



North Dakota University System
Information Technology - Strategic Plan 2013-2015

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EXECUTIVE SUMMARY

State Board of Higher Education (SBHE) Policy 1901.3 Information Technology Project Management states:

Consistent with NDCC section 15-10-44, the state board of higher education shall manage and regulate information technology planning and services for institutions under its control.

The Chancellor is delegated authority and directed to develop information technology planning, policies, standards, guidelines, and project management oversight and reporting in coordination with the state information technology department. NDUS Information Technology (IT) projects shall comply with established standards, guidelines, procedures and processes.

Not more frequently than every two years, a comprehensive information technology plan shall be submitted to the Board for its review and approval. In addition, periodic progress reports on goal progress shall be submitted to the Board.

REFERENCE: N.D.C.C Section 15-10-44

The North Dakota University System (NDUS) 2009-13 Strategic Plan had been revised to include Information Technology (IT) as one of its goals. NDUS Strategic goals include:

1. The North Dakota University System is accessible, a view held by all North Dakotans.
2. North Dakotans recognize that the North Dakota University System is affordable at a level that can be sustained.
3. The North Dakota University System increases the overall vitality of the state through exceptional education, research, training, and service.
4. The eleven institutions comprising the North Dakota University System work together to achieve the vision effectively.
5. The North Dakota University System will leverage its information technology resources to provide access to academic programs and services, allow for innovation in academic and administrative functions to achieve greater effectiveness and efficiencies and help all units deliver excellence. (PROPOSED)

This NDUS Information Technology (IT) Strategic Plan aligns with and supports the “Strategic Plan” brought forward by the Chancellor and approved by the State Board of Higher Education. The NDUS IT Strategic Plan consists of goals, their purpose, strategic objectives to meet the goals, initiatives/projects or tactical efforts/activities from institutions and the System Information Technology Services (SITS) that align with strategic objectives, and then a reflection on accomplishments during the previous two-year cycle.

The North Dakota University System through its System Information Technology Services (SITS) provides a wide portfolio of technology activities in support of the University System and institutions. During the past two years, efforts were made to better align that portfolio with the goals of the Board along with the needs of the institutions and prepare the SITS organization to address future directions, opportunities and challenges. A strategic vision for the future was plotted, recognizing that services must be connected and integrated to meet the needs in an Internet-connected world.

The overarching goals within the NDUS IT Strategic Plan are:

1. Support System Infrastructure Needs (aligns with and supports NDUS Strategic Plan Goal #1 - The North Dakota University System is accessible, a view held by all North Dakotans).
2. Improve Information Technology-enabled Business Processes and Services while Providing and Managing Resources to Align with University System Strategic Goals (aligns with and supports NDUS Strategic Plan Goal #2 – North Dakotans recognize that the North Dakota University System is affordable at a level that can be sustained).
3. Improve and Enhance Student Learning and Customer Focus (aligns with and supports NDUS Strategic Plan Goal #3 – The North Dakota University System increases the overall vitality of the state through exceptional education, research, training and service).
4. Improve and Enhance Collaborative Efforts (aligns with and supports NDUS Strategic Goal #4 – The eleven institutions comprising the North Dakota University System work together to achieve the vision effectively).

Each goal, their purpose, and strategy will be addressed later in the document. Tactical Efforts and Activities are also included with each goal. While tactical effort and activities have been identified, implementation is dependent on funding, other available resources,

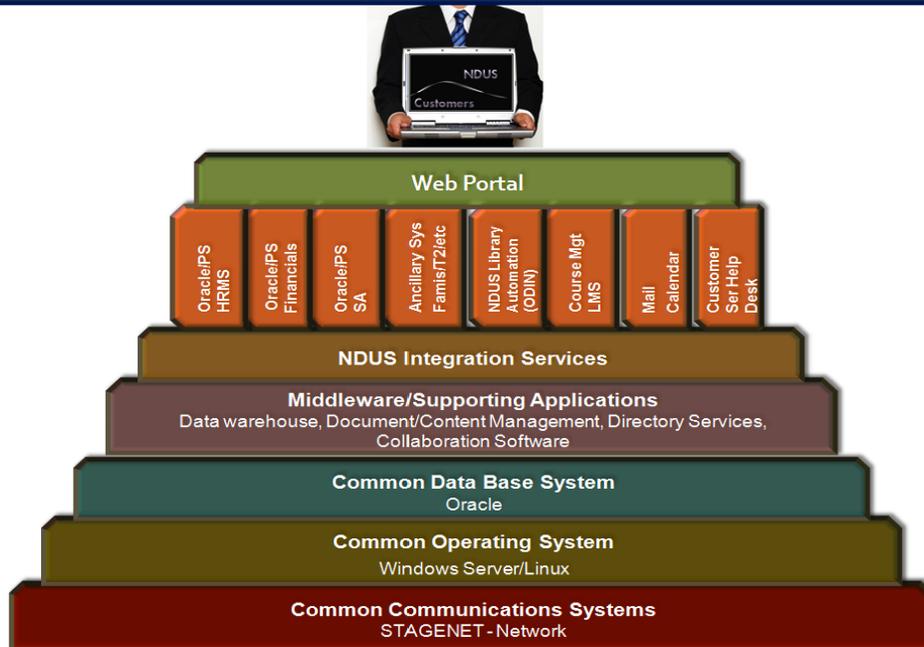
and other priorities that may supersede these at time of implementation.

A random sample of initiatives/projects are included with the goals section; however, a complete summary listing can be found in the section titled “Matrix of Initiatives/Projects by Campus or Entity” at the end of this document.

Accomplishments related to a strategic plan cannot be attributed to a single year but require planning, prioritization, project management through implementation, and ongoing support. A sample of accomplishments, completed during the past biennium, is included in this report with each goal and some may align with more than one goal. A more complete listing of accomplishments is available in the document titled “North Dakota University System, Initiative Status Update, Information Technology – Strategic Plan 2011-2013.”

Today’s world of Information Technology is complex and intertwined. It is no longer designated/standalone systems that process information but a number of systems that are either integrated or interfaced with each other that operate as an enterprise management system. To be successful, a strategic architecture must be implemented and managed. The System Information Technology Services strategic architecture is best described as a visual, layered pyramid depicted as follows on the next page.

Strategic Architecture Vision



Starting on the lowest layer, the “foundation” that all else is built on, is the Common Communication System and it is based on the State’s STAGEnet network.

The second layer from the bottom is the Common Operating Systems; Windows Server, Linux, etc. Operating systems are the “brains” of a computer and it is the software that instructs the computer how to perform basic tasks such as input from the keyboard, sending output information to the display screen, keeping track of files and directories on disks, and controlling peripheral devices as in disk drives and printers. Operating systems provide a software platform on top of which other programs/applications can run. It is the “traffic director” that makes sure different programs and users running at the same time do not interfere with each other and is also responsible for security to make sure that unauthorized users do not access the system.

On the third layer, SITS has standardized by using the Oracle database as the Common Data Base System.

At the fourth layer, Middleware/Supporting Applications exist. Middleware includes such things as security software, directory services, and applications that assist in controlling other applications. It may include software that allows for applications to exchange data even when operating on two different operating systems. Middleware sits between an operating system and applications.

The fifth layer portrays where NDUS integration services take place between the middleware/supporting applications and the applications where the user community interacts with the system.

Layer six is where the applications users are familiar with and use are depicted. Applications include: ConnectND, the third-party systems, ALT services, Learning Management Systems (LMS), ODIN library services, e-mail systems, calendaring systems, and the NDUS Help Desk among others.

The Web Portal is portrayed at the seventh layer. The portal is the window that is used to access applications.

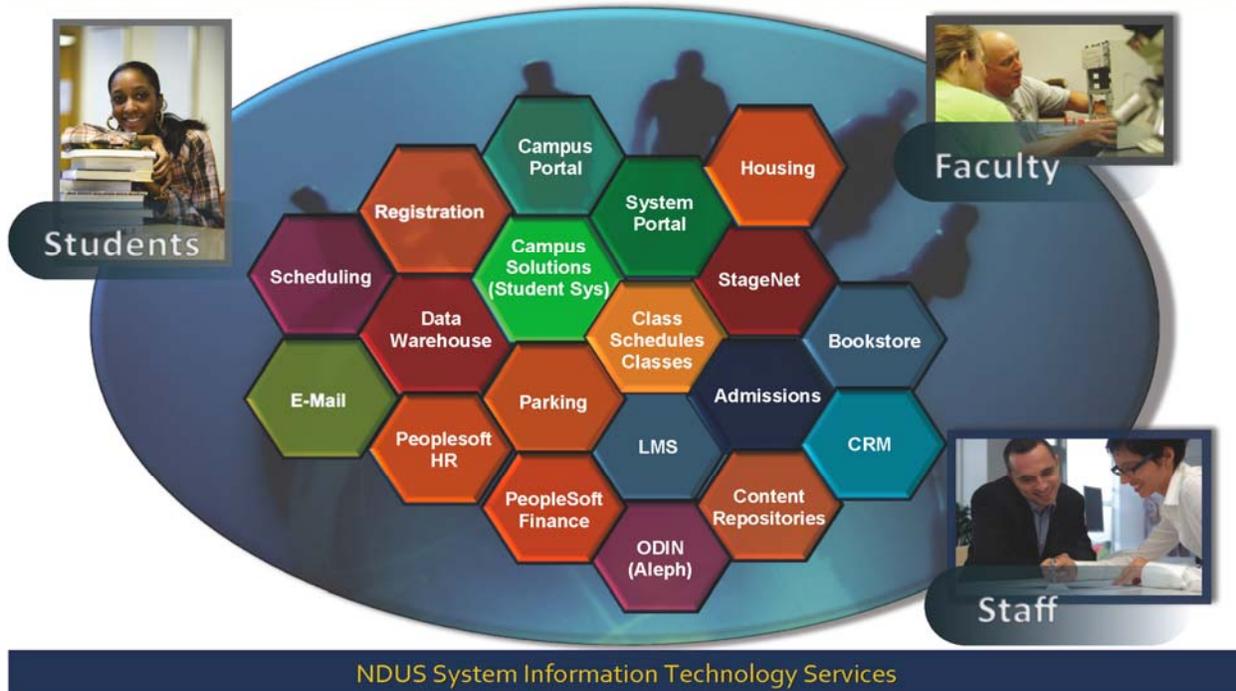
Everything Is Connected

Many of the applications provided through/by SITS are interwoven. To depict this relationship, the following is provided as a visual.

Links to Learning and Services

Everything is Connected

Integrate Services



Because today's systems are complex and tightly integrated, it is difficult to think of one system without also taking into consideration how something done in that system will impact others. An upgrade or enhancement in one system may require an upgrade or changes to another before it will function properly. This tight integration of systems requires more planning before any action/change can be taken, and requires more effort in ongoing support and/or maintenance of these systems.

Efficiencies and effectiveness are keys to our success as the North Dakota University System. Opportunities for collaboration among the institutions that comprise the NDUS are extremely important and having funding available to take advantage of opportunities is a necessity. The NDUS and its institutions must continue to seek ways to enhance collaboration and to provide improved services using the most efficient means available whether done internally or externally through outside providers.

GOALS

This section of the document lists each goal; it's purpose, and the strategy objectives. A sampling of 2013-15 IT initiatives/projects are listed here; however, the complete list can be found later as a matrix in this document. Also, included here is a sampling of 2011-13 IT initiative/project accomplishments. A comprehensive listing of accomplishments can be found in the companion IT planning update titled "North Dakota University System, Initiative Status Update, Information Technology – Strategic Plan 2011 – 2013" which can be obtained from the Office of the CIO. E-mail request to rich.lehn@ndus.edu.

GOAL ONE:

To support North Dakota University System infrastructure needs.

Purpose:

This goal is the foundation for Information Technology (IT) in support of NDUS business processes. Infrastructure holds information technology systems together and allows systems to communicate with each other over a network. It includes such things as security and access control for which guidelines must be developed and updated as needed. Enterprise Architecture provides a blueprint for establishing information technology policies, procedures, and guidelines to promote effective use of information technology.

Strategy Objectives:

1. Offer reliable, cost-effective and appropriate NDUS network services.
2. Provide middleware tools and technologies to help people more easily use networked resources and services while ensuring security and privacy of the information.
3. Prepare the data network Internet Protocol (IP) infrastructure for the convergence of voice, data, and video along with other collaboration tools on a single network.
4. Enable libraries to provide easy access to licensed electronic information.
5. Provide IT enterprise architecture and project management leadership.
6. Provide linkage through STAGEnet, Internet2, and the Northern Tier Network to national and international research and development networks.

13-15 Biennium Initiatives:

- Continue planning and, where feasible, implement Internet Protocol version 6 (IPv6) to succeed IPv4 the current version. IPv6 is the Internet Protocol used to route network traffic to the correct user or system. It supports vastly more IP addresses and provides security enhancements not in the IPv4 protocol. The migration to IPv6 will take several years. In some cases, network equipment will need to be upgraded along with applications to support IPv6.

- Complete the integration of all NDUS institutions into the NDUS Active Directory Service. This is a centralized directory service used to authenticate users and authorize access to multiple systems, including managed networked computers and centralized file-storage resources.
- Fully deploy and implement an NDUS Identity Management Service (IdM) for user accounts and password synchronization across multiple systems. IdM creates efficiency by automating authorization for users to access multiple systems with one user ID and password.
- Complete the server infrastructure upgrade for ConnectND.
- Implement and deploy web services in the ConnectND environments. The student administration integration pack makes it possible to more efficiently integrate and manage ConnectND with other systems, like Learning Management Systems. This offering will allow ConnectND to continue as an authoritative source of personnel, financial, and student data. It will also streamline efforts to utilize data from ConnectND.

11-13 Biennium Accomplishments:

- The NDUS created an enterprise Active Directory (AD) that can provide information to other NDUS institutions and allows for students, faculty and staff to access connected applications using one set of credentials.
- Several NDUS institutions have upgraded their core Local Area Network (LAN) equipment and made other campus network upgrades to enhance performance, take advantage of new functionality, and to position their campus for future functionality.
- Minot State University (MiSU) has a project underway to replace its 18+ year-old multimode fiber optic cable plant with single-mode fiber and extend the build-out to support expanding capital projects.
- MiSU had its final review of its new campus data center in June 2012. The data center equipment that had been moved to different locations on campus during the flood was returned to this new data center.
- A number of institutions and the NDUS data center have moved to virtual servers. This reduced the number of physical servers required and improves efficiency of data centers.
- UND purchased an IBM Storage Area Network in 2011. This system provides storage to mission-critical applications. Also, in 2012, a 140 terabyte storage system was purchased in order to provide centralized disk storage for faculty, staff and students. This provides individuals with a private folder as well as storage that can be used during collaborative efforts.

GOAL TWO:

To improve North Dakota University System information technology-enabled business processes and services while providing and managing resources to align with strategic goals.

Purpose:

This goal is the core that supports business processes of the institutions and the North Dakota University System (NDUS). In order for institutions to remain competitive and offer information technology support for students, faculty and staff, including research and public service, the NDUS must provide and manage information technology resources alignment with NDUS strategic goals.

Strategy Objectives:

1. Work with state government to maintain critical core ConnectND functions and implement upgrades and enhancements to the financial/human resources management and data warehouse systems.
2. Maintain critical core ConnectND functions and implement upgrades and enhancements to the student management, data warehouse, library, and academic technology systems.
3. Enhance the enterprise project management office, including enterprise architecture, to provide project management oversight, enterprise architecture administration, and IT planning in conjunction with the NDUS Chief Information Officer (CIO).
4. Enhance educational experiences with new or re-purposed resources that expand user services, technologies, and initiatives.
5. Use the enhanced communications capabilities made available with STAGEnet to improve services to students, faculty, staff and the citizens of the state.
6. Implement a converged environment that supports voice, data, video and collaboration systems.
7. Hire/train professional staff to meet the needs of NDUS services.

13-15 Biennium Initiatives:

- Implement the planned merger of the UND CIO's staff and functions with the NDUS System Information Technology Services organization.
- Complete construction of the new IT office building and remodeled warehouse space to be used as the NDUS data center.
- Complete the implementation of a common document imaging/scanning system hosted by the NDUS System Information Technology Services.
- Implement unified communications using Microsoft's installed Office 365 and integrating it with UND's telephone system as the communications tool for staff to be located in the new IT facilities under construction. Unified communications includes Instant Messaging, e-mail, presence detection, voice communications, and collaboration tools in one application that allows you to change between these functions with just one "button" click.

11-13 Biennium Accomplishments:

- Developed a funding plan for construction of a new NDUS IT office building and renovation of space for the NDUS Data Center.

- Gained approval by the State Board of Higher Education to implement an NDUS enterprise hosted ImageNow document imaging/scanning system to meet one of the Board's "Maximizing Results through Efficiencies" IT initiatives.
- Completed the PeopleSoft Environments Partitioning Project to physically separate State Government data from NDUS Human Resources and Financial data. This technically complex project reduced the size of the respective databases, allowing upgrades, patches, and fixes to be applied within acceptable outage windows.

GOAL THREE:

To improve and enhance North Dakota University System student learning and customer focus.

Purpose:

Empower student learning and development through the use of technology by providing a near seamless environment for learning through boundless access to information, educational, and research resources both inside and outside the classroom for all types of students from undergraduates to life-long learners.

NDUS encourages and supports an operational environment in which characteristics of its customers – student, faculty, staff, North Dakota residents, and affiliates worldwide – are identified, their needs are understood, relationships and expectations are effectively managed, and quality assurance is fostered for high-quality services and support.

Strategy Objectives:

1. Create an environment for enhancing learning where opportunities and resources are explored, best practices collected, and deploying strategies are developed, implemented and evaluated. Examples include distributed education, effective use of technology in the classroom, and library linkages.
2. Create the means for easy, efficient, and reliable access to learning resources anytime and anyplace and for learning experiences that enable collaboration among learners.
3. Evaluate enhancements to the Online Dakota Information Network's (ODIN) library systems and services to improve functionality that supports the evolving needs of students.
4. Continually improve standards, policies, procedures, and services that facilitate seamless, integrated learning.
5. Identify customer characteristics and respond to their expectations and needs.
6. Develop and implement a system-wide customer relationship management system in support of customer needs.
7. Establish a mechanism that leverages the resources of NDUS to facilitate education decision making by customers regarding instruction, research, information access, and service offerings.

8. Continue to gather feedback from the NDUS user community on services provided by NDUS SITS.

13-15 Biennium Initiatives:

- One of the State Board of Higher Education's, "Maximizing Results through Efficiencies" IT initiatives is to implement an enterprise learning management system with a consistent software approach; shared curriculum content, when appropriate; content repository; and, consistent mobile device interfaces. This initiative has been delayed to give time for faculty to provide input. At this juncture, steps are being taken to improve both the experience for students and faculty and the integration of existing learning management systems with other NDUS applications. Among these are authentications consistent with the NDUS Active Directory standards, better real-time integration with the student administration system, and a single, robust hosting and production site for each of the three primary learning management systems currently in use.
- Implement additional functionality/features to the mobile application for ConnectND that allows students, faculty and staff access to specific data within the ConnectND PeopleSoft system using their smartphones or other mobile devices. Initial implementation allowed for "view" access to this information; however, the ability to change data through mobile device interaction is feasible.
- Develop a comprehensive strategy that integrates legacy video technologies with Unified Communications, providing interoperable desktop and room-based videoconferencing.

11-13 Biennium Accomplishments:

- Implemented an enterprise lecture capture system during the summer of 2012.
- In December 2011, the Blackboard learning management system at UND was upgraded to its latest version providing improvements in grading tools, rubrics, assessments, sharable content object reference model integration, and building blocks. Building blocks allow institutions to customize their instance of the software to meet their needs. These "blocks" are built into the software by Blackboard developers making it easier for customizations to be made.
- Online Dakota Information Network (ODIN) worked in partnership with the North Dakota State Library to implement a new service, TutorND, funded by the State Library. Live tutors are available to help in subject areas such as math, science, English and more, Sunday through Thursday, 6pm — 10pm Central Time. TutorND also has a SkillsCenter™ Resource Library that connects users to thousands of homework, test prep, and career resources that are available 24 hours a day, 7 days a week. The service is available through any library in the state.
- A project to implement mobile access to ODIN library services is under way. When completed, this ODIN library service will make library resources available on the go.

GOAL FOUR:

To improve and enhance North Dakota University System collaborative efforts.

Purpose:

By working together with the State, K-12, and other constituents, the NDUS is able to bring new technologies to North Dakota and support existing ones. Communicating with stakeholders is an important factor and all must work together in making necessary information available to every administrator, faculty, staff, and student across the North Dakota University System institutions.

Strategy Objectives:

1. Monitor NDUS help services so they are optimized within the NDUS community.
2. Implement mechanisms to improve communications with all stakeholders of the NDUS System Information Technology Services (SITS).
3. Collaborate with NDUS institutions, K-12, state and local governments, and libraries to identify appropriate learning and research support systems and converged services.
4. Develop a common architecture that encompasses available educational resources and systems and breaks down barriers between institutions, libraries, and other sources of learning.
5. Work with the Online Dakota Information Network (ODIN) libraries to expand virtual and digital holdings.
6. Promote Internet2 and research-level infrastructure.
7. Foster efforts that lead to the integration and streamlining of video, audio, and data collaborations in cross-platform environments.
8. Provide information to enhance accountability to stakeholders.
9. Collaborate with business and industry to identify the need for IT workers, promote career opportunities, and provide needed education and training.

13-15 Biennium Initiatives:

- Complete the migration of all NDUS institutions to Microsoft's Office 365 environment. This will expand the collaboration tools available to students, faculty, and staff.
- Provide for continued operation costs for the Northern Tier Network in support of the research missions of UND and NDSU. The Northern Tier Network is the high-speed data network connecting research institutions along the northern US border between Chicago and Seattle to other research networks.
- Expand NDUS Help Desk tools and best practices to local campus IT support.

11-13 Biennium Accomplishments:

- Eight of the 11 NDUS institutions completed migrating their faculty/staff's e-mail, calendaring, and web conferencing to the Microsoft Business Productivity Online Services (BPOS) suite by the fall of 2011. These institutions were migrated to

Microsoft Office 365 in 2012 with the intent that all NDUS institutions will be on the same system during the next biennium.

- Nine of the 11 NDUS institutions migrated their student e-mail, calendaring and document storage to Microsoft's hosted Live@edu system with the intent that students would be migrated to a common Microsoft Office 365 environment. Planning for the Office 365 student migration is under way.
- With the assistance of NDUS personnel guiding the efforts, a Customer Relationship Management (CRM) pilot project for Industry partners was undertaken at the North Dakota State College of Science. This project has been launched, is currently in use, and is being evaluated. UND is also using this same vendor's software for CRM.
- Work started and continues with the North Dakota Office of Experimental Program to Stimulate Competitive Research (EPSCoR), under a two-year National Science Foundation award, and four ND Tribal Colleges to improve network connectivity and provide access to the North Dakota Internet2 Sponsored Education Group Participants (SEGP). The grant award is titled: "ND Tribal College Cyber Connectivity (C-2) Investments to Enhance Integrated Education, Research and Workforce Opportunities." (Although the C-2 grant involved four of the five tribal colleges, all five Tribal Colleges continue to participate in discussions regarding the SEGP process).
- NDUS negotiated a contract with Augusoft that allows NDUS institutions to purchase Lumens software at discounted pricing. Lumen's is a web-based, non-credit enrollment management system for NDUS continuing education and extended learning programs. This unique solution provides continuing education programs the ability to manage both open enrollment and contract training all in one system, while complementing the ConnectND PeopleSoft system. This is vital as we continue to support individuals with a wide range of lifelong learning opportunities, while also fulfilling the training needs of the growing business community across our state.

MATRIX OF PROJECTS/INITIATIVES BY CAMPUS OR ENTITY

The following pages contain a summary of all the initiatives/projects that campuses and NDUS SITS have submitted for the 2013 - 2015 NDUS IT Plan. Detailed information regarding each initiative/project is on file with the Office of the CIO.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>BSC</i>	One Card System - Implement a campus one-card system to be used for dining services, Library services, facility access and other services as applicable.	G1-02; G2-05; G3-05	Students and employees.	Efficiencies in payment collections for meals on campus, efficiencies achieved when checking out library books, and security achieved through controlled door access.
	Secure Wireless Connection – Implement a solution that requires individuals with the proper NDUS credentials to connect to our campus wireless network via a secure and strong encrypted connection ensuring that all login information is encrypted and that all data is strongly encrypted during transmission over the campus wireless network.	G1-01,2,3,5; G2-04; G3-01,5; G4-04	NDUS students, employees and guests using BSC wireless network.	Reduced number of compromised computers and individual accounts.
	Proactive Scans of the BSC Network – Acquire the tools and establish a process to scan the internal network for vulnerabilities on at least a quarterly basis per specifications of Procedure 1901.2 and to remediate the findings of the scans in a timely manner. Do external penetration scans of the campus network for vulnerabilities on at least an annual basis and to remediate the	G1-01,2; G3-05	NDUS students, employees and guests using BSC network services.	Reduced number of compromised computers and individual accounts.

findings of those scans in a timely manner.

Network Upgrade – Continue the process of replacing networking switches and wireless access points that have surpassed the industry recommended replacement cycle. This initiative includes building a network equipment replacement cycle into our annual budget.

G1-01,3,5;
G2-01,6;
G3-05;
G4-06,7

NDUS students, employees and guests using BSC network services.

Replacement equipment costs are built into the annual budget instead of large amounts of new money needed every seven to nine years.

Upgrade from IPv4 to IPv6 – There are not enough IPv4 addresses to accommodate the future needs of our campus. There are many more devices connecting to our campus networks (i.e. smart phones, handheld devices, gaming consoles, students bringing their personal computers on to campus, etc.). IPv6 adoption is gaining momentum and it is only a matter of time before its adoption by BSC.

G1-01,3,5;
G2-01,5,6;
G3-01,5;
G4-06,7

NDUS students, employees and guests using BSC network services.

Individuals needing access to BSC network services will be able to obtain a network address when needed.

Create adequate disaster recovery plans and procedures for critical systems under the Information Services responsibility. The procedures are to be used in the event of a natural or man-made disaster of the campus computing facilities.

G1-01,5;
G2-01,2;
G3-05

BSC students and employees as well as NDUS collaborative partners and their students located on the BSC campus.

Measured by how quickly we can become operational in the event of a natural or man-made disaster of campus computing facilities.

Virtual Computer Lab Project – BSC is collaborating with UND and other colleges to create a virtual computer lab environment. We are working on a proof-of-concept and will be reaching a testing phase in the near future. When testing is completed, the virtual environment will be moved from the test environment into working student computer labs. Training for the virtual labs will be provided for faculty and students.

G2-04;
G3-01,4,5,7; G4-03,4

BSC and NDUS students, BSC and NDUS faculty teaching in the virtual computer lab environment as well as IT staff who support student computer labs.

Measured by purchasing lower end computers and extending the replacement cycle by one to three years.

Virtual Software Application Environment – BSC is collaborating with UND and other colleges to create a virtual software application environment. This will allow students to access application software from anywhere given they have access to the Internet. Students will log into a portal and applications they need or are required to use for classes will be available to them by clicking on an icon(s).

G2-04,5;
G3-01,2,4,5,7;
G4-03,4

BSC students and BSC employees.

Students will not have to purchase costly software for courses they are taking. Employees can access software they don't frequently use. Multiple versions of software can be available if needed.

Continuation of Campus CORE (Collaboration, Organization, and Reporting with Efficiency) Portal initiative. Project will continue to systematically add department sites through collaboration and process mapping. Result will be centralized communications, streamlined work processes and central data storage for campus and departmental reports, documents and projects.

G1-02,5;
G2-02,3;
G3-05,7;
Gr-08

All BSC employees.

Reduction in duplicated and non-current data, process mapping of departments, streamlined and centralized workflow processes, and centralized campus reporting.

Research options to replace the campus PBX system. The replacement option will need to fit seamlessly with the NDUS, Microsoft hosted, standardized unified communications system.

G1-02;
G2-04,5,6;

Students, BSC employees and NDUS collaborative partners working from

Discussions are on-going regarding measurements of

	G3-04,5, G4-07	the BSC campus.	success.
Implementation of 5-digit dialing communications with NDUS institutions statewide.	G1-02; G2-04,6; G3-05; G4-02,4	BSC employees and NDUS collaborative partners working from the BSC campus.	Reduced long distance calls and reduced work load for charging long distance calls back to the originating party.
Work in partnership with the NDUS and Pearson Education (Pearson) to offer integrated services for Active Directory and integration with the NDUS Student Information Systems in PeopleSoft.	G3-01,2,4, 5; G4-03,4	NDUS employees and students using the Pearson Education LearningStudio instance.	Time saved by having course information, User Creation & Enrollment Management automatically populated into the Pearson LMS. Reduced number of trouble calls for password resets as students will be able to use their AD credentials to login into Pearson.
Implement the full potential of the Hobson's CRM software to increase enrollment and assist with student retention.	G1-02; G2-04,7; G3-05,6; G4-	Perspective students, current students, parents of students, counselors, and employees associated with providing student services (i.e.	Increased efficiencies in providing information and tracking information sent to perspective

	02,8	admissions, housing, finance, etc.).	and current students.
NECE GridLab Project – Funded by a U.S. Department of Energy grant, this project will be deployed in three phases starting in 2010 and reaching completion 2013. Phase I will augment the campus’ existing distributed generation capabilities by adding solar photovoltaic and biodiesel generation. Phase I will also add an electric vehicle and bulk electric battery storage. Phase II will involve building a mock smart-house in the NECE laboratory. Phase III will involve building telemetry and control systems for all associated equipment that will allow collection of all laboratory data as well as simulation of smart grid physics and markets. The laboratory will utilize new and existing infrastructure for remote access by online students through the public Internet.	G3-01,2,4,5	Energy students.	Objectives are managed through the grant. Specifics are available upon request.
WSC Simulation Project – National Energy Center of Excellence (NECE) Online Simulation Project – This project consists of the development and deployment of an Energy Industry standard full-fidelity simulation platform with a web-native user interface. This project will allow NECE online students in seven different academic programs access to a thermal power plant simulator of the quality and scope of that found in industry through the public Internet. Project is grant funded.	G3-01,2,4,5	Energy students.	Objectives are managed through the grant. Specifics are available upon request.
Creation of a Lineworker Computer Lab – PCs, connectivity, network equipment, and build out for a lab in the Lineman space of the NDRECA in Mandan.	G1-02,5,6; G3-01,4,5	Lineworker students, faculty and staff.	Creation of high speed Internet link to the Lineworkers campus that allows for voice, video and data transmission intended to be used primarily by the students in preparation for

eBooks/Bookstore – Licenses, legal agreements, technology, BSC bookstore systems, etc. needed to publish and sell eBooks through online platforms (Amazon, iTunes, Google Play) and bill students financial aid.

G3-01,2,4,5; G4-03,4

Students and faculty.

careers in the Lineworker industry. The link will also support faculty and staff at the Lineworker campus.

Students are able to purchase digital content created by BSC employees for specific classes, sold through various distribution outlets at prices that are less expensive than information provided through text books sold commercially. Students are able to use financial aid and/or other funding sources as they would if buying a traditional textbook.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
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DCB

DCB does not have any initiatives or formal plans for the 2013 – 2015 timeframe that are large enough to be included in this document. We do, however, have several smaller initiatives planned, but they would not have a significant impact on the state network or NDUS resources.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
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DSU

Networking and Infrastructure Life Cycle Goals.

Upgrade every 4-5 years network management systems and software and core data switches. Upgrade and add wireless access points. UPS and battery backup appliances need replacement and additions. Explore avenues for offering affordable and reliable Internet accesses for all DSU students, faculty and staff. Upgrade DSU web page to provide prospective and current students with up to date and useful information.

Network infrastructure that will support technologies such as IPv6 protocol and future network port authentication standards. It will also support Unified Communications infrastructure such as the Microsoft Office 365 SITS initiative that will provide voice, video, email, calendaring and more. Virtual services is another area that is supported with this initiative, this includes virtual applications and virtual desktops that may provide for example a traditional computer lab to one that is virtual for students who are mobile or at a geographical distance and unable to be in the traditional computer lab. Planning and budgeting for increased bandwidth needs.

Provides consistency and reliability with an established technology. Phases out technology that has shown drastic limitations within last few years and difficult future ahead. Ensures consistent and reliability for services offered to students, faculty, staff and community affiliates.

1

IT users of resources. Managing network traffic helps reduce the total bandwidth needed.

Graphs of LAN and WAN traffic patterns, determine bottlenecks and type of protocols in use.

Administrative Infrastructure Goals.

Determine unified communication solutions. Ensure accurate and timely access to student and administrative information for use by management. Upgrade every 3-4 years designated staff computers. Continue the process of local ConnectND trainer training new employees and ongoing training for existing employees.

Hardware to meet the power users need for accurate, readable and timely reports.

Academic Infrastructure Goals.

Upgrade every 3-4 years designated faculty computers and student accessible computers in 10 primary instructional labs and 50 classroom instructional areas with multimedia workstation consoles that include LCD projectors, Elmo units, VCR and DVD players. Upgrade software on a schedule that provides latest technology on each of the above computers and collaborate with BSC on a software schedule that satisfies DSU's presence on their campus sharing computer lab and office space. Expand the LAN offering more wireless hotspots in key areas providing exposure and access. Plan and support a centralized LMS system of Moodle and Tegrity . Provide students with Microsoft Live@edu as official campus email accounts.

Staying current with hardware platforms that support richer and bandwidth needy applications are a challenge met by consistent schedule hardware updates. Offering students a classroom rich experience in technology meets their expectations and enhances interaction among themselves and faculty. Providing internet accessibility in more areas through wireless allows constant communication of ideas, creativity and knowledge. Online classes require helpdesk support over extended hours allowing centralized NDUS helpdesk to be an economical solution

2 Provides consistency and reliability with an established technology. Ensures consistent and reliability for services offered to students, faculty, staff and community affiliates. Number of users using the services. Help Desk reporting statistics. Application responsiveness from the desktop. Workflow production monitoring.

3 & 4 Users able to use current software and learn it to teach students latest versions of software applications. Electronic tools in classroom allow more methods and processes to teach. Distance Ed solutions. Number of campus's using centralized services. Enrollment and retention statistics.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>LRSC</i>	Improve access to learning resources anytime and anyplace through increased use of lecture capture.	3.2	Students, have resources to review. Faculty can use class time for interactive, engaging learning when core content is available anytime online.	Increased number of faculty using lecture capture and the number of recordings.
	Improve LRSC customer focus, service, and communication by implementing a new lrsc.edu website.	3.7	Students, employees and community members.	Launch of new website and web statistics measuring usage.
	Offer reliable network services to support convergence of voice, data and video along with other collaboration tools on a single network.	1.3	Students, faculty, staff and visitors.	Increase number of wireless APs and upgrade switches for IPv6 compatibility.
	Improve Student ID Card services offered: Food Service, Bookstore, Laundry, Lower Deck, Online Transactions, Photo Uploads to Campus Connection.	2.4	Students, faculty and staff.	Faculty feedback, student usage of ID cards and # of transactions.
	Work with the NDUS to implement a common email system for	1.1	Students, faculty and	Implementation of

employees and students.

staff.

Microsoft Office 365;
increased
communication
between faculty and
students.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
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MaSU Mayville State University does not have any formal projects planned for the 2013 - 15 timeframe to be included in this document; however, there are some smaller projects that are being planned.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
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MISU

It is important to note that IT initiatives FY 2011-13 included the priority of installing a high performance fiber backbone infrastructure and move to centralized data center. Having this foundation in place to support all initiatives identified here and going forward has been realized with the near completion of these core projects.

1. Integrate End-User Technologies

Faculty, staff, and students arrive with personal computing environments self-configured to meet specific needs, preferences, and styles of work.

- Integrate personal computing environments into institutional architectures in a highly functional and convenient way that addresses security, privacy, and compliance.
- Identify infrastructure implications, i.e., bandwidth usage and connectivity barriers.
- Identify scope of Help Desk responsibilities to determine which devices and/or platforms are suitable for use and support.

2.5,
3.1,
3.2,
3.4,
3.5,
3.7, 4.1

Faculty, students,
learning challenged,
NDUS visitors, general
visitors.

Course comprehension
& completion,
retention & graduation
rates, student success
measurements.

2. Leverage technologies and analytical tools to optimize institutional processes and monitor student performance.

- Promote document imaging to campus departments to

2.4,
2.5,
2.7,
3.6,

Faculty, staff, students,
administrators,
governing bodies.

Data/evidenced-based
decision making,
student performance,
retention & graduation

<p>help streamline processes and increase productivity and workflow.</p>	<p>3.7, 3.8, 4.8</p>	<p>rates, course completion rates.</p>	
<ul style="list-style-type: none"> • Identify expertise and roles required to implement new processes and technologies. • Manage publishing, editing, and modifying of content (documents, pictures, data collection, video, etc.). Enable centralized maintenance and manageable workflow with a highly collaborative content management system (CMS). • The student information system provides demographic, academic performance, and aptitude information. Urge NDUS leadership to complete data warehouse project to support evidence-based decision-making and to assist campuses with predicting the probability of student success. 			
<p>3. Identity and Access Management <i>Directory services synching and application federation.</i></p>	<p>1.1, 1.2, 2.5, 3.2, 3.4, 3.5, 4.4</p>	<p>Faculty, staff, students, administrators, visitors.</p>	<p>Student satisfaction, reported ease of use of applications and services across NDUS, reduced risk of identity theft, control of access to appropriate resources.</p>
<p>4. Promote IT Governance throughout the institution <i>Provide a framework for defining decision rights around IT priorities and resource allocation.</i></p>	<p>2.3, 3.3, 3.4, 3.7, 4.8</p>	<p>Students, faculty, staff, administrators.</p>	<p>ROI, economies of scale, targeted input, improved communication.</p>
<ul style="list-style-type: none"> • Ensure coordinated decisions regarding the acquisition of technology devices, software, and support decisions 			

to improve the user experience.

- Improve communication and structure to ensure timely response to changing IT issues such as adopting new technologies, outsourcing, and cloud-based services.

5. Support Student Living through Technology

- Conduct feasibility study to determine the interest and cost estimate to implement cutting-edge video delivery to residence halls and classroom locations without a major infrastructure upgrade to the existing wiring.
- Identify cost-effective switch replacement plan for residence halls to support wireless and mobile computing.

1.1, Students.
2.5,
2.6, 3.5

Decision from the start would be based solely on input and vetting through Student Government Association.

6. Support Teaching and Learning through Technology

Design untethered learning spaces (both face-to-face and online) to encourage student interaction and engage them with active learning techniques that facilitate involvement.

- Streamline technology configuration in support of flexible and easy-to-use classroom environments.
- Configure classrooms that foster collaborative activities. For example, AppleTV connected to a projector allow the use of an iPad and AirPlay to wirelessly mirror any content on the screen to the front of the room. Students can use their own iOS devices to connect to the AppleTV to share their work, pull up sound and video clips, etc. Similar PC options are available at a reasonable cost.
- Migrate courses/course content from BlackBoard CE 8 to BlackBoard Learn v9.
- Conduct faculty and student training on the Blackboard Learn platform and collaboration tools including Tegrity, Collaborate, etc.
- Pilot two HyFlex integrated classrooms that support learning activities offered in-class and online. Students

1.3, Faculty, students, life-
1.4, long learners,
3.2, researchers, learning
3.6, challenged.
4.1,
4.2,
4.4, 5.1

Student satisfaction surveys, comprehension measurements, rate of course completion, retention rates, student performance, and student employment success statistics.

have the option of attending face-to-face, online, or both on any given class day.

<p>7. Develop an Institution-wide Virtualization and Cloud Strategy</p>	<p>1.2, 1.3, 3.1, 3.2, 4.4, 4.7</p>	<p>Faculty, staff, students, administrators, budget overseers.</p>	<p>Reduce overall costs, greater utilization of assets, reduced operating and life cycle costs, reduced environmental footprint.</p>
<p><i>Identify alternative sourcing for services traditionally offered as “stand alone” or “on-premise” only.</i></p>			
<ul style="list-style-type: none"> • Establish a strategy for evaluation, selection, risk assessment, and contract management. • Continue migration to converged infrastructure to centralize the management of IT resources and reduce costs by creating pools of computers, and storage/networking resources to be shared by multiple applications. 			
<p>8. Network/Communications Infrastructure</p>	<p>1.4, 2.1, 2.2, 2.3, 3.7</p>	<p>Faculty, staff, students.</p>	<p>Minimal downtimes, code maintenance, standards adoption, performance logging, annual cost reductions.</p>
<ul style="list-style-type: none"> • Complete single-mode fiber rebuild. • Conduct assessment of IPv6 readiness. • Make STAGEnet network redundancy an urgent issue. STAGEnet upgrade to 10 gigabit network capacity links in Minot does not extend to MiSU campus proper. There is no redundant link to SRT Communications Network Operations Center/ITD's hosting center. • Ensure Unified Communications component upgrades and ongoing maintenance. 			

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>NDSCS</i>	Create an integrated technology plan and infrastructure to improve effectiveness and efficiency for students and staff. [Stated NDSCS Strategic Goal]	1.1, 1.5, 1.6	NDSCS students, employees, and affiliates.	a) A significant upgrade of [currently undocumented] campus infrastructure is completed and documented, and operational plan in place to ensure future updates, enhancements and maintenance; b) Strategic plan in place and operational planning process implemented to manage, monitor, improve, and update campus IT services.
	Enhance student access, learning, and success [Stated NDSCS Strategic Goal] by improving campus technology resources	3.1, 3.2, 3.4	NDSCS students,	a) Significant upgrades made to

including improvements to wireless services, lab and public computers, and software availability.

employees, and affiliates.

campus wireless access;

b) Replacement of and upgrades to the lab and public computers that are available to students;

c) Pilot a virtualization option to make software more accessible to students.

Establish campus connection to Northern Tier Network.

1.6, 4.6 NDSCS students, employees, and affiliates.

Campus infrastructure connected to NTN.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>NDSU</i>	<p>Ensuring a stable budget for IT services, systems, and infrastructure is essential to NDSU's success.</p> <p>During 2013-15, NDSU's efforts will continue to be focused on securing funding for upgrading the electrical and environmental controls of the IACC, which houses the IT Division. The estimate for a total building upgrade cost is just over \$4 million. In order to provide reliable emergency back up power, Phase I of the project will provide two larger UPS units configured for redundancy and added reliability, to be completed during FY13. Continued improvements to network core, edge, and wireless facilities and infrastructure to all campus buildings is necessary to make NDSU's IT infrastructure more reliable and resistant to failure, as an increasing number of critical campus functions rely on the campus network. Addressing redundancy and survivability of the data network and infrastructure would greatly reduce the likelihood that a given building will lose connectivity and the critical (life safety) functions that this connectivity provides.</p> <p>Additionally, while IT funding is limited and rapid changes in technology continue to drive spending, during the 2013-15 biennium NDSU will keep working to change base funding levels for voice, data, video, and emergency support technologies by requesting additional general fund support from the campus and converging cost recovery mechanisms with the intent of better addressing increasing impacts and expectations on the data network. Finally, NDSU remains poised to expand the telephone utility line to include the utilities of data, video and emergency support technologies should the opportunity present itself.</p>	1.1, 1.3 1.5, 1.6	<p>This portion of this initiative will benefit the students and employees of NDSU, related entities, including the NDUS Fargo offices and the state.</p> <p>This portion of this initiative will benefit the students and employees of NDSU.</p>	<p>NDSU will measure its success with this initiative as it reviews its 2013-15 budget authorizations and allotments.</p> <p>NDSU will measure its success with this initiative throughout the 2013-15 biennium; specifically in the preparation of its 2013-15 campus budget.</p>

Continue to grow the infrastructure and technologies critical to providing centralized and integrated emergency support, to include the development of an emergency standard for provisioning door access and video surveillance to secure the external envelope of campus facilities. The campus estimate for Phase I in support of this standard is \$5.2 million.

This portion of this initiative will benefit the students and employees of NDSU by proactively improving security.

If funding is secured in the 2013 legislative session, NDSU will measure its success with this initiative through increased campus awareness and responsiveness.

Improve relationship with academic and administrative departments.

2.5, 2.6
3.5

This initiative will benefit the students and employees of NDSU, related entities, and the state.

NDSU will measure its success with this initiative by examining the feedback received from IT stakeholders and by developing more on-campus partnerships to work toward a clear definition of central IT services for students, faculty, researchers, and administrative staff.

During the 2011-13 biennium, in a continued effort to redefine the role of Information Technology, improve customer relationships, and develop a better understanding of distributed IT, the interim vice president visited with all of NDSU's academic departments and three of its administrative departments to identify needs and concerns. The information gathered will continue to be examined.

Deploy new services as identified through departmental visits.

Enhance existing services as identified through departmental visits.

Increase participation in constituency groups (i.e., IT Liaisons and IT Technical Professionals)

Continue to leverage resources through collaboration and partnerships throughout the campus to enhance the IT experience for both NDSU's students and employees.

NDSU Collaborative Information Technology (IT) Efforts within the NDUS

2.6, 4.2
4.3

This initiative, approved by the NDUS CIO, will benefit the students and employees of NDSU and

NDSU will measure its success with this initiative throughout the 2013-15 biennium

NDSU will continue its efforts as an enterprise telephony system by

providing full service to NDSCS, and positioned to serve other NDSU units as well as NDUS institutions across the state. NDSU will continue to provide the funding and leadership, leveraging the state-wide network, for transparent VoIP communications University System and State-wide, including 5-digit dialing. Continue to roll out Unified Communications and mobility features through integrated solutions to all units served by the NDSU enterprise telephony system.

NDSCS as well as all NDUS institutions served by NDSU. as the number of locations served by 5-digit dialing increases.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>UND</i>	Website – Configure CMS to work with servers and systems on campus. Implement new design and Web site structure. Determine user access to CMS and train as needed. Configure servers for OmniUpdate integration and other campus Web development needs.	1.2, 1.2, 1.5, 2.4, 2.5, 2.7, 3.1, 3.4, 3.5, 3.7, 3.8, 4.1, 4.2, 4.6, 4.7, 4.8, 4.9	UND - All website visitors.	Traffic analytics, user surveys, faculty/staff forums. Main server – analytics, server performance, user surveys. WebApp server – internal surveys, number of units utilizing service.
	Voicemail Upgrade & Unified Communications – This upgrade and subsequent deployment will provide further collaboration, communication, access, as well as providing presence and allowing for business process integration.	1.3, 2.4, 2.5, 2.6, 2.7, 4.1, 4.2, 4.3, 4.4, 4.7, 4.8, 4.9	UND – faculty, staff and students.	Analysis of usage logs, user surveys, analysis of trouble tickets.
	Network Funding – The communications network is relied upon as a strategic resource by researchers, faculty, staff and students. To date, funding has been on an ad-hoc basis and done in a piecemeal manner. Accordingly, upgrades and expansion often lag behind need. With a stable funding mechanism in place, the communications network infrastructure can truly become the solid	1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.5, 2.6, 2.7, 3.1, 3.2,	UND – faculty, staff and students.	Equipment replaced on a defined and consistent cycle. Ability to expand infrastructure in a timely manner and in

<p>foundation that is required to help the University achieve its strategic priorities.</p>	<p>3.3, 3.4, 3.5, 3.7, 3.8, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9</p>		<p>accordance with the elastic needs of the institution.</p>
<p>Smart & Technology Enhanced Classrooms – Install, upgrade and maintain smart and technology enhanced classrooms on campus following guidelines in the final report. Develop tool (database) to track classroom equipment for maintenance and replacement.</p>	<p>2.2, 2.4, 2.7, 3.1, 3.2, 3.4, 3.5, 3.7, 3.8</p>	<p>UND - Students, faculty, staff, businesses, community and regional organizations and alumni.</p>	<p>Satisfaction and needs assessment surveys. Email responses to service requests. Metrics on usage supplied by Registrar’s office and departments. Tracking system provides reports on equipment usage.</p>
<p>SCOM/SCCM – Implement System Center Operations and Configuration Manager applications (SCOM and SCCM). SCOM enables a dynamic response in order to automate changes to ensure continued service performance and availability. SCOM also allows for remediation of a service right from the console, making it easy to restore back to full health in an operationally efficient manner. SCCM provides key management capabilities around application delivery, desktop virtualization, device management, and security that make it possible to enable productivity amidst device proliferation – while also reducing costs.</p>		<p>UND & NDUS</p>	<p>Comparison of past outages and disruptions of service; Comparison of labor hours in support of these systems in the past versus post-implementation.</p>

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>VCSU</i>	Mobile Device Support Expansion. Develop an institutional strategy that compliments ConnectND strategies to support mobile devices. Specifically, prioritize local services offered and deploy mobile development and delivery technology.	2.4, 3.2, 3.5, 4.3	All VCSU users.	User feedback indicates improvements in iOS and Andriod OS support.
	Classroom Technology Enhancements. Deploy the following technologies: microphones to support whole room audio pickup, Apple TV for iOS device support, and iPad control of classroom equipment switching and control.	2.4, 3.1, 3.2, 3.5	Primarily classroom students and faculty. Classroom microphones also benefit students participating by web conference.	User feedback indicates improvements in the three noted enhancements.
	Continue the expansion of the LAN network backbone to 10GB Ethernet.	1.1	All VCSU users.	Technical measurement of bandwidth, plus user feedback regarding speed of access to network services.
	Expand the Viking Card (one-card) System. Expand card access or door monitoring for the exterior doors of all major buildings.	2.4, 3.5	All users that frequent the VCSU campus and	Users indicate improved access and

Consider expanding Viking Card purchasing to campus vending and selected local merchants in Valley City.

local community.

convenience, while campus safety staff indicates an increase in campus security. Increase in vending and eCommerce profits.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
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WSC

WSC had not identified any initiatives or formal plans for the 2013 – 2015 timeframe that are large enough to be included in this document.

NDUS IT PLANNING

13-15 Biennium – Campus Initiatives/Projects Alignment with NDUS Goals and Strategy Objectives

NAME	INITIATIVE/ PROJECT DESCRIPTION	GOAL. OBJEC TIVE	WHO BENEFITS	HOW MEASURED
<i>NDUS SITS</i>	Data Center – Complete construction of, and migration to, new data center.	1.1-1.6, 2.1, 2.2, 2.5, 2.6, 4.1, 4.2, 4.3, 4.4, 4.6, 4.7	All of the NDUS.	Improved service, increased efficiency.
	Create and execute a consolidated network infrastructure environment in the GF data center. <ul style="list-style-type: none"> • Move SITS servers currently in Fargo to GF Data Center. • Move NDUS servers supported by NDSU to the GF Data Center. 	1.	All students, faculty, staff and constituents of NDUS.	Success to be measured by the number of servers moved to the GF Data Center, or percent remaining outside of the Data Center after it is operational.
	IT Office – Complete construction of, and migration to, the new IT Office building.	1.1, 2.1-2.7, 3.3-3.5, 3.7, 4.1, 4.2,	All of the NDUS.	Improved services and increased efficiencies.

4.8,
4.9

<p>Active Directory (AD)/Directory Services (DS) – Full integration into, and use of, Directory Services. Which is a centralized directory service used to manage networked computers and centralized file-storage resources across the University. Directory Services will be utilized to standardize access to systems and applications offered across the NDUS.</p>	1.1-1.6, 2.1-2.7, 3.1-3.8 4.1-4.9	All of the NDUS.	Number of hosts connected; number of systems connected.
<p>Identity Management (IdM) – Fully deploy and implement IdM. IdM is a centralized identity management service for user accounts and password synchronization. IdM helps simplify and standardize user accounts and passwords by managing one user ID and password. IdM can be used to provide sign-on capability with University resources and passwords.</p>	1.1 1.6, 2.1-2.7, 3.1-3.8, 4.1, 4.9	All of the NDUS.	Comparison of user accounts and their automatically assigned access levels prior to use of system. Number of processes that become automated. Analysis of implementation time of processes pre and post-IdM deployment.
<p>Virtual Desktop (VDI) - Virtualization is a set of mainstream technologies that optimizes the delivery of desktops, applications and data to users. UND has provided application virtualization service to the campus since 2007. As the next step, SITS is planning to implement desktop virtualization to the NDUS. As most of the institutions within the NDUS currently do not have or cannot afford to provide a similar service to their constituents, SITS is proposing to implement a proof of concept of desktop and application virtualization to BSC and NDSCS. If proved to be viable,</p>		All of the NDUS.	Cost comparison of hardware purchased; labor hours in support of existing hardware; savings from reduced software licensing costs; number of users and number of times used.

providing the service system wide will enable NDUS to utilize the limited available resources cost effectively and efficiently.

SCOM/SCCM – Implement System Center Operations and Configuration Manager applications (SCOM and SCCM). SCOM enables a dynamic response in order to automate changes to ensure continued service performance and availability. SCOM also allows for remediation of a service right from the console, making it easy to restore back to full health in an operationally efficient manner. SCCM provides key management capabilities around application delivery, desktop virtualization, device management, and security that make it possible to enable productivity amidst device proliferation – while also reducing costs.

NDUS

Comparison of past outages and disruptions of service; Comparison of labor hours in support of these systems in the past versus post-implementation.

Unified Communications: Implement the phased development of an NDUS private cloud service. For UC, Microsoft Lync would be the product implemented.

1. All NDUS institutions and the System Office.

UC implemented and used by SITS staff by January 1, 2014. Expansion decision to be made upon successful implementation within SITS and the System Office.

Where appropriate, utilize vendor resources to reduce hardware, operating, staff costs.

- Review existing mobile infrastructure in NDUS with a focus on reducing capital and operating costs
- Continue to assess new and emerging technologies that may better serve the needs of the system and campuses (e.g., cloud computing).

1. All NDUS students, faculty, staff, and constituents.

Success to be gauged by providing equal or better services for the same of lower cost.

IPv6: Continue working with institutions and ITD to transition to Internet Protocol Version 6 (IPv6).	1. All NDUS and state network users.	Number of NDUS institutions successfully transitioning to IPv6 along with plans for remaining institutions to be transitioned.	
Easily extract real time relevant data and display via dashboards for the top down view; provide in depth and relevant business intelligence	1. Primarily the System Office and external entities.	Faster response to System Office and external entity requests; campuses should have fewer requests for information by the System Office and external entities.	
ARLT	Continue to work with the State ITD to improve data communications services across the state backbone for the benefit of all users. Continue to monitor bandwidth usage across the NDUS institutions, leveraging the new backbone services to provide increased bandwidth to institutions at the lowest possible cost.	1. All NDUS and state network users.	Bandwidth increases to NDUS institutions, and cost per megabit.
Application Virtualization: Continue to virtualize NDUS applications, consolidating or reducing costs while optimizing staff workloads.	1. All NDUS students, faculty, staff, and constituents.	Reduced management costs; number of virtualized applications as they are utilized by	

			constituents.
Risk Management: Develop a comprehensive risk management plan that includes all aspects of disaster recovery, business continuity, and failover (provide 24x7 uninterrupted access across maintenance, backup, upgrade events).	1.	All NDUS students, faculty, staff and constituents.	Uptime percentages, backup coverage and backup windows. Numerous successful backup failover and recovery tests.
Support and expand NDUS SharePoint technology to enhance business processes.	2.	Internal users of NDUS services.	Completion of project; number of business processes supported and users utilizing the service.
Identify and utilize a solution for mobile device management and application support.	2.	SITS and System Office staff, SBHE.	Coverage of managed devices; number of devices managed compared to the number of devices that connect to the network.
Review policies and contracts to address compliance from an audit perspective. <ul style="list-style-type: none"> Guidelines and procedures for what should be tracked. Communication of information management obligations, protection, archiving, reporting obligations. 	2.	Software licensing contacts at NDUS institutions and NDUS students, faculty, staff.	Success to be measured by policy review coverage.

<p>Contracts --- enable system-wide contracts that will reduce costs or create efficiencies.</p>	2.	<p>NDUS students, faculty, staff, and constituents.</p>	<p>Number of contracts consolidated into system-wide or enabling agreements.</p>
<p>Expand NDUS Help Desk service to incorporate support for expanding NDUS services (i.e. Lecture Capture, and other efficiency initiatives).</p>	3.	<p>NDUS students, faculty, staff, and constituents.</p>	<p>Number of new NDUS services supported by the NDUS help desk.</p>
<p>Facilitate organizational education and implementation of Information Technology Infrastructure Library (ITIL) service management design and delivery. (ITIL is a set of practices for IT Service Management that focuses on aligning IT services with the needs of the business.)</p>	3.	<p>All NDUS students, faculty, staff and constituents.</p>	<p>Survey of customers; improved delivery of services and customer satisfaction.</p>
<p>Enhance system-supported LMS capabilities.</p> <ul style="list-style-type: none"> • Learning analytics • Digital content repository • Explore integration with Office 365 (calendars, virtual office hours, access to distant locations, ad hoc videoconferencing) and with Microsoft Office (web apps) • Provide options for social media and publishing tools • Work with ODIN staff to increase integration of the LMS with academic content collections and information discovery • Expand the online professional development planning and record keeping. 	3.	<p>All users of the system-supported LMS as well as faculty, staff, and system office.</p>	<p>Success measured by the number of enhancements implemented during the reporting period.</p>
<p>Wherever applicable, implement mobile interfaces for NDUS services, providing standard interface wherever possible.</p>	3.	<p>All NDUS students, faculty, staff and constituents.</p>	<p>Percentage of applicable web applications with</p>

Evolve ODIN library services to better serve the multiple constituencies.

- Integrate online databases with library services.
- Elements of vitality for local community, workforce development.
- Implement Primo Unified discovery tool for ODIN libraries, enabling new features such as “children’s collection” tab.
- With ODIN community, begin strategic planning process that includes;
 - Investigation of service expansion to libraries that are not currently automated.
 - Investigation of the most effective and efficient manner to deliver electronic library services to different types of libraries, including public, K-12 and smaller libraries.

IVN: Develop a comprehensive strategy that integrates legacy video technologies with Unified Communications, providing interoperable desktop and room-based videoconferencing.

Track progress of Internet 2 collaborative efforts in research and learning, led by NDSU and UND, in support of the Internet2 Sponsored Education Group Participants (SEGP) utilizing R&E network resources. Examples include national/international collaborative learning projects, virtual classroom initiatives, and other theme-based projects as available.

3. All library users in ND.

mobile interfaces.

Growth in the use of library material; growth in the use of library services delivered electronically.

3. All users of NDUS synchronous communication tools.

Success to be measured by the progress made on integrating legacy video and UC systems.

NDUS students, faculty, researchers, international partner university faculty and students, K-12 educators and students.

Number of event participants, along with documenting continued and expanded use of regional and international networks to support and access

			collaborative research.	
	Expand NDUS Help Desk tools and best practices to local campus IT support.	4.	All NDUS students, faculty, staff.	Expanded use of NDUS-recommended help desk tools.
	Fortify system technologies in support of NDUS collaborative programs (i.e. use of Moodle for collaborative courses).	4.	All collaborative users.	Validate that all collaborative programs are using the system technologies that support collaboration.
CND	ConnectND Server Infrastructure Upgrade – Complete the server infrastructure upgrade for ConnectND.		All of the NDUS.	Downtime; services not available; number of instances able to be utilized.
	ConnectND Web Services/SAIP – Implement and deploy web services/SAIP in the ConnectND environments. This offering will allow ConnectND to continue as an authoritative source of personnel, financial and student data. This offering will also streamline efforts to utilize data from ConnectND.		All of the NDUS.	Number of manual processes eliminated; number of systems that use offering.