY 06-07
Total CW Budget	$106,748,000.00	$125,690,000.00
CW Tech Funds	$11,809,033.00	$10,762,394.00

Figure 11.1 | College wide Technology Funding as a Percent of Total Funds

Collegewide and Core Information Technology (Non-Labor) Expenditures

The technology environment and related investments are managed through the application of Collegewide technology standards; within which the College managers are free to make decisions appropriate to their needs. This system ensures that resources are applied to the highest priorities but are consistent with the College's technology vision and architecture. The Collegewide Technology Committee, Faculty Resource Centers, and the Center for the Advancement of Teaching and Learning offer many opportunities to participate and provide input to the Core IT technology initiatives.

The Collegewide philosophy is to distribute resources to the most appropriate level in the organization. The current analysis of non-labor technology funding allocation of the total Fiscal Year 2006-2007 funding for non-labor IT expenses reflects a split of 50% of the total College wide funding for Core IT functions and 50% of the total Collegewide technology funding supporting Campus IT expenditures.

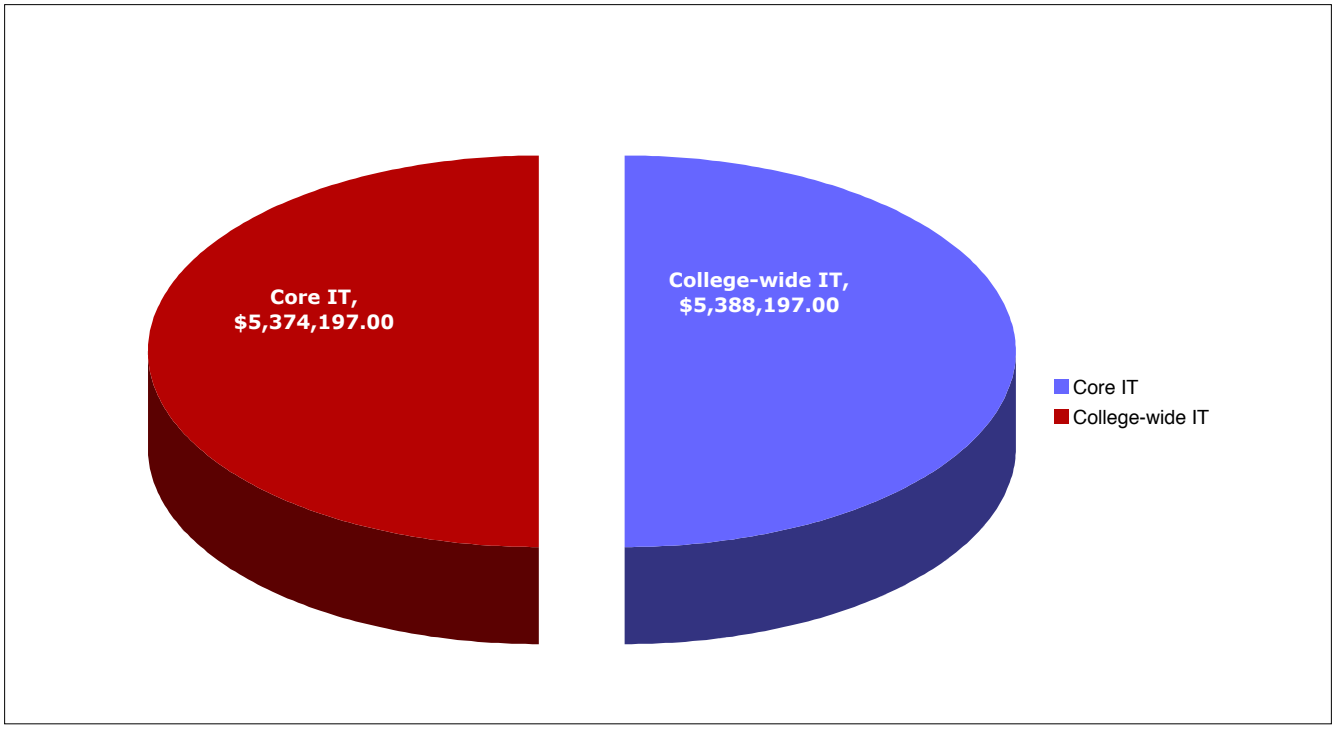


Figure 11.2 | Distributed (Non-Labor) Technology Funds for Core IT and College wide IT

Core Technology Funding (IT Budgets)

Education First

At the time of the previous Strategic Technology Plan (2002), the State of Florida was undergoing considerable financial exigency from the direct and indirect impacts of the September, 2001 terrorist attacks. This impact upon the State economy led to decreases in the State coffers, and resulted in substantial decreases in community college funding. In turn, the College budget was impacted, and within the Core IT a temporary reduction in educational technology funding resulted. An analysis of the Fiscal Year 2003 Core IT budget and a 53%/47% distributive allocation between administrative and educational funding reflects the outcome of the tactical strategies of the period. As illustrated in figure 11.3, the funding trends have again emphasized resource allocation of educational technology and are demonstrated in the fiscal year (Fiscal Year 2007) of a 28%/72% administrative and educational technology resource allocation. The actual change in funding amounts is depicted in figure 11.3.

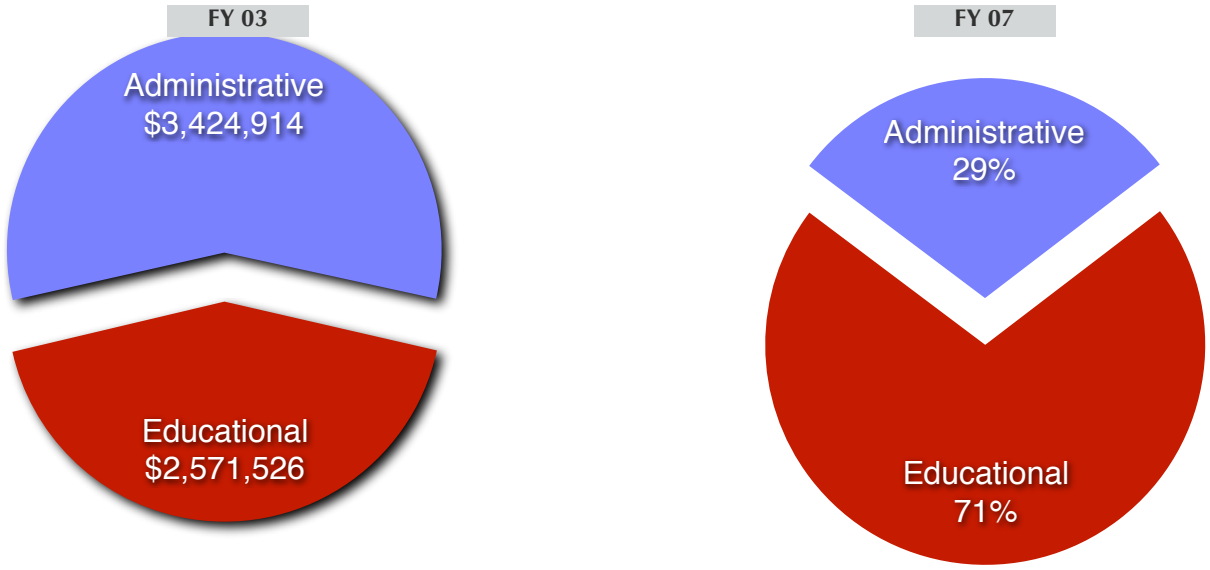


Figure 11.3 | Administrative versus Educational Allocations of Core IT Funds (IT Budgets)

Distributed Labor/Non-Labor Mix

Most educational organizations are extremely labor intensive (including their information technology functions). The Core IT Department has been very successful in maintaining its labor expenses to a minimum and whenever possible, reinvesting funds into its software, hardware, infrastructure, as well as its research and development activities. The result of these efforts is a 26% labor and 74% non labor split in the current fiscal year (Fiscal Year 2007).

The labor/non-labor allocation distribution is impacted somewhat by the use of contracted support services which are budgeted as contractual (non-labor) expenditures. When analyzed by function (labor) rather than general ledger code, the labor/non-labor funding changes to a 30%/70% budget split-still notably below the 44.5%/55.5% funding noted in the Fiscal Year 2002 budget and only a little changed from the current allocation.

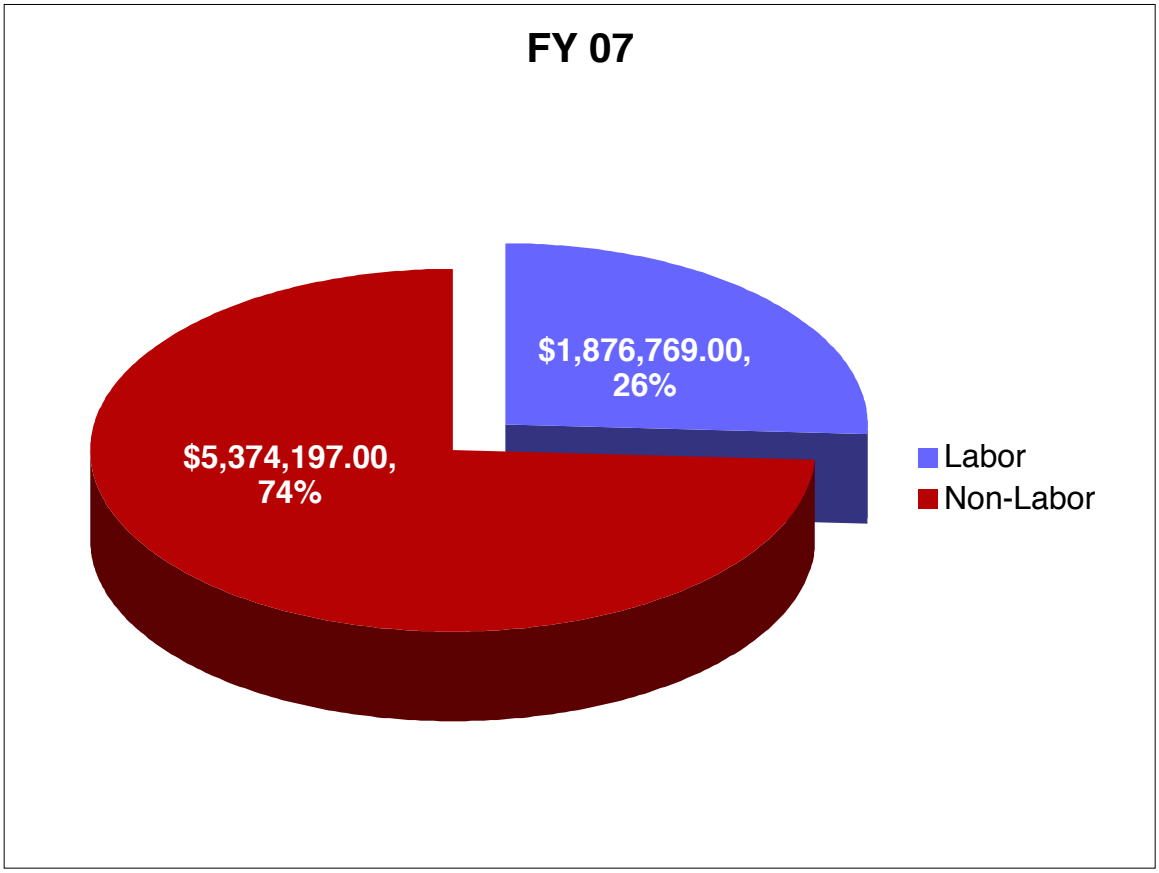


Figure 11.4 | Core Technology Funds by Labor versus Non-Labor

Core Structure Allocation Mix

In its desire to be responsive to changing priorities, the Information Technology Department maintains a dynamic organizational structure to be successful in today's milieu of technology change, knowledge, and skills set requirements.

The major operational units within the Core IT department have changed more in structure than in function. The Networks and Infrastructure unit was previously a subunit of the Educational Technology group, and the E-systems group now exists as a subunit within the MIS/DCC area.

Historically the organizational structure reflected the funding mix and resource allocation resulting in specifically targeted resource allocation models facilitated by budget administrators. College initiatives and projects, and IT initiatives and projects, are not always distinct and/or singular (administrative or educational) and therefore funding support now exists across

budgetary lines. As a result, the Core IT resource distribution for the VP/CIO (4%), MIS/DSS (16%), Networks/Infrastructure (60%) and Educational Technology (20%) is reflective of budget administration; resource allocation is tracked through project codes within the IT Department.

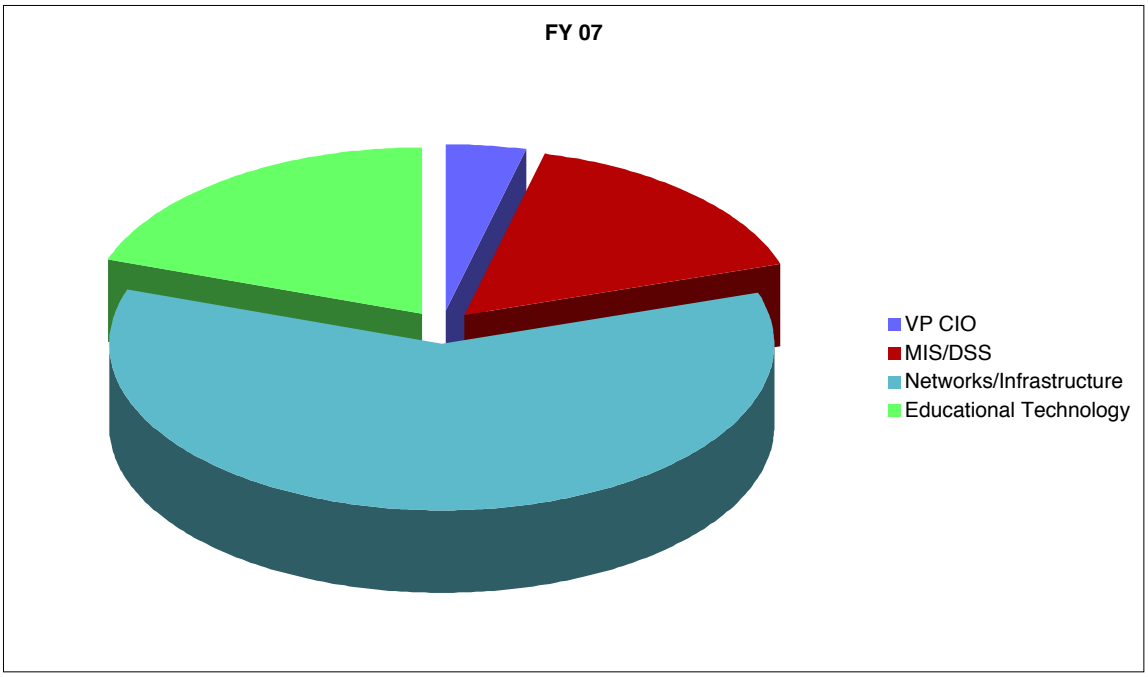
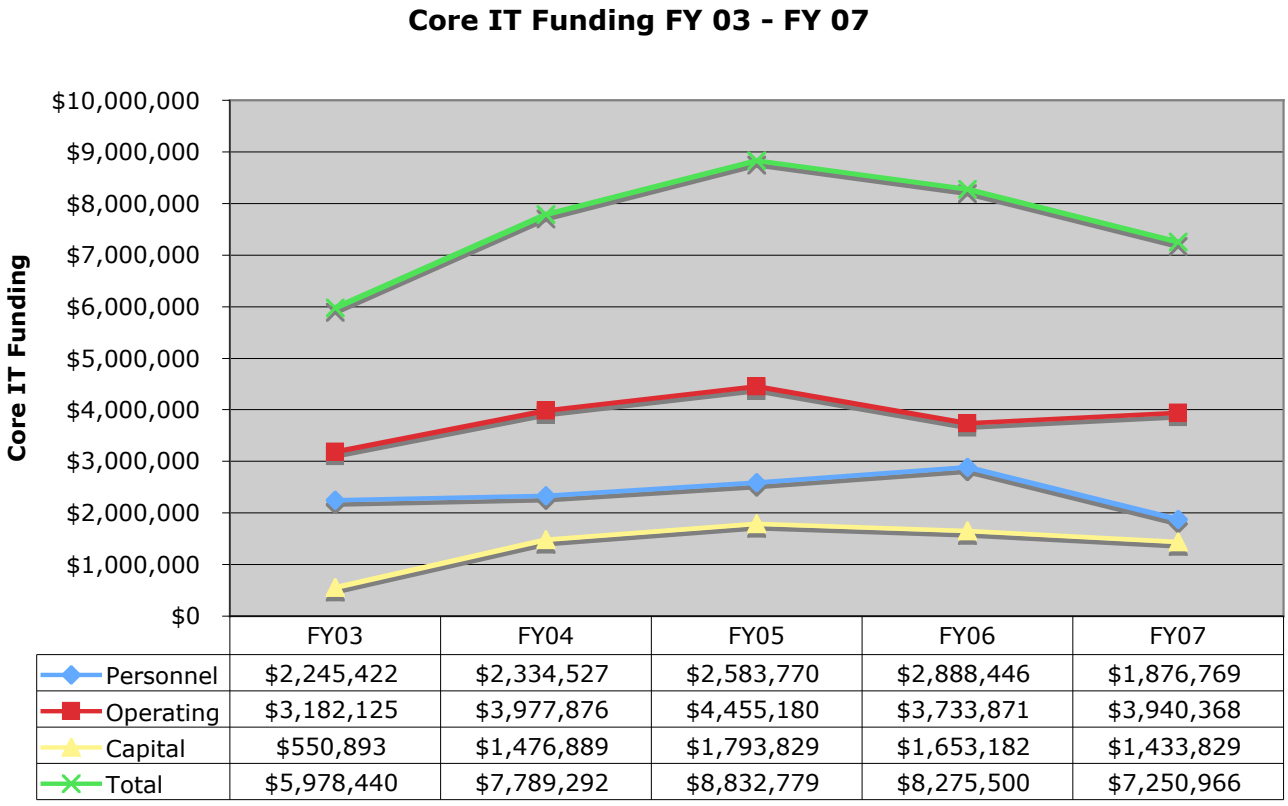


Figure 11.5 | Percentage of Resource Allocation by Operational Units within the Core IT

The Core IT funding reported by its operating units appears to have recovered from the significant decreases in the Fiscal Year 2002 budget (figure 10.6). The general funding history for the last five years is somewhat skewed by the incorporation of the Television Studio and Institutional Research areas within this five year period. This impact has been tempered by redistribution of personnel and budgets. Undoubtedly, the Information Technology Department will need to continue with its agility and dynamic organizational structure for its continued success.



	FY03	FY04	FY05	FY06	FY07
Personnel	$2,245,422	$2,334,527	$2,583,770	$2,888,446	$1,876,769
Operating	$3,182,125	$3,977,876	$4,455,180	$3,733,871	$3,940,368
Capital	$550,893	$1,476,889	$1,793,829	$1,653,182	$1,433,829
Total	$5,978,440	$7,789,292	$8,832,779	$8,275,500	$7,250,966

Figure 11.6 | Core IT Funding FY 03 – FY 07

"You can observe a lot by just watching." – Yogi Berra

Five Year Funding Outlook

The purpose of this outlook is to develop a very rough view of future issues, resource needs, projected major requirements, and forecast of significant technology events that will effect the College. The five year outlook shared within this chapter is based upon (1) navigating the fiscal landscape, (2) globalization and the commoditization of the educational market, (3) trends in collaborative education and collective intelligence, as well as (4) the emerging issues of media creation and the creation of meaningful media.

Navigating the Fiscal Landscape – Conservative Funding, Rising Costs and Demand For Services

In the year 2000, the State of Florida resource allocations provided 75% of the revenue source to Florida State College; today, State support totals 65%. Whereas the College's budget increased from $106,748,000 to $125,690,000 (approximately 15%) from Fiscal Year 2002 to Fiscal Year

2007, tuition for residents has increased 29.1 % and non-resident tuition has risen 26.1%. Like all colleges, Florida State College continues to be faced with rising costs of commodities, maintenance of physical plant, increases in utilities, health benefits and personnel costs continue to rise.

Even in the face of increased operational costs, the College continues to address its demand for services. Distance learning continues to constitute an increasing percentage of total FTE enrollments, and requires increasing online support services. The College's Quality Enhancement Plan (QEP) for increased retention, persistence, and success continues as Project Renaissance; the creation of the Division of the Pre-College Division, development of technical career centers and support of apprenticeship programs are only some of the College's total investment of $2.752 million this year.

Core IT Fiscal Implications

- The competition for funding and personnel in this environment is intense and will require continuing need for efficiency and effectiveness.
- Personnel will be supplemented by project requirements, thereby increasing funding requirements in the operating budget
- Training costs for current personnel will increase and will be reflected in the operating budget
- College initiatives which require additional software and/or hardware will require an increase in both operating and capital portions of the budget
- The College's networks and infrastructure will be defined as a strategic resource and require additional funding for maintenance and enhancement

Globalization, Commoditization of Education, Increasing Competition and the Experience

It was only a matter of time for educational institutions to follow government and businesses into industrial globalization and a worldwide marketplace. Approximately ten years ago persons in Jacksonville seeking post-secondary education were limited by a number of factors and their choice was usually influenced by access, location, cost, and convenience. Since then, the World Wide Web has allowed consumers access to a variety of providers for goods and services,

including post-secondary education. The College's online enrollment growth suggests success in this marketplace, and substantial growth in providing military education is another of its successes in the global education marketplace.

The expansion of the marketplace, and the development of such regional bodies as the South Regional Education Board (SREB) has not only provided a compact for 16 Southern States to work together to attain educational goals, but it also provides a marketplace for online coursework and degrees both from FCCJ and other colleges. Just as with most consumer transaction the personal experience will impact the continuing relationship between the College and the student.

Core IT Fiscal Implications

- The need for system availability will increase and require funding for system monitoring and be reflected in the operating budget and failover capabilities increasing hardware costs; disaster recovery and business continuity costs will require increases in operating and capital budgets.
- Systems integration between the Learning Management System, ORION, and ARTEMIS will increase, requiring an increase in the operating budget; enhancement of the services bus will require business process management and require increases in the operating budget for software and services.
- Transition of the College's website management and expansion of the records management system and increased use of the enterprise content management system may require programming services and/or permanent part-time personnel will require increases in the personnel budget and operating budget, respectively.
- Competition in the marketplace will necessitate realignment of the Service Oriented Architecture (SOA) and incorporate federated identity management to expand customer services through partnerships rather than in-house development. This increase need for services would be reflected in the operating budget.
- The provision of educational content on a worldwide scale will require content creation, digital rights management, and the development and maintenance of resources. These costs will be underwritten in the operating budget and capital budget as needed.
- Training costs for current personnel will increase and reflected in the operating budget.

Accountability, Assessment and Accreditation, and Knowledge Management

The accountability movement in government began in the 1980s and has moved into the education environment. Recovery from the recessions of the 1990s brought with it renewed funding of educational institutions albeit with accountability and performance measures; some funding is tied to performance outcomes. State and Federal requirements for data submission, report submission, and ad hoc information are increasing yearly.

The new Southern Association of Colleges and Schools (SACS) accreditation standards will require a continuing emphasis on instructional design, especially on the linkage between instruction, assessment, outcomes and action plans. There will be an increased need for applied research capabilities within the College to identify variables for success for different cohorts. SACs standards expand the measures of success from the academic domain to student success and services (directly), and resource/support services (indirectly). This will require an expansion of survey research for these areas.

Knowledge management, usually reserved to reflect the incorporation of hardware, software and business intelligence, will take on new meaning at the College through its SIRIUS Academics program. Incorporating instructional design and traditional learning management system functions (both of the software and instructional system requirements) an artificial intelligence component has been considered to incorporate learning styles of the student, and overall experience of the system (faculty/student/learning interaction) to enhance the learning outcomes.

Core IT Fiscal Implications

- The development of a knowledge management system will require (1) creation of a system for data integrity and process validity, (2) development and/or expansion of Oracle data base services, (3) flowcharting of business processes including State reporting and the College's program review (CPR), (4) increased digitization of information and content required for SACs, and (5) the development of instructional content for professional development. These activities will require increases in the operating budgets for software and contract services, and possible increases in the capital expense budget for associated storage expansion and hardware.

- Expansion of the MIS dashboard will potentially require programming services and software which will be reflected in the operating budgets.
- Systems integration between the Learning Management System, ORION, and ARTEMIS will increase requiring an increase in the operating budget; enhancement of the services bus will require business process management and require increases in the operating budget for software and services
- Competition in the marketplace will necessitate realignment of the Service Oriented Architecture and incorporate federated identity management to expand customer services through partnerships rather than in-house development. This increase need for services would be reflected in the operating budget.
- New methods of assessing outcomes will include non-traditional evidence such as ePortfolios. These costs will require increases in software and storage and be reflected in operating and capital expense budgets.
- Programming services for the artificial intelligence component of the SIRIUS project would require an increase in the operating budget.
- Training costs for current personnel will increase and reflected in the operating budget.

Collaborative Education, Collective Intelligence, Blogging and Wikis

The College's Southeastern Center for Cooperative Learning and Learning Communities represented an early innovation in facilitating active learning activities in the classroom. The new forms of collaborative education are observed in instructional activities which foster collaborative education using technology; incorporating the collective intelligence of internal and external constituencies, and providing a forum for the development of the collective intelligence in blogs and wikis. These technological creations not only serve as a medium for active learning activities but serve as a mechanism for social interaction – to contribute, to share and to collaborate.

There are concurrent development activities in virtual environments and massively multiplayer educational gaming. Virtual world environments can be very effective learning spaces as they are general in nature and can be used by almost all disciplines. The environment, actions, locations, and artifacts can all be created as necessary.

Core IT Fiscal Implications

- The creation of blogs and wikis has already begun at the College. The expanded use of these environments for both learning and group activities will require further purchase of blogging and wiki software, and server hardware. These costs will be reflected in the operating budgets and capital expense budgets.
- Virtual environments and massively multiplayer educational gaming requires investments in research and development, software, and hardware. Creation of environmental artifacts will require support depending upon their complexity.
- The learning object repository will have to be expanded to incorporate 3D objects.
- Training costs for current personnel will increase and reflected in the operating budget.
- An increase in storage capacity would require investment in storage virtualization or hardware, and would require an increase in operating and/or capital expense budgets.

Media Creation and Creation of Meaningful Media

The development of instructional media created by faculty, publishers, and instructional designers has increased, and along with it the creation of learning object repositories, standards of meta-data tagging for learning objects. The importance and value of this learning content has brought to bear issues of intellectual property, copyright laws, and as a consequence, digital rights management. Yet to be developed is the standard of meaningful media – how the term will be operationalized, tracked, initiated and valued in the marketplace.

Core IT Fiscal Implications

- The College has been involved in the creation of digital media for a number of years, and is now testing its learning object repository. Clarification of intellectual property and digital rights for marketable products has to be clarified and codified in order for maximum use of the repository. It is assumed that these costs will currently be supported outside of the Core IT budget for both marketable products and College-owned objects in the repository.

- Opportunities exist for digital rights management as there is expanded use in courseware. It is anticipated that such funds would be required in programming and contact services, and reflected in the operating budgets.

A part of the artificial intelligence component for the SIRIUS project linking the object, interactive system outcome and dynamic tagging would require an increase in the operating budget.

CHAPTER 11 | CONCLUSIONS & SUMMARY

"Power corrupts. Absolute power is kind of neat." -John Lehman

This newest iteration of the College's Strategic Technology Plan is really about the achievement of the next generation technology vision. The vision is a simple one: 'Technology Leadership through value creation.' This vision will be realized through completion of the five major initiatives described in this plan.

Although the strategic plan is essential and represents the truly big technology projects at the College, there are quite literally hundreds of operational projects underway in support of these and other Collegewide initiatives and major projects.

The status of major initiatives, projects, and tasks is presented to the College President and the Chief Academic Officer on a quarterly basis and to the Board of Trustees through the College President's initiatives updates and corresponding strategic conversations of the Board of Trustees.

While most technology acquisitions and projects are managed through operational planning and budget processes there are, from time-to-time, exceptions. The budget requirements and/or planned acquisition of large cost or significant volume items are the typical exceptions. In the Fiscal Year 2005-2006 year major funding for Global Learning Technology was provided outside the operational processes while ORION 3 phase I, SIRIUS, and the other major initiatives were supported through re-prioritization of existing technology budgets. Appendix A of this plan estimates the raw number of devices/items anticipated for acquisition over the term of this plan. It is anticipated that funding will be secured outside of the operational budget process.

This strategic technology plan is designed to address all of the major trends and issues presented in the first chapter. The future holds marvelous technological advances and opportunities for the College. It is a truly exciting time to lead.

Through completion of the five major initiatives included in this plan, and continued vigilance on normal projects, the College will extend its success and technology leadership position well into the next decade.

APPENDIX A | NEXT GENERATION TECHNOLOGY STANDARDS & ACQUISITIONS*

"A lot of things are changed or going to be changed very soon. We have revolution now." -Oleg

*** Actual acquisition is intended to be based upon the then-current versions of these models, inclusive of the balance of manufacturer's product line**

Potential Future Purchases

Manufacturer Model/Type	Estimated Annual
Apple iMac & Mac Mini	2800
Apple MacPro	200
MacBook (Air & Pro included)	600
ORACLE and Dell SAN	100
Oracle/Sun Servers	100
Dell Servers	100
Dell Optiplex	500
Dell Precision	100
Dell Laptops	100

Application Subscriptions

Solution/Product/Service	Description
Apple Education Licensing Program	Software Site Licensing (OS, Server, iWork, iLife)
Citrix Software	Virtualization, Infrastructure, Collaboration and Licenses
Microsoft Campus Agreement	Microsoft Office, OS, Server, Exchange, ILM
Microsoft Developer Network (MSDN)	Developer Subscriptions for Microsoft Software Environment

Cloud & Hosting

Solution/Product/Service	Description
Acalog Software Suite & Service	Academic college catalog management and support application.
Amazon Web Services (AWS)	Cloud based services including web applications, storage, backup and ISP support.
BMC Services	Cloud and Hosting Services
Concord XiTracs	Software application used by the HR department to collect, review, and publish reaffirmation and compliance information required by SACS. HR and the Office of Institutional Effectiveness collaborated on the purchase and deployment of this software.
Desire2Learn	Learning management system (LMS)
Google Cloud Connect	Web-based collaboration tool
HP Cloud	Cloud based application support services.
Hyland Software OnBase	Digital document imaging and management provider.
Instructure Canvas	Learning management system (LMS)
IntelliResponse	Self-service question and answer platform ("Just ask!" and "Just ask IT!")
Intelliworks	Recruitment and enrollment management application system.
Kaltura	Digital media management and delivery
Linden Lab SecondLife	Annual Renewal of Florida State College at Jacksonville Online Island Classroom in Second Life
Microsoft Azure	Microsoft SQL Database Hosting
Microsoft Live@edu	Email, Storage and Web hosting service
Monet Software	Call Center Reporting and Staff Management Service for the Welcome Center
Moodlerooms	Learning management system (LMS)
MyEz Appointment	Web based appointment application utilized for supporting student testing, advising and related systems.

Northwest Regional Data Center	Cloud and Hosting Services
Peak 10	Application hosting and backup provider.
Regent Education Financial Aid - Diamond Cloud/Saas	Financial aid application system.
Salesforce.com	Web-based collaboration tool
SilkRoad	Talent management solution.
Streaming Media	Streaming Media
Tessitura	Tessitura enables internet capability for ticketing processing
WEAVEOnline	Software application used by the College for developing and maintaining continuous improvement processes for both the academic and administrative structures; requested and deployed by the Office of Institutional Effectiveness.
Workday	Human capital management/Finance/Payroll system.

Content Subscriptions

Solution/Product/Service	Description
Comcast	TV & Telecommunication Services
DirectTV	TV & Digital Communication Services
FirstCom	Production Music Library
HughesNet	TV & Digital Communication Services
iStockphoto	Image Library
Killer Tracks	Production Music
Lynda.com LyndaPro	Academic Software: Online Training Tutorials for Collegewide Faculty Resource Centers and staff.
Omni Music	Production Music Library
OReilly ETech & Safari Online Library	Technical Reference Manuals on-line

Enterprise Applications

Solution/Product/Service	Description
Advanced Data Systems	Imaging
Blackboard Academic Suite	Learning Management System (LMS) which includes Learn, Collaborate, Connect, Transact, Analytics and Mobile platforms.
Lyris List Manager	SPAM Service for Marketing
Mediawiki Wiki Server	Wiki application framework.
Moodle	Open source learning management system (LMS).
Oracle PeopleSoft Enterprise	Enterprise Resource Planning (ERP) system.
Symphony Ensemble Video CMS	Digital Content Management System
Wolffpack FINANCIER	Enterprise financial aid application.

Hardware & Infrastructure

Solution/Product/Service	Description
8e6 Technologies (Internet Filter & Reporter)	Internet Content Filter (Being replaced by Palo Alto)
Agilysys Applications	Hardware and software support for College systems. Includes applications, services, software and servers.
AMX Control Equipment	Remote Control/Device Automation Equipment
Apple Desktops & Laptops	MacBook Pro, iMac, Mac Mini, MacBook Air, Mac Pro
Apple Mobile Devices & Peripherals	iPads, iPhones, iPods, Apple TV (all models and related accessories)
Axis Security Cameras	Security Cameras
Blackmagic Design	Design Control Surfaces
Cisco Appliances	Miscellaneous Cisco Servers and Network Hardware
Cisco Network Hardware	Network Hardware
Cisco Phone System Hardware	Phones & Servers

Cisco Video Conference & Signage Hardware	Video Conferencing, Telepresence and Digital Signage Hardware
Citrix Appliances	Citrix Virtualization Servers
Crestron Control Equipment	Remote Control/Device Automation Equipment
Dell Appliances	Special Use Servers
Dell KACE Appliance	Image and Inventory
Dell Peripherals	Miscellaneous Dell Parts
Dell Servers	Servers (Intel)
Dell Workstations	Computers (Intel)
Duet LEX	Character Generator & Hardware Maintenance
EMC Appliances	Miscellaneous Servers
EMC Servers	Servers (Intel)
Extron Control Equipment	Remote Control/Device Automation Equipment
Google - Search Engine Appliances	Search Engine Appliance
HID Door Security Products	Door Security Hardware
Juniper Switches	Server Storage Switches
Oracle Servers	Oracle servers (x86 Servers, SPARC T-Series, SPARC Enterprise M-Series)
Palo Alto Appliances	Internet Content Filter and Bandwidth Shaping Hardware
Panduit	Cables, Parts & Tools
RED Digital Cinema Camera Company	High resolution camera solutions

Lab & Local Applications

Solution/Product/Service	Description
3M Health Information System	Academic Software: 3M Web Coding and Reimbursement System. Software provides students with the opportunity to practice workforce coding skills related to Health Care program.
A.D.A.M. Inc. Interactive Anatomy & Physiology	Academic Software: Interactive Anatomy & Physiology for online students.
A.N.D. Technologies PCounter Pro	Pay For Print Software
Access Data Corporation Mobile Phone Examiner Software	Academic Software: Cell phone forensics software. Used in the Computer Forensics program.
Adobe	Creative Suite 5 or Current, Master Collection, Production Premium, Web Premium, Design Premium or any product individually.
Ai Squared ZoomText	Academic Software for Disabled Student Services. Zoomtext Magnifier/Reader enlarges and enhances everything on your computer screen, making all applications easy to see and use. With Reader, Zoomtext reads your documents, web pages and e-mail through computer's speakers.
AMS Ocean Studies	Academic Software: American Meteorological Society Ocean Studies Course Website delivers weekly ocean news, current ocean data and graphics, and satellite imagery in real time throughout the year. Used in Oceanography Lab Course.
Apple Software	Motion, Shake, Logic, Remote Desktop, Final Cut Pro, QuickTime Pro, Remote Access, MobileMe, Pro Applications, AppleWorks, Final Cut Express, Logic Express, Soundtrack, MainStage, WaveBurner, Soundtrack Pro and Compressor.
Autodesk Mayer and AutoCAD	Autodesk Products include: AutoCAD, 3ds Max, Autodesk Maya, Autodesk Alias, Entertainment Creative Suite, and balance of product line @ http://usa.autodesk.com/
CambridgeSoft	ChemACX Database and ChemDraw Pro, Inventory Ultra. Software used for Bioinformatic Courses

Cambrium Learning Group Kurzweil 3000	Academic Software for Disabled Student Services. Kurzweil 3000 is a scanning, reading, writing and learning solution for students with learning disabilities or reading difficulties.
Camtasia	Academic Software: Record anything you see on your screen, edit into a professional screencast you can share instantly. In use by Collegewide Faculty Resource Centers.
CCC Pathways Collision Repair	Academic Software: Students practice workforce skills in use of electronic estimating system. Used in Automotive Program.
Colasoft Capsa Enterprise	Academic Software: Capsa Enterprise is a packet analyzer software developed for network administrators to monitor, troubleshoot, and analyze traffic of wired & wireless networks. Used in the Networking Bachelors Program.
Deep Freeze	Classroom Computer Security Software
Elsevier HESI Testing Software	Academic Software: entrance and exit testing for Nursing Program.
Elsevier MC Strategies Webinservice	Academic Software: The Webinservice.com content library includes thousands of lessons in areas ranging from coding/compliance and HIPAA to nursing and network security/IT. Software related to Health Care program.
ESRI ArcInfo/ArcGIS Mapping Software Suite	Academic Software: Geographic Information Systems mapping software suite. Used in GIS courses.
Final Draft	Academic Software: Screenwriting software used in the Digital Media Program.
Freedom Scientific JAWS Screen Reading Software	Academic Software for Disabled Student Services. JAWS is a screen-reader software that works with Microsoft Office Suite tools for word processing, spreadsheets, and presentation creation.
Google Applications Suite	Google Earth Pro and Google Sketchup Pro
Houghton Mifflin Harcourt SkillsTutor	Academic Software: SkillsTutor is a key component of a comprehensive student improvement program used in Academic Success Centers as well as Adult Studies Program.
Inkling	Interactive Textbooks

Insight Hummingbird	
Invensys Wonderware InTouch HMI	Academic Software: Wonderware is a brand of industrial automation and information software products used in many industries for production management, preformation management, integration with asset management, supply and demand chain and BPM/workflow applications. Used in Engineering Technology program.
iParadigms Turnitin	Academic Software: Turnitin is the leading academic plagiarism detector, utilized by teachers and students to avoid plagiarism and ensure academic integrity. Used across all Blackboard courses.
Jungle Software Gorilla	Academic Software: Production software to handle budgeting, scheduling, locations, editing notes, and film submissions. Used in the Digital Media Program.
LD Assistant	Academic Software: Design and drafting professional CAD solution for entertainment lighting, event planning, and scenic design. Used in the Fine Arts Program.
Learning A-Z	Learning A-Z(Reading, Raz-kids, Vocabulary, Writing , Science, and Reading-Tutors)
Lyric Pro	Character Generator
Math Type	Academic Software used in Math and Chemistry Courses to allow the creation of mathematical notation for inclusion in desktop and web applications.
MathCad	Academic Software used in Math and Chemistry Courses to allow the creation of mathematical notation for inclusion in desktop and web applications.
Mathimatica	Academic Software: Mathematica is a computational software program used in scientific, engineering, and mathematical fields and other areas of technical computing. Specifically requested in support of the BioMed Program.
McGraw-Hill ITTS	Academic Software: ITTS="Instruction Targeted for TABE Success" prepares adult learners for the Tests for Adult Basic Education (TABE), a diagnostic tool used to determine a person's skill level and aptitude.
McGraw-Hill Pre-GED/GED	Classroom Software

Mitchell 1 Automotive Program	Academic Software: OnDemand5.com & Tractor-Trailer.net. Web accessible software for automotive service, repair & management. Used in Automotive Program.
National Instruments Academic Suite Licenses	Academic Software: Maintenance for Circuits used in the Engineering Technology Program.
NETRESEC NetworkMiner	Academic Software: Network Forensic Analysis Tool for Windows. Used in the Networking Bachelors Program.
NetSupport School & Assist	Academic Software for classroom management, training, monitoring, and remote control. Used in courses Collegewide.
OmniGroup	OmniPlan, OmniWeb, OmniGraffle & OmniOutliner
Open Book	Academic Software for Disabled Student Services. OpenBook converts printed documents or graphic-based text into an electronic text format making graphics-based text accessible to the visually impaired.
OpenText HostExplorer	Terminal emulation software supporting access to ORION through terminal emulation.
OpenText HostExplorer	Terminal emulation software supporting access to ORION through terminal emulation.
Oracle Academy	Academic Software: Online training in the fundamentals of database and Java technology. Used in the Information Technology Program.
Peachtree Complete	Academic Software: Accounting software program provides in-depth inventory, job costing, electronic bill pay, and bank reconciliation. Used in Accounting Technology Program.
ProfCast	Academic Software: Ideal tool for recording and publishing your live presentation. In use by the North Campus Faculty Resource Center.
QuickBooks Pro	Academic Software: Business accounting software provides students with the opportunity to practice workforce skills by illustrating how accounting information is created and used.
Real Flow	Simulation Development Tool
Red Giant Magic Bullet Suite	Academic Software: Professional Toolkit for filmmakers everywhere. Used in Kent Campus Faculty Resource Center.

Rockwell Toolkit	Academic Software designed to give system integrators economical access to the Rockwell Automation products and technologies. Used in Engineering Technology Program.
Rosetta Stone	ESOL Program Use Only
Secure ACS Express	Academic Software:
Sibelius Auralia	Academic Software: Complete ear training for classical and contemporary musicians of any age and ability. Used in the Fine Arts program at South Campus.
Sibelius Musition	Academic Software: Complete music theory training & testing software for anyone learning or teaching an instrument. Used in the Fine Arts program at South Campus.
Siemens SIMATIC STEP 7 Professional	Academic Software: Step 7 Pro is the comprehensive engineering solution for SIMATIC Controllers. Used in Engineering Technology Program.
Sigma Internet Netlab	Academic Software: NetLab is the product supported by Cisco Academy and provides an online solution for some of the Cisco courses/labs.
Tax Navigator	Administrative Software purchased by College's Finance Department
Telestream Digital Media Products	FlipFactory, Flip4Mac Digital Media Tools
TI-SmartView Emulator	Academic Software: Complements the TI-83 and TI-84 families of graphing calculators, letting the educator project an interactive representation of the calculator's display to the entire class. Used in Math Courses.

Services & Support

Solution/Product/Service	Description
Accelebrate	Customized web application training provider.
ADT Services	Door Security and Security Camera Installation and Services
Apple Services & Training	Includes maintenance and warranties agreements
Bell Tech Logix	Service helpdesk and inventory solution
Blackboard Services	Blackboard professional services.
Blackboard Student Services	Helpdesk
Cisco Services	Cisco Engineering Services
Cisco Smartnet	Server and Network Equipment Maintenance and Software Upgrades
Citrix Services	Citrix Engineering Services
Dell Services	Implementation and System Engineering Services
EMC Services	SAN and Backup Engineering Services
Emtec	Computer inventory, deployment, configuration, and technical repair services
Enterprise Integration	Service helpdesk and inventory solution
Liferay	Portal application framework.
Mac Specialist	Apple Authorized Service, Support, and Training
Microsoft Services & Training	Microsoft Services & Training
Oracle Training & Support	Oracle training and support.
Presidio Engineering Services	Network and Telecommunications Engineering Services
Symantec Training & Support	Symantec training and support.
Tempest Interactive Media	Web Design
Tools4ever	Programing Services

Systems & Database Products

Solution/Product/Service	Description
Adobe Flex	Open source application framework for development of mobile and traditional web applications.
Adobe RoboHelp	Web-based help/technical documentation tool used in portal applications
Alchemy Net COBOL	COBOL development environment supporting legacy COBOL applications.
Atlassian (Confluence, Jira, Crowd, Greenhopper)	Atlassian product suite providing issue/project management, wikis, collaboration and application development tools.
Avicode	Application monitoring for portal
Axceler Control Point	Sharepoint portal administration and support toolset.
Balsamiq Studio Mockups	Business and technical process visual development toolset.
BlackBerry Enterprise Services	Blackberry Server Software
Bluesocket	Wireless Authentication
BMC Control-m	Batch job scheduling automation and process management application toolset.
C-cure Security Software	Door Security Software
CA ERwin Data Modeler	Database modeling and development toolset.
ChartFX (SoftwareFX)	Graphing/Charting tool for portal applications
Cisco Servers	Servers
Cisco Software	Network Management software
CoSort	Data-processing and sorting application providing services for batch processes.

Cronus ESP Batch	Batch job scheduling automation and process management application toolset.
Dell Software	Miscellaneous Dell Management Software
Eclipse	Application development environment used primarily for Java and Natural application development. This is also under Dennis as MyEclipse which is the name of the product we purchase support for.
EditShare	Complete collaboration, end-to-end media asset management, high-performance shared storage and archiving solution
Embarcadero	Oracle database management toolset.
EMC Software	SAN and Backup Engineering Services
IBM Cognos	Software application for interacting with data and creating reporting, dashboards, scorecards, statistical analysis, etc.
Idera (SQL Diagnostic Manager)	SQL server diagnostic utilities.
Information Builders WebFOCUS	Software application that delivers rich, consumable, interactive information to the widest range of employees, managers, analysts, partners, and customers via solutions such as dashboards, portable analytics, and ad hoc reporting.
IP IPCelerate	E911 Call Alerting and Zone Paging Software
JAMF Casper Software	Computer Software and Image Distribution, Inventory and Mobile Application Management
Mail Essentials	Email Software Tools

Microsoft BI and Performance Point	Bundle of software applications that provide data analysis, employee self-service, dashboards, scorecards, collaboration, reporting, data integration, data warehousing, predictive analytics, and data mining.
Microsoft Sharepoint, Biztalk, Server & Virtual Machine	Portal, Web page and Business Process Management and Workflow software
Microsoft SQL Server	Enterprise Database Software
Milestone Security Camera Monitoring	Security Camera Recording Software
MyEclipse	Application development tool (IDE)
MySQL	Open source relational database application.
Oracle AmberPoint	Service oriented architecture (SOA) Management, Business Transaction Management and run-time SOA Governance applications.
Oracle/Sun Software Portfolio	Oracle/Sun operating system and associated toolset (Solaris).
OSM Cosbatch	Data-processing and sorting application providing services for batch processes.
Quest Software	Active Directory Migration Manager and Exchange Migration Manager
Red Hat Enterprise Linux	Linux operating system (OS)
Respondus & StudyMate	Learning management system (LMS) utilities supporting learning and assessment.
SAP Crystal Reports	Software application for interacting with data and creating reporting, dashboards, scorecards, statistical analysis, etc.
SAS	Software application that provides business analytics tools. Used by the state reporting team to run the local version of the state's edit programs. Crucial to the success of the team.

Software AG Adabas	Enterprise database system (ORION).
Software AG Aris Suite	Process management and performance toolset to include Business Architect, Business Design, IT Architect, Mash Zone, Business Optimizer, Process Performance Manager, Business Simulator, Process Governance.
Software AG Event Replicator	Adabas replication utility.
Software AG Natural Construct	Natural application development utility.
Software AG Natural for Ajax	Web development utility.
Software AG Natural Portfolio	ERP support applications to include Natural Runtime, Engineer, Natural for Eclipse, Entire Access, and Natural Business Services Productivity Package, NaturalOne
Software AG Natural Security	ERP Security Application and Systems Support.
Software AG Predict	Adabas database dictionary.
Software AG SOA Gateway	ADABAS SQL services provider.
Software AG webMethods Suite	Process management and systems integration suite including Business Process Management (BPM), Integration Server, Optimize for Process/ Infrastructure, OneData (MDM), Business Events (KPI), Trading Networks, CentraSite and other prerequisite and corequisite components.
Solarwinds	Network Monitoring and Alerts
Sophos	Antivirus Software
Sorenson Media	Video Delivery Network Platform
Specops	Password Change and Recovery Software
Symantec NetBackup	Backup application system.
Syncsort	Data-processing and sorting application providing services for batch processes.

Tetrad OPX	Batch job scheduling automation and process management application toolset.
Treehouse Software, Inc.	ADABAS and Natural open systems development and monitoring toolsets (ADASIGHT, EAV, Chart).
VMware Products	Virtualization Software
Xmedius	Fax Software
Zoom	Call Recording Software

APPENDIX B | WORKSTATION STANDARDS

"…beware of men bearing magical machines and a list of hopeful prophecies attached." -David Shenk

Technology Standards

Under the direction of the Chief Technology Officer (CTO), minimum standards for hardware and software acquisitions are defined and updated periodically. These standards for workstations (including monitors) are available on the Technology Acquisitions web pages. Current minimum standards and recommended standards are displayed in the following tables. Appendix C describes the College technology acquisition process.

Traditional /Minimum Supported Existing Configuration

Pentium II 333mhz

256 MB RAM (for Windows XP)

6 GB Hard Drive

15″ Flat Panel Monitors

10/100 Ethernet Adapter

PC: Microsoft Windows XP Professional SP2 or above

Apple: Mac OS X v10.4 Tiger

Minimum New Hardware Requirements

PC:	Apple:
Core2Duo 2.13 GHz	2.4 GHz Intel Core2Duo processor
2GB of RAM	2GB memory
160GB Hard Drive	120GB Serial ATA Hard Drive
Sound Card	Combo Drive (DVD-ROM/CD-ROM)
Combo Drive (DVD-ROM/CD-RW)	17″ Flat Panel Monitor
17″ Flat Panel Monitor	Mac OS X v10.4 Tiger or above
USB Keyboard	
USB 2-Button Optical Mouse with Scroll	
Built-in 10/100 Ethernet adapter (network adapter)	
Microsoft Vista SP1 or above	

Level 2 – Maximum Configuration

PC:	Apple:
Dell Precision Workstation 690	Mac Pro
2.66GHz Dual Core Intel Xeon – 1st Processor	2.66GHz Dual Core Intel Xeon – 1st Processor
2.66GHz Dual Core Intel Xeon – 2nd Processor	2.66GHz Dual Core Intel Xeon – 2nd Processor
4GB Memory	4GB Memory
250GB Hard Drive	250GB Hard Drive
16x DVD+/-RW	16x SuperDrive DVD+/-RW and CD-RW
256MB PCIe x16 nVIDIA Quadro FX 3450 Graphics Card	256MB nVIDIA GeForce 7300 GT Graphics Card
Dell 20″ Monitor	Apple 20″ Cinema Display
Microsoft Windows Vista OS	Mac OS X 10.4 or above

Recommended Minimum Laptop Hardware Requirements

PC:	Apple:
1.73 GHz Intel Core Duo Processor	1.83 Intel Core Duo Processor
1 GB Memory	1 GB Memory
80 GB Hard Drive	60 GB Hard Drive
Sound Card	
Combo Drive (DVD-ROM/CD-RW)	Combo Drive (DVD-ROM/CD-RW)
11.1″ Display	13″ Display
Microsoft Windows XP Professional SP2 or above	Mac OS X 10.4 Tiger or above

PC:	Apple:
Latitude D820	15″ MacBook Pro
2.16GHz Intel Core 2 Duo	2.33GHz Intel Core 2 Duo
2GB Memory	2GB Memory
100GB Hard Drive	120GB Hard Drive
8x DVD+/-RW	6x SuperDrive DVD+/-RW and CD-RW

256MB NVIDIA Quadro NVS 110M Graphics Card	256MB ATI Mobility Radeon X1600 Graphics Card
15.4″ Widescreen Display	15.4″ Glossy Widescreen Display
Microsoft Windows Vista OS	Mac OS X 10.4 or above

APPENDIX C | TECHNOLOGY ACQUISITIONS

"When you have faults, do not fear to abandon them." --Confucious

Technology Acquisitions

General

The College strives to ensure provision of a cutting-edge infrastructure and computing environment in order to advance instructional and technical effectiveness and efficiency. Technology acquisitions are accomplished through the combined, and well coordinated, efforts of the individual purchaser, Purchasing Department, and Information Technology. Technology acquisitions can be supported through the Lab Replacement process; Strategic Planning Initiative process, Grants, Construction and Renovation Projects, College Contracts, and Perkins Funding. Therefore, the methodology and processes are dependent upon the type and scope of the purchase, the nature of the product or service, and the criteria/process of the funding source.

Hardware

The College currently supports three hardware platforms (enterprise, server, and workstations) within its architecture. On a Collegewide basis, hardware acquisition typically refers to enterprise servers, application servers, and workstations, routers for networks, storage devices and telecommunications-related products.

Standard

Technology Department managers and staff meet with the campus Directors of Administrative Services (DAS) and campus technology staff, as prescribed by the CTO, to discuss and identify desktop and peripheral standards. These standards, once approved by the CIO and/or CTO are then placed on the Techteam Website ("Acquisitions") on which individual purchasers can find the information necessary to complete their requests. Standards for smart classrooms and all audiovisual equipment are defined as Collegewide standards in partnership with Campus personnel and the Executive Vice President's Office. Consultation with the Learning Innovations group and/or Emerging Technologies personnel is encouraged. Whereas funding of these products is accomplished through a variety of means and services, the actual acquisition occurs through specific technology department approvals required at the time of submission.

Server configuration requirements, network, telecommunications and other technology infrastructure equipment are the responsibility of the Technology Operations Division. This group also provides consulting and specifications for all construction and renovation projects, as well as many others where software, hardware, security, storage and infrastructure is concerned. A flowchart of the hardware acquisitions process is presented in figure C .1.

Figure C.1 | Purchase of Standard and Non-Standard Hardware

The College has a number of strategic partnerships and strong relationships with several technology organizations. Dell has historically provided a large percentage of desktop equipment

and Apple has been the hardware standard for the multimedia, digital media, entertainment courses (editing suites) and programs. However, due to recent technology advances, Apple equipment is expected to significantly increase in the College's computing environment and is likely to become the dominant workstation throughout the College over the next four years. In addition to the technology support, each company has a College Website for the Florida State College. Complementary to the product information will be a Florida State College purchase process and information guide to assist members of the College community as they proceed through the procurement process

Non-standard

Any non-standard technology procurement requires consultation with and approval from the Technology Department.

Projects requiring specific network connections, telecommunications, or server support must be first reviewed and approved by the Technology Operations Division; audiovisual and multimedia are reviewed by the Educational Technology Division.

Software

Standard

The College's standard software acquisitions are those obtained as part of a bundled software acquisition through the Microsoft Campus Software Agreement and other negotiated agreement.

Software for Academic Programs through the Lab Replacement Process

Standards for academic programs are defined by academic units. Requests made for software to support academic courses and programs are generally submitted in the Lab Replacement process. This process starts in the Spring semester prior to the beginning of the new academic year. Once an encoder enters the requisite information in the ORION system for the appropriate term, the system provides a unique reference number for each class. Should the faculty member of record identify software as a component of their instructional resources, the campus tech personnel tests for system compatibility. If compatible, the request goes to the appropriate Dean (who confirms the academic information) and then to the Campus Director of Administrative Services for final approval prior to submission to the Technology Department for purchase

request. The goal of this process is to provide the faculty and academic units with the necessary software installed for the next academic year.

There are other processes by which academic software requests are submitted and processed which are sometimes confused with the Lab Replacement process. Where pre-college/remedial/ABE instruction is supported by grants and/or other federal funding, requests for academic software is typically routed through a different process, although the final purchase undergoes the same purchasing flowchart as any other software request.

Non-standard

Non-standard software is typically not used by academic units or business units to provide services to the College community. However, occasional program-specific (such as health career programs), supplementary (in certain tutoring applications), or pilot program software acquisition is necessary. Approval from the CTO is required prior to any non-standard software acquisition that exceeds the capital software cost threshold, is in-tended for use by students, or will be installed on a server. A flowchart of the acquisitions process for software is presented in figure C. 2.

Services

Consulting services provided by the Technology Department include courseware development and support (Learning Innovations); computer network and telecommunications infrastructure (Technology Operations); facilities planning for technology; high-end digital audio and video (Emerging Technologies and Learning Innovations); network servers and network software (Technology Operations), high-end coding and systems integration, and portal services (E-Systems).

Figure C.2 | Purchase of Standard and Non-Standard Software

Summary

Hardware and software acquisition at Florida State College are designed to be a participatory process with the various constituencies of the College community and is conducted in adherence to Board of Trustees Rule 6Hx7-5.1. Over the years, hardware and software use has grown significantly, and the College continues be identified as a technology leader. The Collegewide Technology Committee, Center for the Advancement of Teaching and Learning, and campus Faculty Resource Centers all contribute to what eventually defines the College's acquisition process and standards.

APPENDIX D | ERPM

"I do not fear computers. I fear the lack of them." –Isaac Asimov

Type	(A)	(B)	(C)	(D)	(E)	(F)	(G)
	6-30-05 Total	Deleted in Fiscal Year 202005-2006	>5 Yrs.old (Acquired prior to 7-1-2001)	3 - 5 Yrs. Old (Acquired between 7-1-01 and 6-30-03)	1 - 3 Yrs. Old (Acquired between 7-1-03 and 6-30-05)	<1 Yr. old (Acquired between 7-1-05 and 6-30-06)	6-30-06 Total (a-b+f)
Network Electronics (routers, switches, hubs, concentrators, bridges, etc.	480	15	178	218	222	25	490
Workstations - Instructional	5270	361	1144	2778	1801	330	5239
Workstations - Administrative	1609	0	150	1389	160	60	1669
Minicomputers/ Large Servers – Instr. [1]	114	15		19	50	30	129
Minicomputers/ Large Servers – Adm. [2]	99	10	11	20	48	21	110
Mainframes	1				1		1

*[1] *For consistency in reporting, use the following criteria: Any non-mainframe server actually supporting 11 or more users (not necessarily simultaneously) should be included in the "large server" inventory. Servers supporting 10 or fewer users should be reported in the workstation simultaneously) should be included in the "large server" inventory. Servers supporting 10 or fewer users should be reported in the workstation inventory. (The type service provided by the server should not be considered.)*

*[2] *For consistency in reporting, use the following criteria: Any non-mainframe server actually supporting 11 or more users (not necessarily simultaneously) should be included in the "large server" inventory. Servers supporting 10 or fewer users should be reported in the workstation inventory. (The type service provided by the server should not be considered.)*

Make/Model	Operating System	Data Base Mgmt. System	Communications Software	Front-End Processor
Oracle/Sun	E12K	Solaris 8	Adabase/Oracle	Hummingbird
Mainframe Inventory				

Quantity of Connections & Bandwidth			
Network Interface Points	**Serial Circuits**		
	Number of 56 Kb/s or less Connections	**Number of T1 (1.544 Mbs) Connections**	**Number of DS3 (45Mbs) Connections**
College-to-Internet (ISP Access Points) (Note 1)	0	0	0
College-to-Internet2 (Access Points) (Note 2)	0	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0	0
Between Campuses (Note 5)	0	2	0
To Active Desktop/Server NICs/Ports (Note 6)	115	0	0
Totals	**115**	**2**	**0**

Network Bandwidth Inventory

Quantity of Connections & Bandwidth			
Network Interface Points	**DSL**		
	Number of Connectioins	**Bandwidth (Mbs - Upstream)**	**Bandwidth (Mbs - Downstream)**
College-to-Internet (ISP Access Points) (Note 1)	2	1	3
College-to-Internet2 (Access Points) (Note 2)	0	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0	0
Between Campuses (Note 5)	0	0	0
To Active Desktop/Server NICs/Ports (Note 6)	0	0	0
Totals	**2**	**1**	**3**

Quantity of Connections & Bandwidth				
Network Interface Points	**Ethernet**			
	Number of 10Mbs Connections	**Number of 100Mbs Connections**	**Number of 1Gps Connections**	**Number of 10Gps Connections**
College-to-Internet (ISP Access Points) (Note 1)	0	1	0	0
College-to-Internet2 (Access Points) (Note 2)	0	0	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0	0	0
Between Campuses (Note 5)	1	3	5	0

Quantity of Connections & Bandwidth				
To Active Desktop/Server NICs/ Ports (Note 6)	0	0	7000	500
Totals	**1**	**4**	**7005**	**500**

Quantity of Connections & Bandwidth		
Network Interface Points	**ATM**	
	Number of Connections	**Bandwidth (Mbs) (per connection- Note 7)**
College-to-Internet (ISP Access Points) (Note 1)	0	0
College-to-Internet2 (Access Points) (Note 2)	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0
Between Campuses (Note 5)	0	0
To Active Desktop/Server NICs/ Ports (Note 6)	0	0
Totals	**0**	**0**

Quantity of Connections & Bandwidth		
Network Interface Points	**Cable Modem**	
	Number of Connections	**Bandwidth (Mbs)**
College-to-Internet (ISP Access Points) (Note 1)	2	6
College-to-Internet2 (Access Points) (Note 2)	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0

Quantity of Connections & Bandwidth		
Between Campuses (Note 5)	0	0
To Active Desktop/Server NICs/ Ports (Note 6)	0	0
Totals	**2**	**6**

Quantity of Connections & Bandwidth	
Network Interface Points	**Total Bandwidth in Mbs**
	(Number of Each Type Connection times Bandwidth for each Connection)
College-to-Internet (ISP Access Points) (Note 1)	120
College-to-Internet2 (Access Points) (Note 2)	0
Campus(es)-to-Central Computing System (Note 3)	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0
Between Campuses (Note 5)	5313.088
To Active Desktop/Server NICs/Ports (Note 6)	12000006.44
Totals	**12005439.53**

Quantity of Connections & Bandwidth		
Network Interface Points	**Other (Wireless Pt-to-Pt, Fractional Connections, etc)**	
	Number of Connections	**Bandwidth (per connection - Note 7_ - Mbs (Please note type of Connection in Notes)**
College-to-Internet (ISP Access Points) (Note 1)	0	0
College-to-Internet2 (Access Points) (Note 2)	0	0
Campus(es)-to-Central Computing System (Note 3)	0	0
Campus(es)-to-Learning Mgmt. System (Note 4)	0	0
Between Campuses (Note 5)	0	0

Quantity of Connections & Bandwidth		
To Active Desktop/Server NICs/ Ports (Note 6)	0	0
Totals	**0**	**0**

Notes:

1. This represents the number direct connections from your college to an Internet Service Provider (ISP) for connectivity into the commercial internet.

2. This represents the number direct connections from your college to an Internet Service Provider (ISP) for connectivity into the Internet2 research network. Connectivity into the Florida Lamda Rail high speed research network should be noted in this section.

3. This represents the connectivity between your campus locations to your Central Computing Systems, including ERP, Email, etc. In some cases, college may use the same network for accessing Central Computing and/or Learning Management Systems as for between campuses. In those cases, please reflect in those rows the same consistent quantity of connections as for between campuses, or otherwise provide clarifying notes.

4. This represents the connectivity between your campus locations to your Learning Management System, WebCT, Blackboard, etc. If you are outsourcing these applications, please note. In some cases, college may use the same network for accessing Central Computing and/or Learning Management Systems as for between campuses. In those cases, please reflect in those rows the same consistent quantity of connections as for between campuses, or otherwise provide clarifying notes.

5. This represents the connectivity between your campus locations. In some cases, college may use the same network for accessing Central Computing and/or Learning Management Systems as for between campuses. In those cases, please reflect in those rows the same consistent quantity of connections as for between campuses, or otherwise provide clarifying notes.

6. This is a measure of the bandwidth from your PC's & Servers into your network. This bandwidth will be the lower of the bandwidth capacity of the NIC or the ports switches that provide connectivity to desktops rather than the capacity of the NIC or Port itself. The number of active computers on your network should not be more than Part II (Hardware Inventory Summary) of your 2003-2004 ERPM report. Example #1) If you have a 10/100 NIC in the desktop but only a 10Mbs switch, then the bandwidth for that desktop is 10Mbs. Example #2) If you have a 10/100 NIC in the Desktop which is connected to a 10/100/1000Mbs switch, then the bandwidth for that desktop is only 100Mbs.

7. If you have more that one connection, please use an average of the total bandwidth. Example #1) If you have 1 ATM connection at 12Mbs and another at 40Mbs, then you would enter 2 connections with 26Mbs of Bandwidth.

GLOSSARY

"And when I have understanding of computers, I will be the supreme being." -Evil (Time Bandits)

.MAC
online service offered by Apple that includes email, blogs, file sharing, photocasting, backup, syncing, and groups

.NET
a development environment from Microsoft for the integration of system types emphasizing platform convergence

3GL (Third Generation Language)
a language designed to be easier for a human to understand, including things like named variables, examples include FORTRAN and COBOL

4GL (Fourth Generation Language)
an application-specific language, a term invented to refer to non-procedural high level languages

802.11
specifications for wireless local area networks (WLANs)

-- A --

A.A.
Associate Degree in Arts

A.A.S.
Associate Degree in Applied Science

A.S.
Associate Degree in Science

Abend
ABnormal ENDing of software application or process, also known as crash

Abort
to terminate a program or process abnormally and usually suddenly, with or without diagnostic information

Accelerator
additional hardware needed to perform some function faster than is possible in software running on the normal CPU, such as graphics accelerators and floating-point accelerators

Access
to use, to read data from or write data to a mass storage device, or the privilege to use computer resources or infrastructure in some manner

Access (i.e. Microsoft© Access)
powerful database solutions that allow organizing, analysis and sharing of information more effectively

ACID
Applied Center for Instructional Design

ACK
message transmitted indicating some data has been received correctly; also, the mnemonic for the ACKnowledge character, ASCII code 6

Acrobat
PDF development software from Adobe

Active directory
a directory service from Microsoft Corporation, similar in concept to Novell *Netware Directory Services*, that also integrates with the DNS structure and is interoperable with LDAP

ActiveX
a stripped down implementation of OLE designed to run over slow Internet links

Ad hoc
contrived purely for the purpose at hand rather than planned carefully in advance

ADABAS
a relational-like, network database system by Software AG

Adaptive instruction
a type of instruction that supplies alternative teaching operations based on assessment of student readiness to profit from them

Address
name or token that identifies a network component or data location

Adobe
font and software publisher specializing in graphics and publications applications

ADSL
Asymmetric Digital Subscriber Line; a form of DSL in which the bandwidth available for downstream connection is significantly larger then for upstream, designed to minimize the effect of crosstalk between the upstream and downstream channels

Advanced Technology
highly developed or complex technology

Aero
new Microsoft Vista operating system interface

After Effects
digital video effects and animation tool from Adobe

AGP
Accelerated Graphics Port; a bus specification by Intel which gives low-cost 3D graphics cards faster access to main memory on personal computers than the usual PCI bus

AJAX
Asynchronous JavaScript and XML, Web 2.0 development technologies

Algorithm
a detailed sequence of actions to perform to accomplish some task, which must reach a result after a finite number of steps; also used loosely for any sequence of actions (which may or may not terminate)

Alias
a name, usually short and easy to remember and type, that is translated into another name or string, usually long and difficult to remember or type; also one of several alternative hostnames with the same Internet address

Alphanumeric
describes the combined set of all letters in the alphabet and the numbers 0 through 9

AMD
Advanced Micro Devices manufacturer of processor chips for PCs

Analog
a continuously variable signal or a circuit or a device designed to handle such signals and receive signals at the same time

Androgogy
the study of teaching adults

Animation
the creation of artificial moving images

ANSI
American National Standards Institute; the U.S. government body responsible for approving U.S. standards in many areas, including computers and communications

Apache
an open source HTTP server for Unix, Windows, and other platforms

API
Application Program Interface; the interface by which an application program accesses an operating system and other services

Apple
Consumer electronics company, known best for Macintosh computers and iPod multimedia palyers

ApplinX
A digital toolset which contains standards-based tools and administration facilities that does not require hosted software and changes to the legacy code

Architecture
process and the outcome of thinking out and specifying the overall structure, logical components, and the logical interrelationships of a computer, its operating system, a network, or other conception

Array
a collection of identically typed data items distinguished by their indices or subscripts; in programming, a series of objects, all of which are the same size and type

ARTEMIS
Academic Resource Technology & Education Management Information System, the Florida State College portal

ARTEMIS II
Next generation of the College portal developed in Java and delivered through the Oracle/Sun JES environment

Artifact
compression artifact; the fuzz or distortion in a compressed image or sequence of video images or a remnant found on media or in a file

Artificial intelligence (AI)
the simulation of human intelligence processes by machines, especially computer systems, which include learning (the acquisition of information and rules for using the information), reasoning (using the rules to reach approximate or defi nite conclusions), and selfcorrection

ASCII
American Standard Code for Information Interchange; the basis of character sets used in almost all present-day computers

ASP
Active Server Pages; a scripting environment for Microsoft Internet Information Server in which you can combine HTML, scripts, and reusable ActiveX server components to create dynamic web pages, also application service provider - a provider of software solutions also Applications Service Provider, a hosted computer service provider

Attribute
a named value or relationship that exists for some or all instances of some entity and is directly associated with that instance or a characteristic of data

Authentication
the verification of the identity of a person, device, or process; the process of identifiscal yearing an individual, usually based on a username and password

AutoCAD
a Computer-Aided Design (CAD) software package for engineering used for drawing and physical layout

Availability
the inverse of the degree to which a system suffers degradation or interruption in its service to its customers

Axe-Sharpening (aka: Yak-Shaving)
a seemingly pointless activity which is actually a necessary step in the process of solving the problem

--B--

Back side
an implementation of secondary cache memory that allows it to be directly accessed by the CPU

Back up
to retain a spare copy of a file, file system or other resource for use in the event of failure or loss of the original

Backbone
the top level in a hierarchical network

Backdoor
also trap door or wormhole; a hole in the security of a system deliberately left in place by designers or maintainers

Back-end
any software performing either the final stage in a process, or a task not apparent to the user

BackOffice
a suite of network server software from Microsoft

Backplane
a physical component of a mainframe or supercomputer comprised of a collection of separate circuit boards that work together to create greater computing power

Bandwidth
the difference between the highest and lowest frequencies of a transmission channel (the width of its allocated band of frequencies); the amount of data that can be transmitted in a fixed amount of time

BAS
Bachelor in Applied Science, four year degree program

Batch
a text file, containing operating system commands that are executed automatically by the command-line interpreter, and used to combine existing commands into new commands or the old style of processing whereby transactions are posted to a file after having been submitted to temporary files

Benchmark
a test used to compare performance of hardware and/or software or a standard against which performance is measured

BES (Blackberry Enterprise Server)
the middleware software package that is part of the BlackBerry wireless platform; this server connects to messaging and collaboration software (Microsoft Exchange, Lotus Domino, Novell GroupWise) on enterprise networks to synchronize email and PIM information between desktop and mobile software

Binary
a number representation consisting of zeros and ones used by practically all computers, known as digital representation

BIOS
Basic Input/Output System; the part of the system software of the IBM PC and compatibles that provides the lowest level interface to peripheral devices and controls the first stage of the bootstrap process, including installing the operating system

Bit
binary digit; the smallest unit of information on a machine that can hold only one of two values: 0 or 1

Bitmap
a representation, consisting of rows and columns of dots, of a graphics image in computer memory

Blackboard
online course management and hosting system used to facilitate e-learning

Blew up
ceased to function in a catastrophic manner, abended

Blog
(short for weblog) is a personal online journal that is frequently updated and intended for general public consumption

Blue-ray
next generation optical disk that provides greater storage capabilities and faster transfer speeds.

Bluetooth
telecommunications industry specification that describes how mobile phones, computers, and personal digital assistants (PDAs) can be easily interconnected using a short-range wireless connection

Bomb
to fail; a program hanging or ending prematurely on a computer, abend

Boolean
the type of an expression with two possible values, true or false or the application of a special branch of mathematical rules known as Boolean algebra

Boot
to load and initialize the operating system on a computer

BPM
Business Process Management; refers to activities performed by organizations to manage and, if necessary, to improve their business processes

BRI
Basic Rate Interface; an Integrated Services Digital Network channel consisting of two 64 kbps "bearer" (B) channels and one 16 kbps "delta" (D) channel, giving a total data rate of 144 kbps wherein the B channels are used for voice or user data, and the D channel is used for control and signaling and/or X.25 packet networking

Bridge
a device which forwards traffic between network segments based on data link layer information

Broker
an intermediary through which resources are provided or accessed

Browser
web browser; a software application used to locate and display web pages and which allows a person to read hypertext

Buffer
an area of memory used for storing messages; used to decouple processes so that the reader and writer may operate at different speeds or on different sized blocks of data

Bug
an unwanted and unintended property of a program or piece of hardware, especially one that causes it to malfunction

Bus
a collection of wires through which data is transmitted from one part of a computer to another

Business Continuity
a progression of disaster recovery, aimed at allowing an organization to continue functioning after (and ideally, during) a disaster, rather than simply being able to recover after a disaster

Byte
a unit of storage capable of holding a single character, typically eight bits

--C--

C
programming language designed for systems programming and used to re-implement Unix

C#
an object-oriented language devised and promoted by Microsoft

C++
one of the most used object-oriented languages, a superset of C

CA
Computer Associates, a software company specializing in systems level software

Cable
also patch cable; a piece of copper wire or fiber optic cable that connects circuits in a PC or in a network environment or to pull wire

Cable modem
a type of modem that allows people to access the Internet via their cable television service, which can transfer data at 500 kbps or higher

Cache
a small fast memory holding recently accessed data, designed to speed up subsequent access to the same data; also a local copy of data accessible over a network

CAF (Composite Application Framework)
SAP Composite Application Framework (SAP CAF) is a composite application methodology that allows reuse and composition of different services, user interface components, and business processes into solutions

Carrier
a transmitted electromagnetic pulse or wave at a steady base frequency of alternation on which information can be imposed by increasing signal strength, varying the base frequency, varying the wave phase, or other means

CAT3
twisted pair cabling system – maximum data rate of 16 Mbps

CAT5
twisted pair cabling system – maximum data rate of 100 mbps and 1000 mbps depending on implementation

CAT5e
twisted pair cabling system – maximum data rate of 100mbps

CAT6
twisted pair cabling system – maximum data rate of 200-250 MHz

CATL
the Center for the Advancement of Teaching and Learning at Florida State College; a faculty-driven body dedicated to promoting and honoring the enhancement of teaching and learning

CATV
Community Access Television, cable television

CBT
Computer-Based Training; training done by interaction with a computer

CDMA
Code-Division Multiple Access, a form of multiplexing where the transmitter encodes the signal using a pseudo-random sequence that the receiver also knows and can use to decode the received signal

CD-Rom
a non-volatile optical data storage medium using the same physical format as audio compact discs, readable by a computer with a compatible drive

CDRW
a Re-Writeable version of CD-Rom

Cell
in spreadsheet applications, a box in which you can enter a single element, also short for cellular communications and associated devices

Centrasite
CentraSite™, the leading SOA Registry and Repository co-developed by Software AG and Fujitsu, CentraSite™ is a full SOA Governance solution

CEO (Chief Executive Officer)
the highest-ranking executive in a company or organization, responsible for carrying out the policies of the board of directors on a day-to-day basis, also CXO

Certificate
a private key issued by an entity (typically a company) to other entities (organizations or individuals) to allow them to prove their identity

CFO (Chief Financial Officer)
the corporate officer primarily responsible for managing the financial risks of a business

CGI
Common Gateway Interface; a standard for running external programs from an HTTP server that specifies how to pass arguments to the executing program as part of the HTTP request

Character
an alphanumeric or other graphic symbol, typically equivalent to a byte in storage

Chat
any system that allows any number of logged-in users to have a typed, real-time, on-line conversation, either by all users logging into the same computer, or more commonly nowadays, via a network

CHEMA
Council of Higher Education Management Associations (CHEMA) is an informal voluntary assembly of thirty management-oriented higher education

Chip
a microelectronic semiconductor device consisting of many interconnected transistors and other components, fabricated on a small rectangle cut from a Silicon (or for special applications, Sapphire) wafer

Chunking
grouping and organization content into manageable units

CIO (Chief Information Officer)
Chief Information Officer, the executive in charge of information systems and technology

Cisc
communications hardware manufacturer

Citrix
an American corporation that produces software designed to facilitate secure access to applications and content

Class
the prototype for an object in an object-oriented language; analogous to a derived type in a procedural language; also a set of objects which share a common structure and behavior

Classroom
a term often used in educational theory to denote traditional on-site teaching, as opposed to distance learning

CLG
Career Limiting Gesture, behavior that jeopardizes one's career or employment

Client
a computer system or process that requests a service of a server, using some kind of protocol, and accepts the server's responses or a customer

Clock
a processor's clock or one cycle thereof

COBOL
Common Business Oriented Language; a 3rd generation programming language typical in mainframe business systems environments

Cognition
the mental process of knowing, including aspects such as awareness, perception, reasoning, and judgment

Collapsed backbone
a network backbone that consists of the backplane of a single switch, rather than multiple switches connected together

Compile
to transform a program written in a high-level programming language from source code into object code

Connections
new branding for the College portal (ARTEMIS)

Converged Device
a portable gadget used for voice, calendaring, and e-mail/messaging

Cookie
a packet of information sent by an HTTP server to a World-Wide Web browser and then sent back by the browser each time it accesses that server

CORBA
Common Object Request Broker Architecture; an Object Management Group (OMG) specification which provides the standard interface definition between OMG-compliant objects

Core Animation
the creation of artificial moving images that enlighten the core of a subject

Core Audio
integrates a range of audio functionality directly into the operating system

Courseware
software designed to be used in an educational program

CPU
Central Processing Unit, also processor or central processor; the part of a computer which controls all the other parts

Crash
to fail suddenly, also a serious computer failure; signifies either a hardware malfunction or a very serious software bug

Criterion-referenced assessment
an evaluation that is scored based on specific proficiency standards

crossvision
a Service-oriented Architecture (SOA) suite from Software AG positioned around the topics of Business Process Management, Legacy Integration and SOA Management and Governance

CTO (Chief Technology Officer)
the executive responsible for setting standards and managing technology infrastructure

Curriculum
an organized set of formal education and /or training intentions or offerings

Customer
a product user, also client

CXO (Chief Executive Officer)
also CEO

Cyber
a prefix used in a growing number of terms to describe new things made possible by the spread of computers

--D--

DAS
Director of Administrative Services on a Florida State College campus or center

Dashboard
user interface that, somewhat resembling an automobile's dashboard, organizes and presents information in a way that is easy to read

Data Center
a specialized facility for enterprise scale computers

Data engine
a program that parses data, i.e., changes it from one form to another or systems that serve as backend transactional servers

Data integrity
the validity of data

Data warehouse
a generic term for a system for storing, retrieving and managing large amounts of any type of data; this software often includes sophisticated compression and hashing techniques for fast searches, as well as advanced filtering

Database
a collection of information organized in such a way that a computer program can quickly select desired pieces of data, an electronic filing system

Database administration
the design and management of the database and the evaluation, selection, and implementation of the database management system

DBA
DataBase Administrator; an individual responsible for the design and management of the database and for the evaluation, selection, and implementation of the database management system

DBMS
DataBase Management System; a suite of programs which typically manage large structured sets of persistent data, offering ad hoc query facilities to many users

Dean
a College administrator responsible for an area or areas of instruction, whose duties may include the management of faculty, budgets, and resource allocation

Death magnet
causes for business failure as identified by Guy Kawasaki

Debian
a freeware computer operating system that uses the Linux kernel and other program components obtained from the GNU project

Debug
to identifiscal year and remove bugs in a software program

Decision Package
discrete analysis of a product, service, or project in accordance with the Zero Based Budgeting methodology

Decision support
software used to aid management decision making, typically relying on a decision support database

Delimited
a character or string used to separate, or mark the start and end of, items of data in a database, source code, or text file

Denial-of-service
also DOS- attack; a type of attack on a network that is designed to bring a network down by flooding it with useless traffic

Desktop
a computer display area that represents the kinds of objects one might find on a real desktop: documents, phonebook, telephone, reference sources, writing (and possibly drawing) tools, and project folders, also a workstation

Development (software)
the process of analysis, design, coding, and testing software

DHCP
Dynamic Host Configuration Protocol; a protocol that provides a means to dynamically allocate IP addresses to computers on a local area network

Digital
a description of data which is stored or transmitted as a sequence of discrete symbols from a finite set, which most commonly means binary data represented using electronic or electromagnetic signals

Digital certificate
an attachment to an electronic message used for security purposes, used to verifiscal year that a user sending a message is who he or she claims to be, and to provide the receiver with the means to encode a reply

Digital signature
a digital code that can be attached to an electronically transmitted message that uniquely identifies the sender

DIMM
Dual In-Line Memory Module; a small circuit board that holds memory chips

Director
multimedia authoring tool from Macromedia

Disable
to close (software) or turn off (hardware)

Disaster Recovery
covers the data, hardware and software critical for a business to restart operations in the event of a natural or human-caused disaster

Disk
a flat rotating disc covered on one or both sides with some magnetic material on which data can be encoded; the two main types are the hard disk and the floppy disk

Disruptive technology
technology so new and different that it changes perceptions and paradigms causing new thinking and processes to be developed, sets new standards

Distance learning hybrid course
a course which is partially delivered through an online learning platform

DLL
Dynamically Linked Library; a library which is linked to application programs when they are loaded or run rather than as the final phase of compilation, thereby allowing the same block of library code to be shared between several tasks rather than each task containing copies of the routines it uses

DLP
Digital Light Processing (DLP) is a technology used in projectors and video projectors

DMAC
Digital Multimedia Authoring Center

DNS
Domain Name System; an Internet service that translates domain names into IP addresses

Dolby
Dolby Digital; a digital audio coding technique that reduces the amount of data needed to produce high quality sound

Domain
a group of computers and devices on a network that are administered as a unit with common rules and procedures; within the Internet, domains are defined by the IP address and all devices sharing a common part of the IP address are said to be in the same domain

Downtime
a period of time during which a computer system is not operational, due to a malfunction or routine maintenance, opposite of available

DRAM
a common kind of Dynamic Random Access Memory (RAM)

Dreamweaver
web authoring tool from Macromedia

DS3
a framing specification for digital signals (Digital Signal Level 3)

DSL
Digital Subscriber Line; a family of digital telecommunications protocols

DSS
Digital Signature Standard; the NIST's standard for digital signatures

Dual Core
a device containing two independent microprocessors

Dumb terminal
a type of terminal that consists of a keyboard and a display

Duplex
a communication system in which both ends of the communication can send

DV
Digital Video; a plug-in circuit cartridge required by some games consoles in order to play MPEG video material

DVD
Digital Versatile Disc; a type of CD-ROM that holds a minimum of 4.7GB, enough for a full-length movie, and has access rates of 600 Kbps to 1.3 Mbps

--E--

E-Business
conducting business and related activities electronically using Internet-centric technologies

ECC
Error Correction Code or error checking and correcting; allows data that is being read or transmitted to be checked for errors and, when necessary, corrected on the fly; differs from parity-checking in that errors are not only detected but also corrected

ECM
Enterprise Content Management content, document archiving, collaboration, and records management

Ecolate filter
Hardin's concept that all organisms are interconnected thereby eliminating the ability to alter one thing without affecting another

E-Commerce
the system of processes of managing online financial transactions including business-to-business transactions

Econometrics
measurements of the value of information

EDI
Electronic Data Interchange; the exchange of standardized document forms between computer systems for business use

EDO
short for EDO-RAM Extended Data Output Dynamic Random Access Memory; faster than conventional DRAM, EDO RAM can start fetching the next block of memory at the same time that it sends the previous block to the CPU, unlike conventional DRAM which can only access one block of data at a time

Educational Technology
the combination of carbonware, hardware and/or software to improve teaching and learning processes and outcomes.

EDUCAUSE
non-profit organization that seeks to further post-secondary education through the efficient and effective use of technology

Edutainment
a neologism that expresses the marriage of education and entertainment in a work or presentation

EFT
Electronic Funds Transfer; the transfer of money initiated through electronic terminal, automated teller machine, computer, telephone

EII
Data On Demand Access; combine and deliver data from disparate sources

EIS
Extended Industry-Standard Architecture; a bus standard for IBM compatibles that extends the ISA bus architecture to 32 bits and allows more than one CPU to share the bus

Email
Electronic mail; messages automatically passed from one computer user to another, often through computer networks and/or via modems over telephone lines

Emerging technology
technology that is new and not widely adopted but may be in limited use

Enable
to open (software), turn on (hardware), or create potential

Encryption
any procedure used in cryptography to convert plaintext into ciphertext in order to prevent any but the intended recipient from being able to interpret the encrypted data

End user
any individual who runs an application program

Enrollment
a count of students by course; often referred to as headcount, it is a snapshot view of the college's student population and can be categorized by various demographic information, such as gender, racial/ethnic group, high school code, type of student, etc. Enrollment can include all students in every course (duplicated) or can count each student once per academic year (annual unduplicated)

Enterprise
a large organization or the entirety of an organization

Entourage
Microsoft email client for the Mac

E-Procurement
business-to-business purchase and sale of supplies and services over the Internet

ERP
Enterprise Resource Planning; an integrated information system that serves all departments within an enterprise; a business management system that integrates all facets of the business, including planning, manufacturing, sales, and marketing, grew out of MRP systems

E-Services
also web services; web-based applications that allow server-to-server or application-to-application communications

E-Systems
systems developed exclusively for the conduct of e-commerce and related purposes

E-Systems Team
development team responsible for the development of ARTEMIS and for managing the SOA portfolio.

E-Tard
unsatisfactory digital capacity

Ethernet
local area network (LAN) technology, was originally developed by Xerox and then developed further by Xerox, DEC, and Intel, which typically uses coaxial cable or special grades of twisted pair wires

Excel
a program developed by Microsoft which is used to create and maintain dynamic spreadsheets, create charts and graphs, and keep information easily accessible and easily manipulated

Expert system
application that contains a knowledge base and a set of algorithms or rules that infer new facts from knowledge and from incoming data; an artificial intelligence application that uses a knowledge base of human expertise to aid in solving problems

Extended
having added features to a program, especially through the use of hooks, to extend the functionality of a program

Extensible
said of a system (e.g., program, file format, programming language, protocol, etc.) designed to easily allow the addition of new features at a later date, through the use of hooks, an API or plug-ins

Extranet
a private network that uses the Internet protocol and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other users outside the company

eXtreme Programming
a discipline of software development that follows a specific structure designed to simplifiscal year and expedite the process of developing new software in an environment of rapidly-changing requirements, i.e. through small teams of developers

--F--

FACTS
Florida Academic Counseling and Transfer System for shared academic advising and transactions

FAQ
Frequently Asked Question

Farm
server farm; a group of computers acting as servers and housed together in a single location

FASTER
Florida Academic System for Transfer of Educational Records for the transfer of records between educational agencies

Fed. ID Management
implementation of enterprise authentication/authorization across multiple identity management systems and networks

Feedback
information which can be used to restructure knowledge and support metacognitive regulation of ongoing performance

Fiber
fiber optic; refers to the medium and the technology associated with the transmission of information as light impulses along a glass or plastic wire or fiber, which carries much more information than conventional copper wire and is far less subject to electromagnetic interference

Final Cut
industry slang used when referencing the Apple software video editing product Final Cut Pro.

Firewall
a set of related programs, located at a network gateway server, that protects the resources of a private network from users from other networks

Firmware
programming that is inserted into programmable read-only memory (programmable ROM), thus becoming a permanent part of a computing device

Flash
vector-based web multimedia authoring tool from Macromedia

Flat Panel
a very thin display screen

Floating point
a method for storing and calculating numbers in which the decimal points do not line up as in fixed point numbers; used for calculating a large range of numbers quickly, used as a measure of processor speed

Flogging
excessive thrashing

Font
a design for a set of characters, which is the combination of typeface and other qualities, such as size, pitch, and spacing

Formative evaluation
an assessment utilized to gain information that will guide further instruction

Frame
in graphics and desktop publishing applications, a rectangular area in which text or graphics can appear; in communications, a packet of transmitted information in video and animation, a single image in a sequence of images; in HTML, refers to dividing the browser display area into separate sections, each of which is really a different web page

Frontside
in a personal computer with an Intel processor chipset that includes a Dual Independent Bus (DIB), the frontside bus is the data path and physical interface between the processor and the main memory (RAM)

FTE
(Full-Time Equivalent) is a measure of enrollment equal to student enrolled full-time for a full academic year. Total FTE enrollment includes full time plus the calculated equivalent of the part-time enrollment. Total FTE enrollment is student semester hours divided by 30 for Advanced and Professional, Postsecondary Vocational instruction, and College Prep. For all other instruction, instructional clock hours are divided by 900 hours. FTE is calculated by the state using the institution's course records for each student submitted via the Student Database five times per reporting year and is incorporated into the state's funding model.

FTP
File Transfer Protocol; a client-server protocol which allows a user on one computer to transfer files to and from another computer over a TCP/IP network; also the client program the user executes to transfer files

Full motion video
any system used to deliver moving video images and sound on a computer

--G--

Gadget
a device that has a useful specific practical purpose and function, Vista version of a Mac Widget

Garageband
part of the Apple iLife software suite; this software is used to create and edit audio files

GHz
GigaHertz

Google
popular Web search engine, a search engine is a coordinated set of programs that includes: (1) spider (also called a "crawler" or a "bot") that goes to every page or representative pages on every Web site that wants to be searchable and reads it, using hypertext links on each page to discover and read a site's other pages (2) a program that creates a huge index (sometimes called a "catalog") from the pages that have been read (3) a program that receives search requests, compares it to the entries in the index, and returns the results

GNU
a UNIX-like operating system that comes with source code that can be copied, modified, and redistributed

GPS
Global Positioning System is a constellation of satellites that enable ground receivers to pinpoint their geographic location; within 10 to 100 meters

GUI
Graphical User Interface; a graphical (rather than purely textual) user interface on a computer which makes programs easier to use

Guification
web enablement of existing legacy applications (maps) through “screen scraping”

--H--

Hacker
an individual who, through creative methods, discovers innovative solutions to extremely complex problems

Half duplex
the transmission of data in just one direction at a time

Hardware
the physical, touchable, material parts of a computer or other system, used to distinguish these fixed parts of a system from the more changeable software or data components which it executes, stores, or carries

HDTV
High Definition Television; a television display technology that provides picture quality similar to 35 mm movies with high sound quality

Hex
a base 16 mathematical representation of data

Hexadecimal
refers to the base-16 number system, which consists of 16 unique symbols: the numbers 0 to 9 and the letters A to F

High Res
High Resolution; a large amount of information per square inch on a display screen or printed form; measured in dots per inch (dpi), i.e., the more dpi, the higher the resolution and quality

HP
Hewlett-Packard; manufacturer of computer hardware

HTML
Hyper Text Markup Language; the authoring language, used to create documents on the World Wide Web, which defines the structure and layout of a web document by using a variety of tags and attributes

HTTP
Hyper Text Transfer Protocol; the underlying protocol used by the World Wide Web which defines how messages are formatted and transmitted, and what actions web servers and browsers should take in response to various commands

Hub
a common connection point for devices in a network; commonly used to connect segments of a LAN

HVAC
Heating, Ventilating, and Air Conditioning; environmental control system

--I--

I/O
Input/Output describes any operation, program, or device that transfers data to or from a computer or peripheral device

I1
the Internet, sometimes called simply the Net; a worldwide system of computer networks, a network of networks in which users at any one computer can, if they have permission, get information from any other computer

I2
Internet2; closed network for universities to work together and develop advanced Internet technologies such as telemedicine, digital libraries and virtual laboratories

iCal (Mac Application)
a personal calendaring program that is used to schedule and track appointments, view multiple calendars at the same time, and share calendar information with other permitted users

iDVD (Mac Application)
a program used to design dynamic slideshows and customize menu backgrounds with photos, slideshows, and movies

iLife (Mac Application)
suite of Apple Mac productivity applications that include: iPhoto, iMovie, iDVD, Garageband, and iWeb.

Illustrator
vector graphics editing and development tool from Adobe

Imaging
the capture, storage, manipulation, and display of images

iMovie (Mac Application)
A program used to import and develop movies from multiple sources. The application can output to DVD (through iDVD), iPods, the Web, and to podcasts.

Infini-D
3-D modeling tool from MetaCreations

Initiatives
Collegewide planning elements, similar to objectives

Insource
to use internal resources to achieve desired goal within an institution

Instant Messaging
exchange of text messages through a a software application in real-time

Instructional design
a systematic approach to the development of instructional programs which takes into account learning theory and research to ensure that the intended learning aims are realized

Instructional development
a systematic approach to the development of instructional programs at an organization level; larger in scope than instructional design, it takes into account the organization as a whole

Instructional technology
the systemic and systematic application of strategies and techniques derived from behavior and physical sciences concepts and other knowledge to the solution of instructional problems

Intel
the world's largest manufacturer of computer chips

Internet
any set of networks interconnected with routers; the Internet is the biggest example of an internet

Internet2
collaboration among more than 100 U.S. universities to develop networking and advanced applications for learning and research

Intranet
a network based on TCP/IP protocols (an internet) belonging to an organization, usually a corporation, accessible only by the organization's members, employees, or others with authorization

IP
Internet Protocol; the method or protocol by which data is sent from one computer to another on the Internet

iPhoto (Mac Application)
a program used to import, organize, and share photos.

iPod
Apple's portable digital audio and video playback device.

IP telephony
a general term for the technologies that use the Internet Protocol's packet-switched connections to exchange voice, fax, and other forms of information that have traditionally been carried over the dedicated circuit-switched connections of the public switched telephone network

IRIX
the primary, UNIX-based, operating system used by Silicon Graphics workstations and servers

ISDN
Integrated Services Digital Network; an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires

ISP
Internet Service Provider; one that provides access to the Internet

IT Leadership Academy
the IT Leadership Academy hosted by Florida State College crafts curriculum specifically for the development and advancement of information technology leaders. Such leaders include, but are not limited to; CIOs, CTOs, Directors, Program and Project Managers, Senior Consultants, and Technical Leads.

The program offerings feature a distinguished faculty consisting of renowned IT thought leaders, content experts, and successful executives in the field sharing their ideas, perspectives, and experiences in a rich state-of-the-art and comfortable educational setting. Programs provide opportunities to develop and leverage a strong professional network of future and current IT leaders in all industry types. A post-baccalaureate certificate in IT Leadership is currently under development.

IT Service Request
web-based tool in ARTEMIS that provides capability for users to submit technology requests (including web development, programming, and database services).

iTunes (Mac Application)
iTunes is a media player created by Apple which allows users to play and categorize music and video content. iTunes is expanding its useability to include educational and social applications (i.e., Podcasting, iTunesU)

iTunes Unversity (aka: iTunesU)
using "podcasts," downloaded lectures provided in digital media format, teachers can upload lecture files onto a website provided by Apple and have students visit the site and download lectures onto an iPod for portable learning

ITV
Interactive TeleVision; a system for beaming real-time television conferences from one site to another, or to multiple sites

ITV room
a classroom site for interactive television

IVR
Interactive Voice Response; a software application that accepts a combination of voice telephone input and touch-tone keypad selection and provides appropriate responses in the form of voice, fax, callback, e-mail and perhaps other media; usually part of a larger application that includes database access

iWork (Mac Application)
this application consists of two programs, Pages and Keynote. Pages is a word-editing program and Keynote is a presentation program.

--J--

Java
object-oriented programming language developed by Oracle/Sun Microsystems in the early 1990s. Java applications are compiled to bytecode, which at runtime is either interpreted or compiled to native machine code for execution

JavaScript
a scripting language based on the concept of prototype-based programming

JES
Oracle/Sun Java Enterprise System. Set of enterprise tools from Oracle/Sun Microsystens that include portal services and identity management.

Job
the unit of work that a computer operator (or a program called a job scheduler) gives to the operating system

--K--

Kernel
the essential center of a computer operating system, i.e. the core that provides basic services for all other parts of the operating system; can be contrasted with a shell, the outermost part of an operating system that interacts with user commands

Keyboard
a text input device of a computer

Killer app
application that creates high demand for a hardware system or platform

Knowledge base
information collection/repository of facts or expertise

Knowledge management
a concept in which an enterprise consciously and comprehensively gathers, organizes, shares, and analyzes what it knows, its collective

KPI
“Key Performance Indicator” – this is a measurement of organizational success. Used to show and measure progress towards an organizational goal.

--L--

Lab
laboratory; a site in which theories can be tested or taught hands-on environment; typically a computer classroom or science facility

Lab Manager
the supervisor of a laboratory, its resources and services

Lambda Rail
a computer network that utilizes high-speed fiber-optic lines. This network is utilized as an applications testing tool

LAN
Local Area Network; a group of computers and associated devices that share a common communications line and typically share the resources, applications, and data storage of a single processor or server within a small geographic area

LCD
Liquid Crystal Display; a technology used for displays

Learner analysis
an examination of student characteristics that are relevant to the design of instruction that include, but are not limited to, age, academic ability, learning style, and motivation

Learning object
a discreet chunk of data that is part of a learning module, which can include video, audio, text, e-mail, slides, case studies, or any medium that can be digitized

Learning styles
cognitive, affective, and physiological factors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment

Legacy Modernization
migrating and restructuring older legacy systems which have become outdated due to obsolete platforms and applications to more modern platforms which can support new advancements and heterogeneity in technology applications

Leopard (Mac OS)
the most recently released Unix-like graphical operating system developed by Apple for their computers

LIB
Label Information Base; extension for library files

Library
a collection of objects that are stored in a common location most frequently, programs in source code or object code form, data files, scripts, templates, fonts, and physical storage units such as tape cartridges

Linux
a freely-distributable open source implementation of UNIX that runs on various of hardware platforms

Live Motion
Web/Multimedia authoring tool from Adobe

Luddite
a member of the organized groups of early-19th-century English craftsmen who destroyed the textile machinery that was replacing them; often used to describe anyone opposed to technological change or critical of technology

--M--

Mac
the Macintosh; introduced in 1984 by Apple Computer, was the fi rst widely-sold personal computer with a graphical user interface (GUI)

Mac OS
the computer operating system for Apple Computer's Macintosh line of personal computers and workstations

Macromedia
software publisher specializing in multimedia related products

Mainframe
an industry term for a large computer generally associated with IBM

Maintenance
the selective testing of a software system to ensure the absence of any bugs and that no previously-working functions have failed; also checks to see that newly added features have not created problems with previous versions of the software

MAN
Metropolitan Area Network; a network that interconnects users with computer resources in a geographic area or region larger than that covered by a large local area network (LAN) but smaller than the area covered by a wide area network (WAN); also used to mean the interconnection of several local area networks by bridging them with backbone lines

Message design
a field of study that encompasses students' perceptions of media and their subsequent ability or disability to interpret media

Meta-data
electronic tags that are embedded in web materials to permit their retrieval by search engines

Methodology
a series of rules, practices, and processes for the development of solutions, software, and other technology products

MHz
MegaHertz

Microcode
programming that is ordinarily not program-addressable but, unlike hardwired logic, is capable of being modified; may sometimes be installed or modified by a device's user by altering programmable read-only memory (PROM) or erasable programmable read-only memory (EPROM)

Microsoft
the world's leading publisher of software and development products

MIDI
Musical Instrument Digital Interface; a protocol designed for recording and playing back music on digital synthesizers that is supported by many makes of personal computer sound cards

Midrange
refers to computers that are more powerful and capable than personal computers but less powerful and capable than mainframe computers

MIS
Management Information Systems; a general term for the computer systems in an enterprise that provide information about its business operations also refers to a centrally-coordinated system of computer expertise and management

MIS/Decision Support
Manages the computer systems responsible for storing and creation of information for an organization; possessing a competitive level of computer expertise

MMO
Massive Multiplayer Online [Game]; this game is capable of supporting a large amount of users simultaneously, can be extrapolated to an educational opportunity learning environment

Modem
Modulator/Demodulator; a device that modulates outgoing digital signals from a computer or other digital device to analog signals for a conventional copper twisted pair telephone line and demodulates the incoming analog signal and converts it to a digital signal for the digital device

Monitor
a computer display and related parts packaged in a physical unit that is separate from other parts of the computer; notebook computers don't have monitors because all the display and related parts are integrated into the same physical unit with the rest of the computer

Monitoring
watching system performance

Motherboard
the physical arrangement in a computer that contains the computer's basic circuitry and components, where circuitry is imprinted or affixed

MTF
Modulation Transfer Function or Mean Time to Failure

Multimode
multimode fiber is optical fiber that is designed to carry multiple light rays or modes concurrently, each at a slightly different reflection angle within the optical fiber core

Multimedia
the use of more than one concurrent presentation medium; typically used to mean the combination of text, sound, and/or motion video

My Advisor
Component of ARTEMIS that provides academic planning and counselor/advisor resources

--N--

Natural
Software AG 4th generation programming language

Netscape
Web browser

Network
a series of points or nodes interconnected by communication paths, which can interconnect with other networks and contain sub-networks

NOC
Network Operations Center

Norm-referenced Assessment
an evaluation that is scored based on a bell-curve distribution produced by all students' scores, such as standardized tests

NWRDC
Northwest Regional Data Center – based in Tallahassee, Florida, this organization is a leading provider of educational and governmental secure computing for the State

--O--

Object
unit of code, a process component, or content element, also target

OEM
Original Equipment Manufacturer; a company that uses product components from one or more other companies to build a product that it sells under its own company name and brand

Office
Office productivity suite from Microsoft

Online
the condition of being connected to a network of computers or other devices; frequently used to describe someone who is currently connected to the Internet

OOP
Object-Oriented Programming; programming organized around objects rather than actions, data rather than logic

Oracle
A leading supplier of software for information management; it is best known for its sophisticated relational database products

ORION
Florida State College's name for its implementation of the Integrow ERP solution

ORION 2
platform migration of the ORION system to the open systems environment

ORION 3
web–enablement of the ORION system.

ORION/ARTEMIS Executive Committee
oversees all aspects of ORION/ARTEMIS Steering Committee

ORION/ARTEMIS Steering Committee
determines, approves, and prioritizes development projects for ORION and ARTEMIS

OS
Operating System; the program that, after being initially loaded into the computer by a boot program, manages all the other programs in a computer

OSAF
Open Sources Applications Foundation, organization formed to support and encourage community-based software development and open licenses for use of the software

OSF
Open Systems Foundation, group of companies collaborating to establish systems and product standards that are non-proprietary

OSX
Unix-based operating system released by Apple, which focused on modularity and a complete revision of previous Apple operating systems

Outsource
to hire an outside agency or team to complete a project

--P--

Pagemaker
publishing/print layout tool from Adobe

Pages (Mac Application)
a word and document editing program released by Apple as part of their iWork package

Parse
to analyze something in an orderly way, break down to elemental levels

Password
sequence of characters used to verifiscal year that a user requesting access to a system is that user

PBX
Private Branch Exchange; a telephone system within an enterprise that switches calls between enterprise users on local lines while allowing all users to share a certain number of external phone lines

PCI
Peripheral Component Interconnect; an interconnection system between a microprocessor and attached devices

PCS
Personal Communications Services; a wireless phone service

PDA
Personal Digital Assistant; any small mobile hand-held device that provides computing and information storage and retrieval capabilities

Pedagogy
the study of teaching children; often used to refer to teaching methodology as a whole

PERL
Practical Extraction and Reporting Language; a script programming language that is similar in syntax to the C language and that includes a number of popular UNIX facilities

PERL Hack
software product thrown together using PERL scripts

PHB
Pointy-Haired Boss, as in Dilbert™ character

Photoshop
graphics editing tool from Adobe

PHP
Hypertext Processor; edits and translates a specially scripted language to create dynamic websites.

PICS
a Cisco security firewall product

PIN
a pronged contact, part of a male connector which plugs into a female connector as part of a signal interface in a computer or other communications device; the number of pins in a connector is sometimes used in describing it

Plasma Display
uses cells held between two panels of glass to emit light when noble gases in the cells excite and turn to plasma

Plenum
a separate space provided for air circulation for heating, ventilation, and air-conditioning, provided in the space between the structural ceiling and a drop-down ceiling or under a raised floor; often used to house connecting communication cables

Podcast
an audio or video file uploaded by one user and downloaded by others to listen/view on an iPod. These files are typically lecture-based, or similar to a talk radio program. Users do not communicate in real time

POP
Point-Of-Presence; an access point to the Internet with a unique Internet Protocol (IP) address

Port
on computer and telecommunication devices, a specific place for being physically connected to some other device, usually with a socket and plug of some kind, also a software connection point

Portal
aggregate entry point for multiple virtual services; typically accessed through a web browser

Portlet
these applications combine within a web portal page to create a dynamic interface for users; portlet applications include email, discussion forums, stock reports, etc

POS
Point-Of-Sale; a terminal that is a computerized replacement for a cash register, able to record and track customer orders, process credit and debit cards, connect to other systems in a network, and manage inventory

Posix
Stands for "Portable Operating System Interface for Unix;" this defines the application programming interface for software to be compatible with Unix operating systems

PowerPoint
a Microsoft program used to design colorful and dynamic presentations

Premier
non-linear DV Editing Tool from Adobe

PRI
the Integrated Services Digital Network (ISDN); has two levels of service: the Basic Rate Interface (BRI), intended for the home and small enterprise, and the Primary Rate Interface (PRI), for larger users

Production
the live systems environment in which real data and real transactions occur

Program
a specific set of ordered operations for a computer to perform

Project
Microsoft project management software or a group of tasks designed to produce an end product

Proprietary
a technology or product that is owned exclusively by a single company that carefully guards knowledge about the technology or the product's inner workings; may only function properly when used with other products controlled by the same company

Protocol
the special set of rules that govern communications

PSTN
Public Switched Telephone Network; refers to the local long distance and international phone system which is used every day

Public-key encryption
an encryption scheme wherein each person gets a pair of keys, called the public key and the private key, the public key being published while the private key is kept secret; often used in conjunction with a digital signature

--Q--

QuarkXpress
publishing/print layout tool

Query
a question or request for information entered by a user of a search engine or database

--R--

RAM
Random Access Memory; the place in a computer where the operating system, application programs, and data in current use are kept so that they can be quickly reached by the computer's processor but which only stay in RAM as long as your computer is running

Recovery
the recovery of lost data packets

Relational
relational database; a collection of data items organized as a set of formally-described tables from which data can be accessed or reassembled in many different ways without having to reorganize the database

Resolution
the sharpness and clarity of an image; often used to describe the relative quality of monitors, printers, and bit-mapped graphic images

RF
Radio Frequency; any frequency within the electromagnetic spectrum associated with radio wave propagation

Robust
an adjective commonly applied in marketing literature to information

ROI
Return On Investment; for a given use of money in an enterprise, how much return (usually profit or cost saving) will result

ROM
Read-Only Memory; computer memory on which data has been prerecorded and which, once written, cannot be removed and can only be read; unlike main memory (RAM), ROM retains its contents even when the computer is turned off

Root
the top directory in a file system

Router
a device that connects any number of LANs.

RSS
program/application which "reads" subscribed to websites for new content and aggregates this new content in one area for the user. Commonly used to track frequently updated information sites and weblogs.

--S--

SAN
Storage Area Network; a high-speed sub-network of shared storage devices which acts as a pathway between the end user and the stored data

Scanner
an input device that takes in an optical image

SIRIUS (aka SIRIUS Academics)
Florida State College initiative designed to address three objectives: (1) to facilitate the development of pedagogically sound instructional coursework; (2) enhance educational outcomes, and (3) improve student performance, retention and success.

SLA
Service Level Agreement

Slippage
lateness of a project, a slide in the project plan

Smart (as in classroom)
an on-site classroom wired for Internet access, that contains multimedia equipment such as video projector, DVD player, and computers

SOA
Service-oriented architecture (SOA [pronounced "sō-uh" or "es-ō-ā"]) describes a software architecture that defines the use of loosely coupled software services to support the requirements of business processes and software users

Soft key
a keyboard key that is simulated by an icon on screen

Software
computer instructions or data; (1) systems software: the operating system and all the utilities that enable the computer to function; (2) applications software: programs that do real work for users, such as word processors, spreadsheets, and database

Software AG
software publisher specializing in data base management products

Solaris
a UNIX based operating system developed and distributed by Oracle/Sun software

Spam
Unsolicited e-mail, typically consisting of advertisements

SPARC
Scalable Processor ARChitecture; a 32 and 64 bit architecture developed by Oracle/Sun Microsystems that utilizes RISC based computing.

SSL
Secure Sockets Layer; a protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that's transferred over the SSL connection

Standard
a definition or format that has been approved by a recognized standards association also norms set within an organization

Storage (Storage Array)
a group of physical hard drives combined to create a large volume of space to house data in a Storage Area Network

Stub
a routine that doesn't do anything other than declare itself and the parameters

Summative evaluation
an assessment utilized to determine final learning outcomes and often to determine grades

Switch
(1) in networks, a device that filters and forwards packets between LAN segments; (2) a small lever or button; (3) another word for option or parameter — a symbol that you add to a command to modifiscal year the command's behavior.

SYN
a SYNtactic specification language

SyncSort
Data management/file management systems product for IBM mainframe environment

Sysadmin
also systems administrator; an individual responsible for maintaining a multi-user computer system, including a local-area network

System
also computer system; a combination of components working together which includes both hardware and software

--T--

T1
also DS1 line; a dedicated phone connection supporting data rates of 1.544Mbits per second

T2
also DS2 line; a dedicated phone connection supporting data rates of 6.312 Mbps

T3
also DS3 line; a dedicated phone connection supporting data rates of about 43 Mbps

Tablet
graphics tablet, digitizing tablet, or electronic tablet; also Tablet PC; a design for a fully-equipped personal computer that allows a user to take notes using natural handwriting on a stylus- or digital pen-sensitive touch screen instead of requiring the use of a keyboard

Tag
a command inserted in a document that specifies how the document, or a portion of the document, should be formatted

Tape
a magnetically coated strip of plastic on which data can be encoded

Task analysis
a process utilized to determine what content needs to be included in a segment of instruction for learner to achieve the learning goal

TCP/IP
Transmission Control Protocol/Internet Protocol IP protocol deals only with packets, TCP enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent

Teaching methods
strategies utilized by instructors to deliver content and allow student interaction with content

Technology
all computer hardware, software, and similar and related electronic, mechanical, or systems-like products, processes, or projects

Telecommunications
refers to all types of data transmission, from voice to video

Telecommuting
system where workers are not necessarily located at a central business location

Teleconference
a conference held via a telephone or network connection

Telephony
the science of translating sound into electrical signals, transmitting them, and then converting them back to sound; that is, the science of telephones; used frequently to refer to computer applications that performs functions traditionally performed by telephone equipment

Test
the phases of checking for bugs and confirming system functionality

TFT
Thin Film Transistor, also active-matrix LCDs; a type of LCD flatpanel display screen, in which each pixel is controlled by from one to four transistors

Thin client
a simple program or hardware device which depends mostly on the function of a server

Thrashing
excessive paging in virtual memory

Tomcat
Apache Server -based application that enables java code to run under a web environment

Transaction
a unit of interaction with a DBMS or system, which must be treated in a coherent and reliable way independent of other transactions

Transactional distance
a measure of the learner's perception of relatedness to the instructor, the environment, and the process

--U--

Ultra Thin Client
a computer that primarily operates using a central server for all processing

UNIX
a multi-user, multitasking operating system that is widely used as the master control program in workstations and especially servers

Unzip
to extract files from a Zip archive

UPS
Uninterruptible Power Supply; a power supply that includes a battery to maintain power in the event of a power outage

Uptime
a computer industry term for the time during which a computer is operational, available, opposite of downtime

URL
Uniform Resource Locator; the global address of documents and other resources on the World Wide Web, the first part indicating the protocol, the second specifiscal yearing the IP address or the domain name where the resource is located

USB
Universal Serial Bus; an external bus standard that supports data transfer

USENET
an informal system designed to exchange news

User
an individual who uses a computer or system

User ID
user identifier; a user number or name which is unique to a particular user of a computer or group of computers which share user information

--V--

Vapor
also vaporware; a sarcastic term used to designate software and hardware products that have been announced and advertised but are not yet available

Veritas
storage management software for backup and recovery of data

Video card
also graphics card or graphics adapter; a circuit board fitted to a computer, containing the necessary video memory and other electronics to provide graphics display capability

Virtual
not real; distinguishes something that is merely conceptual from something that has physical reality, e.g. virtual memory

Virtual College
an educational program offered part- or completely online

Virus
A computer program that infects and runs on a computer without the knowledge or per mission of the computer's user; the virus spreads to other computers through file sharing and connected networks.

VISIO
Diagramming and graphical data presentation product from Microsoft

Vista (i.e. Microsoft Vista)
Recently released graphical operating system for Windows/Microsoft computers.

Visual Basic
graphical development language also known as VB

VM
Virtual Machine a self-contained operating environment that behaves as if it is a separate computer

VMS
Virtual Memory System; an operating system from the Digital Equipment Corporation that runs in older generation mid-range computers

VoIP (Voiceover IP)
the routing of voice over internet IP

VPN
Virtual Private Network; a network that is constructed by using public wires to connect nodes, such systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted

VRAM
Video RAM, special-purpose memory used by video adapters that, unlike conventional RAM, can be accessed by two different devices simultaneously

VRML
Virtual Reality Modeling Language a specification for displaying 3-dimensional objects

VRU
Voice Response Unit, also IVR

--W--

WAN
Wide Area Network; a computer network that spans a relatively large

WebDAV
Web-based Distributed Authoring and Versioning.

Web Enablement
extends legacy applications for access via a web browser.

Webification
the act of transforming items into a format where they can be displayed on the web

Web Services
reusable application modules/interfaces that are exposed through XML (web-based APIs)

Widget
a application or computer element that a user can interact with in a virtual sense

Wizard
an interactive virtual guide which takes a user through the steps of a program's process to complete a task

Workstation
a computer that generally has a higher level of processing power and work-related programs and graphic design capabilities than the average desktop computer; a computer that is loaded with all the appropriate programs necessary for a job

--Y--

Yak-Shaving (aka: Axe-Sharpening)
a seemingly pointless activity which is actually a necessary step in the process of solving the problem

--Z--

Z-linux
IBM implementation of Unix on the Z-series processor

Z-OS
IBM operating system

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QUOTES

Introduction .....“Change in all things is sweet.” -Aristotle

Executive Summary .....“Success is never final.” -Winston Churchill

Chapter 1: Technology and higher education: The Future .....“The future ain’t what it used to be.” – Yogi Berra

Chapter 2: Technology Strategy

.....“Possunt quia posse videntur. Audentis fortuna iuvat.”

(“They can because they think they can. Fortune favors the bold.”) -Virgil

Chapter 3: Technology Vision ..“Leadership is the capacity to translate vision into reality.” -Warren G. Bennis

Chapter 4: Technology Architecture....“As long as you’re going to be thinking anyway, think big.” -Donald Trump

Chapter 5: Management and Structure.....“The fact is, being a leader changes everything.” -Jack Welch, Former CEO-GE

Chapter 6: Strategic Technology Initiatives ..“...we are actively looking for new cliffs to jump off...” -Albrecht of HBO

Chapter 7: Collegewide Initiatives Related to Technology...“Be a yardstick of quality. Some people aren’t used to an environment where excellence is expected.” -Steve Jobs

Chapter 8: Major Technology Project Status ..“The reward for work well done is the opportunity to do more.” -Jonas Salk

Chapter 9: Security, Business Continuity, and Disaster Recovery .....“How much pain have cost us the evils that never happened.” –Thomas Jefferson

Chapter 10: Environment.....“Nothing quite new is perfect.” -Cicero

Chapter 11: Fiscal Resources.....“Love lasteth as long as the money endureth.” -William Claxton

Chapter 12: Conclusions & Summary.....“Power corrupts. Absolute power is kind of neat.” -John Lehman

Appendix A: Next Generation Technology Standards & Acquisitions* ..“A lot of things are changed or going to be changed very soon. We have revolution now.” -Oleg

Appendix B: Workstation Standards.....“…beware of men bearing magical machines and a list of hopeful prophecies attached.” -David Shenk

Appendix C: Technology Acquisitions.....“When you have faults, do not fear to abandon them.” --Confucious

Appendix D: ERPM.....“I do not fear computers. I fear the lack of them.” –Isaac Asimov

Glossary .“And when I have understanding of computers, I will be the supreme being.” -Evil (Time Bandits)

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Chapter 2 - Technology Strategy.....Rob Rennie

Chapter 3 - Technology Vision .....Rob Rennie

Chapter 4 - Technology Architecture .....Dennis Reiman, Rob Rennie

Chapter 5 - Management and Structure.....Dennis Reiman, Rob Rennie

Chapter 6 - Strategic Technology Initiatives .....Taya Ball, Dennis Reiman, Rob Rennie,
.....Chris Shaffer, Kelly Thomas

Chapter 7 - Collegewide Initiatives Related to Technology.....Dennis Reiman, Rob Rennie,
.....Norm Schussler

Chapter 8 - Major Technology Project Status.....Frank Barber, Mitch Chin, Eddie Christian,
.....Robyn Foshee, Rusty Gardner, Theresa Lott, Karen Luttrell, Chris Martin, Thornton May,
.....Herman Möller, Michelle Nifong, Dennis Reiman, Rob Rennie, Norm Schussler,
.....Chris Shaffer, Ron Smith, Linda Swanson, Kelly Thomas, Ian Vanhoof

Chapter 9 - Security, Business Continuity, and Disaster Recovery .....Eddie Christian

Chapter 10 - Environment.....Chris Martin, Dennis Reiman, Ron Smith

Chapter 11 - Fiscal Resources.....Rob Rennie, Norm Schussler

Chapter 12 - Conclusions and Summary .....Rob Rennie

Appendix A - Next Generation Technology Standards and Acquisitions .....Rusty Gardner,
...Chris Martin, Herman Möller, Steve Permuy, Dennis Reiman, Ron Smith, Linda Swanson,
.....Kelly Thomas, Ian Vanhoof

Appendix B - Workstation Standards .....Dennis Reiman

Appendix C - Technology Acquisitions .....Norm Schussler

Appendix D - ERPM .....Eddie Christian

Glossary.....Taya Ball, Rob Rennie, Dennis Reiman, Norm Schussler, Ron Smith,

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