**North Florida Community College**

**Technology Plan**

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**Executive Summary**

This document is the Strategic Technology Plan for North Florida Community College. As such it will be the guiding influence and primary framework for technology initiatives and projects undertaken by the College for the next three years and will be amended annually.

In no way, however, shall this plan inhibit the agility necessary to meet fiscal or business demands nor the ability to provide technological support for changing College initiatives.

*Listed below are the major assumptions forming the premise for constructing this plan:*

* *The College must maintain a refresh cycle of all technologies.*
* *Students can improve learning by using appropriate technology and will need technological knowledge to be life‐long learners in the 21st century.*
* *We must train our faculty and staff, provide sufficient resources, and embrace technology in a timely manner in order to provide the best learning environment.*
* *Students, Faculty, and staff are ready to embrace technology.*
* *The infrastructure, of both equipment and people, must be in place to support*

*the demand for and use of technology.*

* *Technology now delivers a complete instructional environment for the College*
* *The on‐line instructional environment is the fastest growing sector of the College*
* *Rapid changes in technology will continue*

*The following items define the level of acceptable services.*

***For all Students, Faculty, and Staff:***

* *Access to a fully functional instructional computing environment*
* *Emergency communication systems to provide information and assistance in the case of an emergency*
* *Access to current computer resources (equipment, software, printing, etc.)*
* *Support for customers of technology (staffing, problem resolution, help desk)*
* *High speed access to the Internet*
* *Access to wireless technologies while on campus*
* *Security measures to protect all data and equipment*
* *Policies and procedures to guide and inform all faculty, staff, and students.*
* *Continue to improve technology to meet the changing needs and trends in education*

***For students:***

* *Access to computer labs*
* *Access to technology based instructional environment (D2L and GoMail)*
* *Ability to access and utilize technology in the services and instructional areas*
* *Remote access to student services and the instructional environment*

***For faculty members:***

* *Availability of a base set of technologies in every classroom*
* *Access to multimedia development for instruction (training, equipment, support, etc.)*
* *Access to D2L instructional technologies*

***For staff members:***

* *Access to applications and support*
* *Access to easy to use tools to retrieve and report information*
* *Access to critical information to support the goals of the College and its constituents*

***For classrooms:***

* *Multimedia equipped classrooms*
* *High speed access to the internet*
* *Easy to use solutions*

**Technology Vision**

North Florida Community College is committed to being a leader among Florida colleges in using technology to accomplish its mission and to enhance teaching and learning, creative and scholarly activities, and service to the community. Further enhanced educational delivery systems which, when used in conjunction with the current classroom model, will provide education that allows for better student access while maintaining academic integrity. Areas of focus include:

* *Create a technological environment that encourages, enhances, and rewards effective, efficient, and flexible use of technology.*
* *Educate staff, faculty, and students to use technological innovations to facilitate their learning and to be prepared to use new technologies to enhance their careers and lifelong learning.*
* *Support faculty in their use of technology as an integral part of their teaching, scholarly and creative activities, and service.*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Empower faculty, staff, and students to openly communicate and share information and ideas within commonly accepted ethical and legal guidelines.*
* *Assist faculty and staff in the development of discipline‐specific academic tools utilizing technology.*
* *Provide full‐function servers, networks, software, and peripherals that will support educational delivery systems.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Maintain security awareness and systems to secure our environment and our data.*

**Annual Initiatives**

***2012***

* *Oracle Server Redundancy*
* *Complete Windows 7 Implementation*
* *Student Web Application system implemented into PROD*
* *Web Systems utilizing SharePoint and Microsoft workflow technology*
* *Online System for Instructors (No Show, Early Alert)*

***2013***

* *Interactive Web based Banner Degree Works System*
* *Phone system upgrade, installation of Avaya IP Office*
* *Planning and purchase of Unified Computing System (UCS) equipment*
* *Establishment of iPad and Microsoft Surface classroom(s)*
* *Set-up of Poly Com instructional equipment*

***2014***

* *Implement Single Sign-on Technology*
* *Installation of UCS equipment*
* *Installation of production equipment in the B35 Data Bunker*
* *Implement AdvisorTrac and TutorTrac to aid with early alerts for students*
* *Rollout Degree Works to Advisors and Students*
* *Complete installation of secure wireless connection*
* *Exchange 2013 Implementation*
* *Expansion of Disaster Recover to St. Johns River Community College*

***The Next 3 Years***

* *Interactive Web based Banner Degree Works System*
* *Continued Security Evaluation and testing*
* *Staff Training on new and existing software/hardware*
* *Support Staffing for Instruction Technology*
* *Instructional Technology Growth*
* *Backbone refresh (10 GB fiber to Core) (2015)*
* *Upgrade wireless technology across campus*

**Technology Discussion   
Infrastructure**

***Backbone***

***Current Procedures/Environment***

* *Cisco equipment and security systems are used throughout the environment and include a CISCO Catalyst 6509 Layer 3 Switch and CISCO ASA 5510 (Building 2 on Main campus and at the Bunker Data Center)*
* *Fiber optic are utilized for all outside cable runs*
* *Backbone and desktop connections are gigabit*
* *All server farms are “Green” utilizing VMWare virtual technology*
* *Wireless coverage in all buildings Main Campus (current version 802.11N)*
* *Three Ethernet circuits totaling 70/130 Mb connectivity via link balancer*

***Goal Procedures/Environment***

* *The infrastructure, of both equipment and people, must be in place to support the demand for and use of technology.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Maintain security awareness and systems to secure our environment and our data.*
* *All NFCC systems and services should have the following characteristics:* 
  + *The network should be evaluated and re‐engineered every 3‐5 years*
  + *All systems should have redundant hardware to ensure connection capabilities for all technologies*
  + *All data transmissions should be across secure communication lines with enterprise level monitoring.*
  + *All technology should be current and under current support agreements.*
  + *Systems should be available 24/7 365 days whenever possible*
  + *Staff knowledge should be extensive and augmented by outside experts*

***Gap Analysis***

*Expand data center capabilities on each site with the installation of UCS to improve site independence in the event of disaster.*

***Security***

***Current Procedures/Environment***

* *College data security systems are provided by Cisco, Oracle, Microsoft and Barracuda.*
  + *CISCO ASA5510 firewall*
  + *Microsoft System Center Endpoint Protection*
  + *Microsoft Active Directory*
  + *Oracle 11g*
  + *Barracuda Spam/Web filter*

***Goal Procedures/Environment***

* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Maintain security awareness and systems to secure our environment and our data.*
* *Microsoft Active Directory security testing*

***Gap Analysis***

*The College needs to continue testing and improving all security systems.*

***Telephone Services***

***Current Procedures/Environment***

* *NFCC currently has an Avaya Office IP Phone Infrastructure*
* *Voicemail is available to all staff and faculty via an Avaya Unity Voicemail Server*
* *Unified communication between the phone system and Exchange 2010*

***Goal Procedures/Environment***

* *Unified communication systems to provide information and data seamlessly between multiple devices and technologies*
* *Empower faculty, staff, and students to openly communicate and share information and ideas within commonly accepted ethical and legal guidelines.*
* *Backup Primary Rate Interface (PRI) Circuit that will allow Data/Phone Connectivity on the event of an emergency*

***Gap Analysis***

*None*

***Administrative Software***

***Current Procedures/Environment***

* *Ellucian is the provider of NFCC’s primary administrative software. Ellucian is the leading vendor of college administrative software in the world.*
* *Security to the Ellucian data is provided using the Oracle database. Oracle is the leading provider of enterprise level database solutions worldwide*
* *All web applications are secured using encryption technologies*
* *Fully integrated degree educational audit system that what will assist in student career planning as well as improve time to degree.*

***Goal Procedures/Environment***

* *Support faculty in their use of technology as an integral part of their teaching, scholarly and creative activities, and service.*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Provide full‐function servers, networks, software, and peripherals that will support educational delivery systems.*

***Gap Analysis***

*The college needs to implement online applications to allow student to apply and be accepted to the institution online.*

***Backup and Disaster Recovery Procedures***

***Current Procedures/Environment***

* *Remote data replication is utilized in both the Microsoft and Oracle backup strategies*
* *All backups are performed Disk to Disk*
* *Annual disaster recovery testing is performed*
* *All procedures are reviewed and maintained as a part of that testing*
* *All areas of the College participate in Disaster Recovery planning and testing*
* *All data centers are supported with UPS, Load Balancing*
* *Redundant cooling systems protect our data centers*
* *The college has installed failover generator technologies at production site.*

***Goal Procedures/Environment***

* *Implement UCS Mirror Technology which will allow for continuous availability of resources*

***Gap Analysis***

*The College needs to continue to monitor new technology changes in the area of disaster recovery.*

**Access and Services**

***Network Access***

***Current Procedures/Environment***

* *All faculty and staff have current computer and software configurations*
* *All NFCC computers and users use either Windows and/or Mac*
* *Student accounts and student computers are logically separated by Microsoft security technologies*
* *Access to a fully functional instructional computing environment*
* *Access to current computer resources (equipment, software, printing, etc.)*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Open access wireless available campus wide*

***Goal Procedures/Environment***

* *Implementation of a single sign-on technology using Campus EAI SSO*

***Gap Analysis***

*None*

***E‐Mail***

***Current Procedures/Environment***

* *Email is the primary means of communications for both students and staff*
* *Exchange 2010 environment*
* *Implemented email journal/archiving solution*
* *MyNFCC portal provides targeted communications and services*
* *GoMail utilizes free service for student email through Google*
* *Barracuda Mail Archiver is used for long-term archiving*
* *McAfee Security-as-a-Service (SAAS) is used to filter SPAM*

***Goal Procedures/Environment***

* *Implement Exchange 2013*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Empower faculty, staff, and students to openly communicate and share information and ideas within commonly accepted ethical and legal guidelines.*
* *Expand memory capabilities of servers*

***Gap Analysis***

*The college needs to continue to keep up with and control new methods of SPAM delivery.*

***Web Presence***

***Current Procedures/Environment***

NFCC currently has a full set of services available via the internet. The College offers the following web services:

* *Registration*
* *Degree Audit*
* *Degree Tracking*
* *Degree Shopping*
* *Transcripts*
* *Financial Aid*
* *Employee Benefits*
* *Purchasing*
* *Budget Inquiry*
* *Grade Entry*
* *College Policy Acceptance*
* *Forms Handling with Approvals*
* *Secure Intranet site for faculty and staff resources*

***Goal Procedures/Environment***

* *Implement Online Admissions*
* *Implement Online Program Change*
* *Implement Online Budget Planning*
* *Implement Online Staff and Adjunct Contract Creation*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Assist faculty and staff in the development of discipline‐specific academic tools utilizing technology.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*

***Gap Analysis***

*The college needs to continue implementing new functions to simplify how our students, faculty and staff receive information.*

***Emergency Communications***

***Current Procedures/Environment***

* *Ability to communicate with students, faculty and staff in several ways in the event of an emergency*
* *All students and staff have email accounts which can receive email notification*
* *All students and staff have access to MyNFCC and its variety of communication channels*
* *All students registered for courses have access to our Learning Management System (Desire2Learn) where news announcements can be posted*
* *The College has contracted to provide voice and text messaging with e2Campus*
* *The College uses Alertus, an emergency notification system, to push information to all desktops on campus in the event of an emergency.*

***Goal Procedures/Environment***

* *Emergency communication systems to provide information and assistance in the case of an emergency*
* *Digital signage in various buildings on campus that have heavy student traffic*

***Gap Analysis***

*The college needs to continue to evolve in the area of emergency communication.*

***Remote Access***

***Current Procedures/Environment***

* *Remote VNC connections are available to all staff upon appropriate approval*
* *Remote email access is given to all students, faculty and staff*
* *Internet access to College services is provided to all students, faculty and staff*
* *Faculty and staff can gain access to virtual machines using VMWare View upon appropriate approval*
* *Faculty and staff can remotely access their networked machine using LogMeIn upon appropriate approval*
* *Lync software provides access to fully functional instructional computing environment*

***Goal Procedures/Environment***

* *Access to current computer resources (equipment, software, printing, etc.)*
* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*

***Gap Analysis***

*None*

**Staffing and Support**

***Support Structure***

The following positions serve, with the assistance of the Dean of Administrative Services, to plan, install, and maintain all computing resources for North Florida Community College:

*Coordinator of Database & Reports-Margie Phillips*

*Database Analyst/Desire2Learn -Carolyn Thigpen*

*Instructional Tech Support-Linda Brown*

*Duplication-Tammy Horne*

*IT Admin Support/Helpdesk Specialist -Cindy Burnett*

*Network Administrator -John Sirmon*

*Network Support Specialist -Kim Palmer*

*System Support Specialist -Scott Hubert, Tisha Phillips*

*Infrastructure Support Specialist – Isaac Goyette*

*NFCC currently has:*

* *804 PC desktops*
* *135 Apple desktop/laptops*
* *40 Virtual and 4 Physical servers on main campus*
* *7 physical servers at disaster recovery site*
* *50-60% of issues are handled remotely using remote access technology (GoverLan)*
* *64 iPads*
* *32 Microsoft Surfaces*

***Programming Environment***

***Current Procedures/Environment***

* *The Oracle database store all production data and administrative software systems.*
* *NFCC uses the Oracle database platform along with Microsoft Access and Microsoft SQL databases for tracking and reporting purposes.*

The programming environment of NFCC consists of the following toolset:

* *Oracle Databases*
* *Microsoft Access Databases*
* *Microsoft SQL Databases*
* *SQL, PL/SQL and SQL Developer*
* *Oracle Developer*
* *Oracle Forms*
* *APEX*
* *Oracle Reports*
* *Crystal Reports*
* *Business Objects Enterprise*

***Goal Procedures/Environment***

* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Assist faculty and staff in the development of discipline‐specific academic tools utilizing technology.*
* *Continue develop SharePoint*
* *Implement Campus EAI Single Sign On application*

***Gap Analysis***

*The college needs to continue to expand solutions for students, faculty, and staff.*

**Hardware and Software**

***Hardware***

***Current Procedures/Environment***

* *Currently running 40 virtual servers using VMWare software*
* *Virtual Storage runs on NetApp SAN technology*
* *College has standardized on Dell laptops and desktops*
* *“First resort” disaster recovery command center room (Firing Range, Bldg 35)*

***Goal Procedures/Environment***

* *Provide resources that facilitate productive uses of technologies in the support functions of the College.*
* *Provide full‐function servers, networks, software, and peripherals that will support educational delivery systems.*
* *Assure current and reliable administrative systems to enhance delivery of services to all constituents.*
* *Maintain security awareness and systems to secure our environment and our data.*
* *Install and implement UCS virtualization*

***Gap Analysis***

*The College needs to continue its “green” effort*

***Software***

***Current Procedures/Environment***

* *Primary software used by the College is provided via a Microsoft Campus Agreement*
* *List of the supported software and hardware can be found in the IT Procedures Manual*
* *NFCC utilizes both “push” and “image” technologies in the deployment of new software*
* *Deployment of automated software and security updates is automated*

***Goal Procedures/Environment***

* *Maintain security awareness and systems to secure our environment and our data.*
* *Provide full‐function servers, networks, software, and peripherals that will support emerging educational technology and delivery systems.*
* *Access to current computer resources (equipment, software, printing, etc.)*

***Gap Analysis***

*The College must implement new technologies to support change management.*

**Instructional**

***Academic Issues***

***Current Procedures/Environment***

* *650 student computers for internet access and instructional usage*
* *NFCC has equipped all classrooms with basic technology (computer, projector, extroncontrols, smartboard, and document cameras)*
* *All classrooms have high speed access to the internet*
* *D2L is the current learning management system provided to all instructors and classes*
* *Polycom technology allows connectivity of faculty and students in different geographic locations*

***Goal Procedures/Environment***

* *Assist faculty and staff in the development of discipline‐specific academic tools utilizing technology*
* *Support faculty in their use of technology as an integral part of their teaching, scholarly and creative activities, and service*
* *Empower faculty, staff, and students to openly communicate and share information and ideas within commonly accepted ethical and legal guidelines*
* *Create a technological environment that encourages, enhances, and rewards effective, efficient, and flexible use of technology*
* *Expand remote access technology in the classroom*
* *Implement Respondus LockDown Browser for online assessment to reduce academic dishonesty.*

***Gap Analysis***

*NFCC needs to expand its use of classroom technologies.*

*NFCC needs to continue to encourage faculty to bring technology into their teaching environment.*

***On Campus Student Access***

***Current Procedures/Environment***

* *Students may access the Internet in the Library and any open lab that contains computers for student instructional use*
* *Open wireless network access is accessible on campus to students using their personal devices*
* *The college uses 10 external antennas to improve the wireless network’s signal strength and coverage area.*
* *Students have access to printers using GoPrint, pay for print services*

***Goal Procedures/Environment***

* *Access to a fully functional instructional computing environment*
* *Access to current computer resources (equipment, software, printing, etc.)*
* *Access to wireless technologies while on campus*
* *Educate staff, faculty, and students to use technological innovations to facilitate their learning and to be prepared to use new technologies to enhance their careers and lifelong learning.*

***Gap Analysis***

*The College needs to create a technology portal*

**Backup and Recovery Service Level Agreement**

***Overview***

The IT department created these Procedures to provide users with reliable backups of their data. This is accomplished using Eversync. Eversync is an automated, enterprise‐wide storage management application. The application has two components: a central server and multiple clients. This client software package will send daily backups over the network to Eversync server. The backups are performed using a full-differential-incremental backup structure. The client package also provides the capability to perform manual backups and restores.

***Backup and Recovery Assumptions***

* *The NFCC backup times will be executed as defined in the NFCC Backup and Recovery Plan.*
* *Production servers will be backed up and recoverable.*
* *Each server and/or directory has a backup plan defined in the attached NFCC Backup and Recovery Plan.*
* *Local, end‐user disk drives and the data/files on them will not be backed up or recoverable. Storage of NFCC data is strictly forbidden in the local drives of NFCC computers. Local device storage is usable for “Incidental Use” as defined in the Acceptable Technology Use Agreement.*
* *All data/files stored in “Home Folders”, “Departmental Folders” or “Instructor Folders” will be backed up with the Home Folders management class as defined below.*
* *All data/files stored on an IT server outside the recommended locations will be backed up and recoverable as defined in the NFCC Backup and Recovery Plan.*
* *No unnecessary data/files should be placed in the “Home Folders”, “Departmental Folders”, “Instructor Folders” or any other IT supported server. Examples could include pictures, music, movies, etc.*
* *Data/Files that fall outside the defined service agreements (below) will not be backed up or recoverable.*

***Backup and Recovery Configurations and Limitations***

Below are definitions of each of the backup and recovery strategies used in the NFCC Backup and Recovery Plan.

The functional areas of student records, financial accounting, human resources, and payroll are in one integrated database application and operates in an Oracle database on a server running Linux Server as the OS which is housed on a server in the Building 5 Data Center but will be transferred to a blade in a UCS chassis in the hardened, Communication Bunker behind the Public Safety Building (#35). This bunker is our Production Site as it is equipped with a diesel powered generator which starts automatically. The supporting software and applications used to access theses records in also housed in this Virtual Server Farm environment. We have duplicate equipment in the DR Data Center in the Computer Services Building #5 and keeps a mirror image of the virtual production environment.

**Mirror Procedures**

Files written to volumes on a virtual server in the Building 35 Bunker Data-center are written to the corresponding mirror servers at the DR site in Building 5 utilizing the transport bandwidth on the internal network infrastructure. This will minimize the impact of almost any DR scenario due to the presence of the generator and a backup circuit to the Internet.

**Backup Procedures**

Database and application files are backed up in snap-shots on the SAN twice daily. These files are written to a hard drive backup device housed in Building 2 on a daily, weekly, and monthly schedule. The monthly Full Backups are archived on a removable 2 TB hard drive which is then stored in the safe in Building 13.

**GAP Analysis Summary**Listed below are gap comments from throughout this plan. The President and Management Team of the College and the IT department must consider these issues in prioritization and funding.

***Infrastructure Initiatives***

***Backbone***

*Expand data center capabilities on each site to improve site independence in the event of disaster.*

***Security***

*The College needs to continue testing and improving all security systems.*

***Administrative Software***

*The college needs to implement online applications to allow student to apply and be accepted to the institution onine.*

***Backup and Disaster Recovery Procedures***

*The College needs to continue to monitor new technology changes in the area of disaster recovery.*

***Access and Services Initiatives***

***Email***

*The College needs to continue to keep up with and control new methods of SPAM delivery.*

***Web Presence***

*The College needs to continue implementing new functions to simplify how our students, faculty and staff receive information.*

***Emergency Communication***

*Then college needs to continue to evolve in the area of emergency communication.*

***Staffing and Support Initiatives***

***Programming Environment****The College needs to continue to expand solutions for students, faculty, and staff.*

***Hardware and Software Initiatives***

***Hardware****The College needs to continue its “green” efforts.*

***Software****The College must implement new technologies to support change management.*

***Instructional Initiatives***

***Academic Issues****NFCC needs to expand its use of classroom technologies.*

*NFCC needs to continue to encourage faculty to bring technology into their teaching environment.*

***On Campus Student Access****The College needs to create a technology portal*