NORTH DAKOTA
UNIVERSITY SYSTEM

ACCESS. INNOVATION. EXCELLENCE.

North Dakota University System
Core Technology Services
Annual Report 2013-2014

(Report generally covers the period from July 1, 2013 to June 30, 2014)

Presented By:

Dr. Lisa Feldner

Vice Chancellor for Information Technology and Institutional Research

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A MESSAGE FROM THE CIO

Lisa Feldner
Vice Chancellor for Information
Technology and Institutional
Research

The North Dakota University System (NDUS), Core Technology Services (CTS) continues to evolve in providing the best information technology services to the North Dakota University System institutions and System Office that it can. This has been another busy year implementing several important initiatives that will increase efficiencies for all of the university system.

A number of changes have occurred and the first major change is that most of the Core Technology Services staff have moved into the new IT Office building located on the west edge of the University of North Dakota campus. This is a fantastic facility that brings staff previously located in seven different buildings in and around the UND campus under one roof. For some staff, this is the first time that they have had the opportunity to work with colleagues on a daily basis without first scheduling meeting time at another building. A certificate of occupancy was issued on August 13, 2013 and staff moved into the new building by Thanksgiving.

A certificate of occupancy was issued on January 31, 2014 for the completion of renovated space that is now the new NDUS data center. NDUS built the data center to Tier 3 standards and it has been operational since spring 2014. We continue to move non-production environment IT equipment from the old data center to the new one and we expect this process to continue through most of 2014.

Grand Forks wasn't the only site where staff moved into different space. On May 2, 2014, the Core Technology Services staff located in the Fargo Skills and Technology Training Center moved to leased office space in Fargo's Multiband Tower building. North Dakota State College of Science, from whom CTS leased space in the Skills and Technology Training Center, grew in number of students served and needed to take back the leased space. The Multiband Tower building also houses other State government offices and it was more cost effective to lease space there than find another location. With other agencies located at the Multiband Tower building, necessary communications networks were already in place to meet our needs.

A second major change that occurred was the hiring of Darin King as Deputy CIO who oversees and manages the daily operations of Core Technology Services. Prior to joining CTS, Darin had been employed as Director of the North Dakota Educational Technology Council and previously worked as the Director of Technology with the Grand Forks Public School District. With Darin's leadership in managing the day-to-day operations, my time can now be used to concentrate on strategic IT issues and Institutional Research.

The third major change was the renaming of the organization. For several years the organization was called System Information Technology Services (SITS); however, with a change in its leadership, merging of UND's IT staff into NDUS's Information Technologies, and new IT facilities

Darin King
Deputy CIO

it was determined that a new name was fitting. SITS was renamed Core Technology Services (CTS) which better reflects the functions and services provided to the NDUS institutions and the System Office.

Bringing together the staff that had been spread throughout and near the UND campus, merging of UND's and NDUS's IT staff, new leadership and new IT facilities will create an environment where unprecedented collaboration can take place, leading to our ability to provide IT services that are more timely, effective, and efficient to all the NDUS.

In closing, I want to thank the staff that has been instrumental in implementing and providing services for the North Dakota University System. I hope you will find the information within this report to be useful.

Sincerely,

NDUS IT Office building.

NDUS Data Center

Multiband Building

WHO WE ARE AND SERVICES PROVIDED

Background

The Sixtieth Legislative Assembly (2007) passed HB1461 that created and enacted a new section to chapter 15-10 of the North Dakota Century Code (NDCC) giving responsibility to NDUS to manage their technology efforts. Hence, the State Board of Higher Education was given authority to manage and regulate information technology planning and services for institutions under its control.

State Board of Higher Education Policy Section 1901.3 states:

> *Consistent with North Dakota Century Code section 15-10-44, the state board of higher education shall manage and regulate 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 conjunction 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.*

The NDUS definition of Information Technology (IT) includes, but is not limited to: hardware, software, services, and supporting infrastructure to manage and deliver information using voice, data, and video.

The North Dakota University System, Core Technology Services (CTS) has been delegated these responsibilities by the Chancellor.

Core Technology Services (CTS)

The North Dakota University System (NDUS) Core Technology Services plans, integrates, coordinates, and supports the system-wide delivery of technology-based resources, services, and solutions to NDUS institutions, students, faculty, staff, the System Office, and North Dakota residents. CTS does this by leveraging current technologies, researching new technologies, and by positioning the University System to innovate and use future technologies. CTS provides secure information management and technology services to the North Dakota University System, linking academic and business services within the NDUS community, and by connecting users to the information and educational resources they need to accomplish their goals.

Core Technology Services is responsible for a wide portfolio of technological activities in support of the North Dakota University System. The NDUS Chief Information Officer (CIO) is responsible for providing overall leadership, vision, strategy, management and accountability for System-wide information technology services. Working with the institutions, the CIO is responsible for carrying out the following NDUS information technology goals:

- Support North Dakota University 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).

- Improve North Dakota University System information technology-enabled business processes and services while providing and managing resources to align with NDUS 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).
- Improve and enhance North Dakota University System student learning and user's focus (aligns with and supports NDUS Strategic Goal #3: The North Dakota University System increases the overall vitality of the state through exceptional education, research, training and service).
- Improve and enhance North Dakota University System 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).

CTS Departments

While the CIO has direct responsibility and oversight of the CTS organization, the Deputy CIO has responsibility for the day-to-day operations of the organization. Below is a depiction of the organization structured within broad categories.
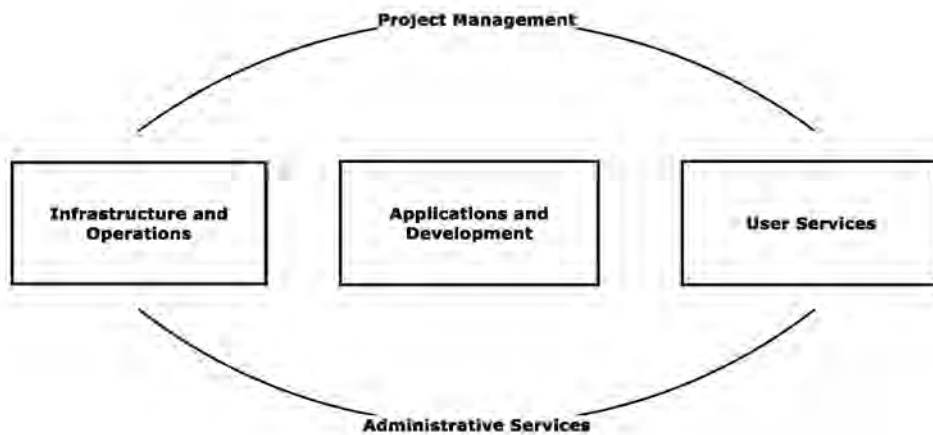
In addition to the Deputy CIO reporting directly to the CIO, other direct reports include the Assistant to the CIO, Assistant CIO/Fargo Site Manager, and Assistant CIO for Academic, Research and Learning Technologies (ARLT)/External Relations.

CIO Direct Reports

The CTS organization structure reporting directly to the CIO includes:

- Assistant to the CIO – Includes: Project/Portfolio Management, IT Planning Coordination, Large Project Oversight and Reporting, Enterprise Architecture Administration Oversight, and Grand Forks Site Facilities Management
- Assistant CIO/Fargo Site Manager – Administrative Services, Application Access Control, Fargo Facilities Management, Financial Services, and Personnel Services
- Assistant CIO for ARLT/External Relations – Software Licensing Administration, ODIN Library Services, NDUS Help Desk/Service Management, NDUS IT Security Officer, Special Projects, Strategic Partnerships, and Vendor Relations

Deputy CIO Direct Reports

The CTS organization structure reporting to the Deputy CIO who in turn reports directly to the CIO includes:

- Director, Enterprise Services – Applications and Development – consists of the Connect North Dakota (CND) Campus Solutions Developers, Enterprise Application Administration, and Enterprise Development
- Director, Infrastructure and Operations – consists of Data Base Administration, Data Center, High Performance Computing, Integrated Services/Telecom, Network Services, IT Security, and Server Administration
- Director, User Services – consists of CTS Desktop Support, Foundational/Emerging Technologies, Instructional Services, Integrated Systems, System Office Support, and Web Communications
- Director, Financials & HRMS – ConnectND Financials and HRMS Business Analysts and Development
- Director, Student Information Systems – ConnectND Campus Solutions and third-party systems Business Analysts

Data Center

The North Dakota University System Data Center, located at the University of North Dakota campus, is the primary hosting site for NDUS enterprise systems. CTS built it to Tier 3 specifications meaning that it has redundancy built into critical electrical and mechanical support systems and has the ability to continue operations while staff performs repairs or maintenance on portions of the support systems. With this level of redundancy built into the systems, failure of one component would not affect the data center's ability to continue operations as the redundant system would take over the full load whether it were electrical or mechanical in nature.

North Dakota University System Online (NDUSO)

North Dakota University System Online (NDUSO) is an internet-based system-wide collaboration for the delivery of collaborative course/certificates/programs. Because of its significant use of information technologies, NDUSO is considered an information technology area reporting to the Vice Chancellor of Academic and Student Affairs. The funding for the Director of Distance Education and State Authorization is included in the CTS pool.

STRATEGIC ARCHITECTURE

All things need a solid foundation to build upon. The Core Technology Services division has a defined strategic architecture to which IT services and applications provided by the NDUS System must adhere.

NDUS institutions implementing an IT service or application must receive approval from the NDUS CIO prior to purchase so as to ensure it will be compatible with other IT systems and services, and that it will not duplicate an existing System-provided application or service. NDUS Procedure 1901.3 defines the process for gaining approval and provides information on what systems of specific interest are included within the NDUS Strategic Architecture requiring NDUS CIO approval.

The Core Technology Services strategic architecture is best described as a visual, layered pyramid depicted as follows:

Strategic Architecture Vision
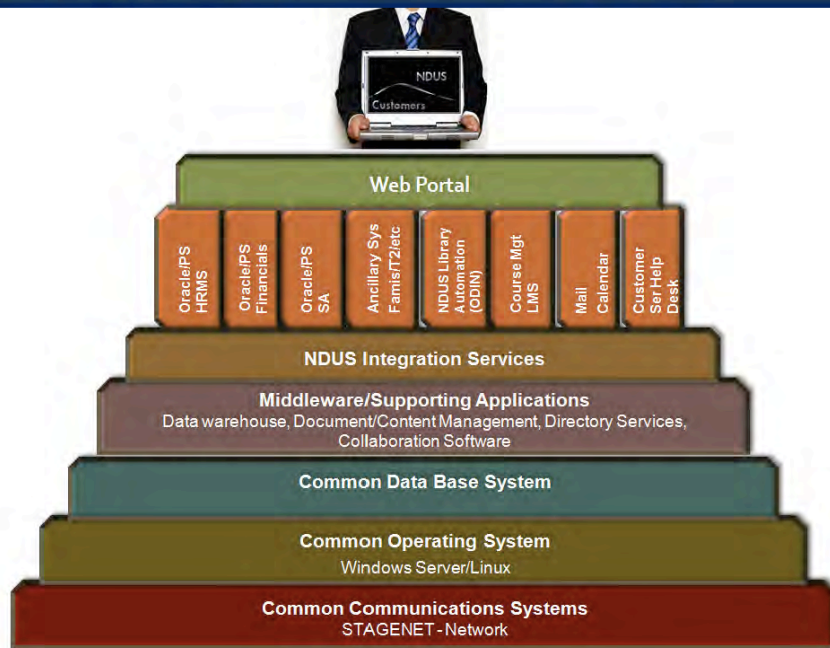
Starting on the lowest layer, the "foundation" that all else is built on, is the Common Communication System that is based on the State's STAGEnet network.

The second layer from the bottom is the Common Operating Systems: Windows Server, Linux, etc. Operating systems are the "brains" of a computer and 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 such as disk drives and printers. An operating system provides 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.

The third layer is the Common Data Base System. A database is basically a collection of information organized in such a way that a computer program can quickly select the desired pieces of data. Think of it as an electronic filing system. To access information from a database, a database management system is needed. This is a collection of programs that enable one to enter, organize, and select data in a database.

Layer four consists of Middleware/Supporting Applications. 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 that users are familiar with and use are depicted. Among others, these include applications such as ConnectND, third-party systems, Learning Management System (LMS), ODIN library services, e-mail and calendaring systems, and the NDUS Help Desk.

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

Everything Is Connected

Many of the applications provided through/by CTS are interwoven. The following visual depicts this relationship:

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

CORE TECHNOLOGY SERVICES - GOALS

Core Technology Services (CTS) has established four goals as guiding principles for information technology planning and system implementations. These goals are sufficiently broad to allow information technology goals at the NDUS's eleven institutions to roll into that of CTS and in turn, roll into the strategic plan of the State Board of Higher Education.

Goal 1 – Support North Dakota University System infrastructure needs.

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.

Goal 1 aligns with and supports NDUS Strategic Plan Goal #1 – The North Dakota University System is accessible, a view held by all North Dakotans.

Goal 2 – Improve North Dakota University System information technology-enabled business processes and services while providing and managing resources to align with NDUS strategic goals.

In order for the NDUS 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 aligned with NDUS strategic goals.

Goal 2 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.

Goal 3 – Improve and enhance North Dakota University System student learning and users' focus.

The focus of this goal is to empower student learning and development through the use of technology by providing a near seamless environment for learning through boundless access to informational, educational and research resources, both inside and outside the classroom, for all types of students from undergraduates to the life-long learners. The NDUS encourages and supports an operational environment where characteristics of its users – 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.

Goal 3 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.

Goal 4 – Improve and enhance North Dakota University System collaborative efforts.

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 everyone must work together in making necessary information available to every administrator, faculty, staff, and student across the North Dakota University System institutions.

Goal 4 aligns with and supports NDUS Strategic Plan Goal #4 – The eleven institutions comprising the North Dakota University System work together to achieve the vision effectively.

MAJOR ACCOMPLISHMENTS

The 2013 legislature made significant investments in CTS for the 2013-15 biennium. This support resulted in a number of major accomplishments. The timeframe, during which projects listed below occurred or were completed, where applicable, is indicated in (*italics)* after each accomplishment. For the most part, items listed have been worked on between July 1, 2013 and June 30, 2014 (or completed shortly after June 30th).

Items listed have been broken into two groups, those that have a greater strategic component or impact and those that are more tactical or operational in nature. Some items could fall into both categories.

Strategic

- **NDUS IT Facilities –**
  - o **Construction of the new Information Technologies office building** was completed with a Certificate of Occupancy granted on October 15, 2013. NDUS Core Technology Services staff along with many of the UND ITSS staff moved into the new building by the end of November. This brought together over 100 staff members who had previously been located in seven different buildings across or adjacent to the UND campus. (*Completion fall 2013)*.
  - o **Renovation of space for construction of a new data center** was completed and a Certificate of Occupancy was authorized on January 31, 2014. NDUS took ownership of the data center upon issuance of the certificate of occupancy and began the process of installing the network equipment to make the facility operational. CTS staff installed new hardware for Production environments and they are moving non-production environments during the fall and winter of 2014. NDUS delayed hardware refreshes during the past couple of years, where possible, so instead of replacing then moving these items, staff could install the new hardware at the new data center for production environments. This minimized downtime and reduced risk to production systems. *(Construction completed January 31, 2014 and most other items will be moved by end of year 2014).*
  - o **Relocated CTS staff located in Fargo** from leased space in the Fargo Skills and Technology Center to leased space in the Multiband Tower building. North Dakota State College of Science, from whom CTS leased space in the Skills and Technology Training Center, grew in number of students served and needed to take back the leased space. The Multiband Tower building also houses other State government offices and it was more cost effective to lease space there than find another location. With other agencies located at the Multiband Tower building, necessary communications networks were already in place to meet our needs.
- **IT Organizational Changes –**
  - o In May 2013, **Lisa Feldner, Ph. D**., Chief Information Officer (CIO) for the Information Technology Department (ITD) for the state of North Dakota, took one of the top jobs in the North Dakota University System, effective June 3. Dr. Feldner's position is **Vice Chancellor for Information Technology and Institutional Research**, where she oversees the NDUS Core Technology Services (CTS) and has taken charge of institutional research, one of the most critical components of university system operations. She succeeded Randall Thursby, who served as NDUS CIO since July 2006 and retired. It is important to note this change as it led to a number of the other changes found below. *(Effective May 2013 and ongoing)*
  - o **Darin King** was hired at **Deputy Chief Information Officer** and is responsible for day-to-day operations of CTS. Prior to joining NDUS CTS, Darin was the Director of the North Dakota Educational Technology Council and previous to that was the Director of Technology with the Grand Forks Public School District.
- **NDUS SITS name changed to Core Technology Services** – NDUS System Information Technology Services was renamed NDUS Core Technology Services to better reflect the types

of systems and services that are being provided through the new organization. *(December 2013)*

- Server Consolidation – Staff created a list of **NDUS servers and applications** housed at the NDSU data center. CTS staff are moving them **to the new NDUS data center** at UND. The CTS server team has full access to the servers and applications and they will provide the leadership in moving the infrastructure.
- CTS is currently offering **integration to internal and external NDUS services with LDAP and ADFS authentication**. Expanded the centralized directory service used to manage networked computers and access services across the University System. Extended the schema and added domain for Lync project.
- **Identity Management (IdM)** – CTS deployed IdM features to enrich centralized identity management service for user accounts and password synchronization. We continued to expand account and password synchronization to other campuses beyond the two CTS currently services. We finished enhancements to the system in order to ensure that CTS could maintain the current level of reliability.
- **Microsoft's System Center Configuration Manager (SCCM)** – CTS deployed SCCM and are using it to deliver Operating System (OS) updates, antivirus, and software applications to all the desktop computers managed by CTS, including the System and CTS staff. In addition, CTS User Services has worked with a number of NDUS institutions in setting up and configuring their SCCM environment and hosted a multi-day SCCM workshop for the institutions.
- **Microsoft Lync Unified Communications** – CTS has configured the Lync instance in a high-level availability design. Lync provides: presence information, in/out bound calling, instant messaging, conference calling and meeting capabilities. CTS also provisioned the Lync instance with enhanced 911 capabilities for mobile users. This allows users to be routed to the correct Public Service Answering Point (PSAP) with no regard for whether the user is in the office or on the road. Testing is currently underway and CTS continues to add users to the pilot rollout.
- **Student Live@edu email** – All 9 institutions successfully upgraded their student tenants to Office365. *(Fall 2013)*
- **NDUS employee Office365 email** – CTS upgraded the NDUS employee Office365 email tenant to Wave15. *(July 2013)*
- **Mobile Infrastructure** – CTS implemented **NDUS-Systemwide Service Set Identification (SSID)** across the campuses, allowing the State Board of Higher Education (SBHE) members and any NDUS faculty, staff, student to authenticate to the local campus wireless network using their NDUS Active Directory Account. CTS installed a central radius server to accommodate this system.
- **Internet Protocol version 4 (IPv4) and version 6 (IPv6)** – NDUS and ITD finalized and signed the contract with ARIN protecting the legacy IPv4 address space in the NDUS domain. With the huge number of devices connecting to networks, everyone is running out of IPv4 numbers and IPv6 is taking its place. The State Information Technology Department successfully implemented IPv6 on STAGEnet. NDUS institutions are continuing to explore opportunities to utilize IPv6 on campus subnets. *(November 2013)*
- **ImageNow** – CTS is currently in the process of migrating UND's ImageNow instance to new infrastructure that will service the entire university system. CTS has established the project plan and identified the team. Once the migration is complete, CTS will be able to start onboarding those campuses currently not using a document imaging system. The migration of campuses currently on ImageNow will be staggered to make sure each campus' migration goes smoothly and the users have enough time to settle in before migrating the next campus. CTS has demonstrated the software and discussed the functionality with all of the campuses except for one. The project is on schedule and is expected to take about 2 years to complete the migration and onboarding of all campuses. *(March 2014 and ongoing)*
- **STAGEnet bandwidth** - Working with the State Information Technology Department, CTS increased the network bandwidth from 100 to 300 mbps for DCB, LRSC, and WSC; NDSCS was upgraded from 500 mbps to 750 mbps. *(Completed September 2013)*

- **NE STAGEnet Quadrant Move** – Working with the State's Information Technology Department, CTS moved the core hub for STAGEnet's NE Quadrant to the new NDUS IT building. This benefits STAGEnet and NDUS with added reliability. *(Summer 2014)*
- **Improved Security Posture** – The State's Information Technology Department (ITD) worked with the NDUS to implement threat prevention and detection services on the Internet links serving the NDUS. *(Spring/Summer 2014)*
- In addition to the new data center, **other items CTS has put in place to mitigate risks and system downtime** include:
    - Enhanced capabilities of load balancer
    - Expanded clustering and virtualization
    - Redundant connectivity to STAGEnet
    - New IT building – access restricted to CTS employees
    - Developed emergency de-provisioning of user access
    - Expanding our application and system monitoring capabilities
    - Implemented patch management through Microsoft's System Center Configuration Manager (SCCM) and Microsoft's System Center Operation Manager (SCOM)
- **NDUS Intranet** – A project plan for the development of an NDUS Intranet based on SharePoint technologies has been developed and approved. Work is under way on the development of system requirements and governance.
- **Mobile Device Strategy** – CTS researched available tools and options to implement a mobile device strategy. However, turnover of key staff and subsequent gaps in coverage put a hold on further development in this area. More recently, the CIO Council formed a comprehensive endpoint security strategy group to discuss issues related to data access, data security, and management of endpoint devices on networks. The end-result of this group's effort will help determine the next steps for mobile device management and application support. *(Ongoing)*
- **Procurement** – CTS staff and Legal Counsel review contracts and software licenses for technical, security, and legal compliance. The number of contracts reviewed this year has escalated as CTS staff looks for efficiencies by implementing contracts or by negotiating reductions in pricing system-wide. Work on this initiative continues. *(Ongoing)*
- **The NDUS SBHE identified efficiency** – Tegrity Lecture Capture, has been incorporated into the Help Desk for best effort response. The Chancellor delayed most of the other NDUS IT efficiencies. ImageNow will be expanded and incorporated during summer of 2014.
- **Incorporation of Information Technology Infrastructure Library (ITIL)** – ITIL is an internationally recognized set of practices for IT service management. A NDUS Assistant CIO is a member of the Educause ECAR IT Service Catalog working group, building upon the ITIL Service Catalog and focusing specifically on Higher Education. In addition, the NDUS IT Service Manager/Help Desk project leader is certified on ITIL Foundations and ITIL Service Transition. At the summer 2013 NDUS Help Desk Conference, CTS presented the Information Technology Infrastructure Library (ITIL) concept of Problem Management. This included root cause analysis and other techniques to resolving a problem. The summer 2014 NDUS Help Desk Conference focused on the IT Service Request catalog.
- **ODIN proxy servers** – CTS moved all twelve ODIN proxy servers from the NDSU location to the new Grand Forks data center.
- **Collaborative Student Support** – System provided technologies are in position to support collaborative students. NDUS is using a single instance of Moodle to support four institutions. Tied into Moodle are collaborative tools for lecture capture (Tegrity), web conferencing (Blackboard web conferencing), and instant messaging (Blackboard IM). CTS has initiated additional efforts to connect the Office365 environment, but little progress has occurred due to vendor inability to provide integration capabilities.
- **Student Administration Integration Pack (SAIP)** – NDUS has integrated SAIP with UND's Blackboard and the NDUS Moodle instances. eCollege currently does not have the capacity to integrate with SAIP. MiSU, a Blackboard campus, has shown interest in utilizing SAIP similar to UND. *(January 2013)*
- **Starfish** – Starfish, the student intervention tool, is a retention solution purchased by UND in

May 2014. Implementation of the software is underway. The software makes it easy for the institution to enlist the community as active participants in student success initiatives by automating student tracking, early alert, online appointment scheduling, and assessment. The results are powerful and the outcomes are measurable. Other NDUS campuses have an interest in this same product.

- **Statewide Longitudinal Data System (SLDS)** – NDUS continues to work on the inclusion of Post-Secondary information for the 11 North Dakota University System Institutions into SLDS. SLDS is a data warehouse comprised of historical education and workforce training data. The objective of the SLDS is to provide data on the outcomes of North Dakota education and workforce training programs.
- **Predictive Analytics Reporting (PAR) Framework** – CTS performed programming, planning and implementation of the PAR framework for a possible Performance Funding initiative for NDUS. They completed a pilot project with UND. The Predictive Analytics Reporting (PAR) Framework is a national, non-profit analytics-as-a service provider. PAR brings 2 year, 4 year, public, proprietary, traditional, and progressive institutions together to collaborate on mitigating student loss by identifying the effective practices that support student progress toward their academic goals.

Tactical/Operational

- **Fall Learning Series webinars for all institutions** – Sponsored total of 10 seminars focusing on different technologies offered by NDUS CTS.
- **Internal Learning Management System (LMS) (Moodle) sites** – Created various Moodle sites for Advanced Learning Technologies (ALT) Campus Administrators, CTS Staff Senate, and CTS Wellness Committee
- **Blackboard Collaborate site for Council of College Faculties** – Created a Blackboard Collaborate site that provides a comprehensive online learning and collaboration platform to help create virtual classrooms, offices and meeting spaces.
- **Employee Resource site** – In order to manage compliance for Human Resource compliance activities, CTS worked with a number of institutions to develop an employee resource site in NDUS Moodle.
- **Implemented Qualtrics survey system for CTS and System office** – Qualtrics is an online survey software tool (similar to Survey Monkey). CTS delivered orientation and training sessions on the software.
- **Implemented Atomic Learning for CTS and System Office** – Atomic Learning offers solutions for professional development, technology integration and software training and support. CTS delivered orientation and training sessions on the system.
- Developed and deployed two **system-wide CIO surveys**.
- Tested and implemented **Polycom Cloud Axis and Renova video scheduling** software.
- **Virtual Desktop Infrastructure (VDI) proof of concept** – CTS deployed a VDI proof of concept to BSC, UND, and DSU. During a yearlong experiment, all three institutions decided that VDI is not a viable option for their needs. However, both BSC and DSU showed an interest in the Application Virtualization. UND already utilizes Application Virtualization. *(July 2013)*
- **New and Emerging Technologies**:
  - Quarterly updates along with an annual Fall Executive Microsoft Symposium for Higher Ed/K12/ITD occur in order to share the latest solution updates and direction in the public sector. *(Symposium was held in October 2013)*
  - With Cloud Services on the horizon, NDUS subscribed to Azure Cloud Services via the NDUS Microsoft EES agreement, in part to accommodate the needs of faculty, staff, students who were implementing services in Amazon Web Services; in part to become familiar with the cloud services cost model, and also to accommodate researchers and research needs. *(July 2013)*
  - A special K-20 project, The Road to Little Rock is hosted on Azure and provides curriculum for K-12 and Higher Education that is distributed throughout North

Dakota. *(Completed November 2013)*

- o Implemented Student Advantage licensing for students, which provides five free copies of the Microsoft Office Suite for personal use. This also allowed two institutions to move away from their student option and save more than $17,000 each annually. *(Completed January 2014)*
- o As a result of the Microsoft Digital Alliance, all Higher Education institutions in North Dakota, including Tribal Colleges, as well as K-12 schools were eligible to participate in the Dreamspark program, providing free software for STEM programs. *(Completed November 2013)*
- o In addition, through the Digital Alliance, CTS worked with Microsoft to provide special workshops for students at NDSU and UND to learn Mobile App development. *(November 2013)*

- **iDashboards** – iDashboards is a dashboard software purchased by UND in May, 2013. In collaboration with UND's Institutional Research, CTS/UND created a number of dashboards for UND's consumption. Some of the data feeds to the software have been automated. After demonstrating the software to other NDUS institutions, there were inquiries on the possibility of using the software for their needs as well. CTS is gauging the viability of using the software system-wide, knowing some of its limitations. *(August 2013)*

- **STAGEnet RFP for STAGEnet Transport Service** – NDUS staff reviewed (with various groups such as CIOs and Network Steering Committee providing feedback) on the State's RFP for STAGEnet Transport Services. This RFP re-bids the Internet access, the core network backbone, and all endpoints (last mile), including the NDUS institutions. An NDUS representative participated in the scoring of the RFP responses. *(Fall 2013)*

- As **institutions request legal review for IT-related contracts**, those are passed on to CTS by legal staff to be vetted for technical and security integrity, requests from legal staff for language changes, and to work with vendor to create an agreement applicable to all NDUS institutions. These contracts create efficiencies by enabling faster access, better pricing (in many cases), and single review versus multiple reviews. *(Ongoing)*

- **Software Audits** – More companies are performing software audits on businesses using their products. CTS staff are vetting software asset management and licensing management systems in order to provide the necessary information. This will allow NDUS to manage the full software asset management lifecycle through a Licensing Dashboard and produce reports that will provide information for license compliance and software audits.

- **Process improvement for new services** – Prior to the rollout of a new NDUS service, CTS is ensuring that they are documented and incorporated into the NDUS Help Desk for system-wide support.

- **NDUS Help Desk ServiceNow** – All institutions are using the NDUS Help Desk ServiceNow management system. In addition, NDUS has integrated **RightAnswers**, a knowledge management tool, into ServiceNow. *(May 2014*)
  Campuses will begin implementing summer of 2014.

- **NDUS Community Moodle** – CTS redesigned the NDUS Community Moodle and the upgraded system incorporated a NDUS Learning Portal. NDUS is using this portal to consolidate compliance training and expand professional development capabilities. Continued progress here is on hold while the System Office determines who will be responsible for leading the compliance training activities. The upgrade to Moodle provides enhanced social media and publishing capabilities.

- **HighPoint Mobile Interface** – CTS implemented HighPoint's mobile interface for NDUS's ConnectND. Initial deployment included "lookup" or inquiry capabilities. Expansion of functionality will include the ability for students to update information, including registering for classes, dropping and adding classes, accepting financial aid awards, etc. CTS tested these and are developing a deployment plan.

- **Primo Unified Discovery Tool for Online Dakota Information Network (ODIN)** – ODIN has completed the initial implementation of the Primo discovery tool. The tool provides a single user interface style to search nearly all owned/licensed library materials in a single

search. The first library went live on 5/2013. Over 50 more followed by 8/2013 and the last three libraries completed by 12/2013.

- Ex Libris (NDUS's provider of library automation solutions) turned over responsibility for the **NDSU Primo public catalog interface to ODIN.** This will occur as NDSU Libraries move from implementation to 'support' for Primo & Alma on October 15, 2013.
- **Minitex ILL** – This Interlibrary Loan (ILL) functionality serves libraries in MN, SD and ND. ODIN coordinated work with the University of Minnesota and the PALS library support group in the move of the Minitex ILL function from the U of M Aleph server to the Mankato Aleph server.
- **New ODIN Libraries** – ODIN set up a branch library and performed staff training for the new library of the University of Jamestown in Fargo, added Bowman Public Library *(September 2013)*, and added Walhalla Public Library *(May 2014)*.
- **VCSU library database reload** – ODIN worked with Valley City State University library to reload their entire database performing numerous data cleanup functions in the process.
- **Termination of UFind** – With the deployment of the Primo discovery tool ODIN was able to shut down the UFind interface. UFind has been in use since December of 2009.
- ODIN **enhanced and expanded the maintenance user interface for ODIN's database** authentication application that is used to manage all libraries in North Dakota.
- ODIN added the **Zinio Magazine collection** to the electronic resources available statewide.
- ODIN added **"collectionHQ" analysis tool** for Grand Forks Public Library. collectionHQ is the world's leading electronic collection tool which represents an important new way public libraries select, manage and promote their collections.
- **Northern Tier Network (NTN)**
  - o Completed required grant activities and final reports, and received approval confirmation from the National Science Foundation (NSF) for two federal stimulus grants.
  - o Coordinated Research & Education Stakeholders meetings via videoconference (Fall and Spring) to provide updates to recently completed grant activities and how the improvement will positively impact research and academics across the state.
  - o Worked with the Tribal Colleges to provide updates on expanded access to resources for academic and research as a result of technical upgrades enabled by an NSF EPSCoR grant
  - o Working with NDSU Tribal College Partnerships and ND EPSCoR, coordinated a second C2 conference for Tribal Colleges focused on specific areas of interest for collaboration, including the Master of Public Health Program – American Indian specialization; updates on the National Ecological Observatory Network (NEON).
  - o Coordinated the K12 STEM (science, technology, engineering, and mathematics) initiatives – a pilot for a series of STEM-based videoconference sessions for K-12 schools across ND and SD, providing professional development exercises for participating teachers, followed by classes where students are introduced to various topics and given the opportunity to interact with scientists at higher education institutions and research centers. This initiative included a variety of curriculum-based projects that utilized the NTN to support access to videoconferencing, remote instrumentation and data repositories as tools for planning and collaboration.
  - o ND EduTech continued to facilitate and support curriculum-based content program and international classroom collaborative projects involving resources available via global Research and Education (R&E) networks.
  - o Representatives from ND K-12 and higher education attended the Internet2 Annual Global summit that convened in Denver in April 2014, showcasing two examples of ND's evidence of use of R&E network and the value these connections provide to academics and research across the K-20 community.
  - o Internet2 K20 Initiative's "Global Democracy: Presidents and Policy" – The Presidential Primary Sources Project completed its second year. ND's Theodore Roosevelt Center at DSU participated in this project.

- **Campus Solutions upgraded infrastructure** – CTS has migrated Campus Solutions to new infrastructure at the new data center, which allows for the dynamic allocation of resources during peak periods of usage.
- **Listserv administration** – CTS took over management of the Listserv software previously administered by NDSU. *(August 2013)*
- **State of North Dakota's Grant** – CTS developed code for the Financial Aid module in Campus Solutions that allows the System Office to administer the Grant. Applicants can now apply for the Grant and monitor award. All North Dakota Post-Secondary educational Institutions are included.
- **eTranscripts integration into the Campus Solutions – CTS** participated in planning and performed development to integrate eTranscripts into the Campus Solutions environment.
- **Biographical Demographical Data Project** – CTS initiated a project for coordination between Human Resources/Financial and Campus Solutions of biographical and demographic data to increase efficiencies and reduce customers having to go to multiple systems to change address, phone, email etc.
- **Admission Application annual updates** – NDUS completed the annual updates to the Application for Admission for the NDUS. (Admissions in Campus Solutions)
- **AppTree mobile access** – CTS deployed AppTree's mobile access software to NDUS's Facilities Management (FAMIS) system for use by remote workers.

This concludes the 2013-2014 NDUS Core Technology Services Annual Report.