NORTH DAKOTA
UNIVERSITY SYSTEM

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North Dakota University System

Core Technology Services

Annual Report 2014-2015

(Report generally covers the period from July 1, 2014 to June 30, 2015)

Presented By:

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Vice Chancellor for Information Technology and Institutional Research

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A MESSAGE FROM THE CIO

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This has been a year of preparing the North Dakota University System (NDUS), Core Technology Services (CTS) division for the planning and implementation of several major projects that will lay the foundation for the future. The 64th Legislative Assembly was generous in funding projects CTS will implement and enacted legislation that drives the direction for the NDUS going forward.

One such legislative action is a new section to North Dakota Century Code (NDCC) 15-10 that requires use of electronic mail, file server administration, database administration, research computing, storage, application server, and hosting services be obtained through a delivery system established by the State Board of Higher Education (SBHE). This legislative action requires that the Board shall establish policies and guidelines for the delivery of services, including the transition from existing systems to functional consolidation, with consideration to the creation of efficiencies, cost-savings, and improved quality of service.

While some systems/services at some NDUS institutions will be moved during this next year, much time during the first year of the biennium will be spent on planning to ensure that systems are consolidated in a manner that has the least impact on users of the systems and services.

At this time I would like to mention a few initiatives undertaken during this past year that benefit CTS, NDUS institutions, and the NDUS as a whole. These are not in any specific order and you can find a more complete listing of major accomplishments towards the end of this report.

Higher Education institutions tend to be large targets for cyber threats through network intrusion and planting of malicious malware. This is an ongoing problem and requires constant vigilance to stop these activities and reduce risks of data exposure to those without a need to know. During this past year, in conjunction with the State's Information Technology Department (ITD), firewall devices have been installed in the State's STAGEnet network to detect data traffic containing malware and remove such items from the network before it reaches an NDUS network. Not only does this reduce the risk of malware reaching the institution, it also reduces the amount of data packets transported to the institution's network providing more capacity for institutional data.

With the new NDUS Data Center in operation, CTS decided to bring in a data center manager with experience running other Tier 3 or greater level datacenters. CTS issued a Request for Proposal (RFP) and awarded to Vision Technologies, Inc. This is a 14-month contract with the ability to extend it if we feel it would be beneficial. Based on Vision Technologies experience in running large, Tier 3 or greater data centers, and industry best practices, the manager will analyze current operations and standard operating procedures to determine what changes CTS should make. Vision Technologies will present recommendations to CTS senior management for consideration. Additionally, CTS will revise current operating procedures to include best practices. Updating current processes will ensure we have the best environment in which to consolidate systems and services going forward.

CTS has also made changes that will allow us to manage staff resources better. CTS issued a RFP for a work management system and awarded to TeamDynamix. CTS staff will use this system to assign project and operational tasks to individuals. CTS will be able to base work assignments on resource availability. Staff members will know what work is assigned to them, the amount of time they have to complete the tasks, when task completion is due, and what other tasks are waiting in their queue. This system will also track projects at multiple portfolio levels and allows CTS to "slot" projects into

time lines where staff resources can accommodate the project. Better management of staff's time and knowing the length of time it will take to complete a project based on the available staff resources will not only increase efficiencies but also drive project success in being on-time and on-budget.

One last item I would like to highlight is an internal unit change within CTS. We created a new unit within the Office of the CIO called P^3/M, which stands for Planning – Procurement – Project/Management. By bringing these fragmented functions together into one unit, we feel we can improve response time and gain efficiencies. The purpose of the unit is to deploy and/or assist with deploying strategic initiatives. An individual, previously employed with the State's Information Technology Department (ITD), with considerable experience in IT planning, procurement and project management was hired and has helped jump start this unit. Some existing CTS staff along with a reassigned UND project manager make up this unit. While the unit is in its early stages of development, combining these functions into one unit will improve CTS' successes.

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,

Lisa Feldner

NDUS IT Office building (Grand Forks)

Multiband Building (Fargo). CTS staff location in Fargo.

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

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 focuses on supporting the NDUS strategic goals:

- Deliver degrees that are the best value in the nation.
- Provide programs people want, where and when they need them.
- Equip students for success.
- Maximize the strengths of the unified system.

CTS 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

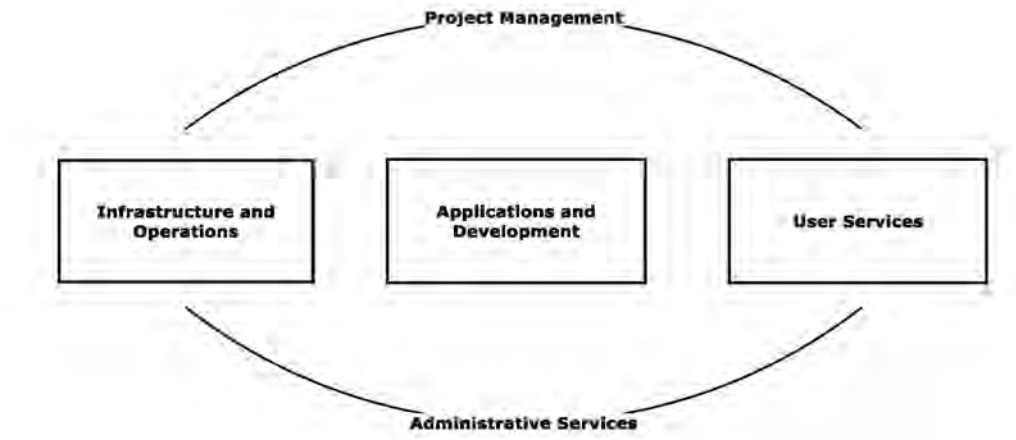
overall leadership, vision, strategy, management and accountability for System-wide information technology services. Working with the institutions, the CIO is responsible for carrying out the following NDUS information technology goals:

- Support North Dakota University System infrastructure needs.
- Improve North Dakota University System information technology-enabled business processes and services while providing and managing resources to align with NDUS strategic goals.
- Improve and enhance North Dakota University System student learning and user's focus.
- Improve and enhance North Dakota University System collaborative efforts.

These goals are covered in more detail later in this document.

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.



CIO Direct Reports

The CTS organization structure reporting directly to the CIO includes:

- Deputy CIO –responsible for the day-to-day operations of the technology organization.
- Assistant to the CIO – Includes: IT Planning Coordination, Procurement and Software Licensing Administration, Project/Portfolio Management, Large Project Oversight and Reporting, Enterprise Architecture Administration Oversight, and Grand Forks Site Facilities Management.
- Assistant CIO/Fargo Site Manager – Includes: Administrative Services, Application Access Control, Fargo Facilities Management, Financial Services, and Personnel Services.
- Assistant CIO for ARLT/External Relations – Includes: Help Desk/Service Management, Special Projects, Strategic Partnerships, and Vendor Relations. The person in this position retired in early 2015. CTS is reviewing the organizational structure of the senior management to determine the most efficient operational structure. Since most of the 2014/2015 year operated with this person in place, we will include changes in next year's report.

Deputy CIO Direct Reports

The CTS organizational structure reporting to the Deputy 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.
- Director, ODIN Library Services.
- Director, NDUS IT Security Officer.

Data Center

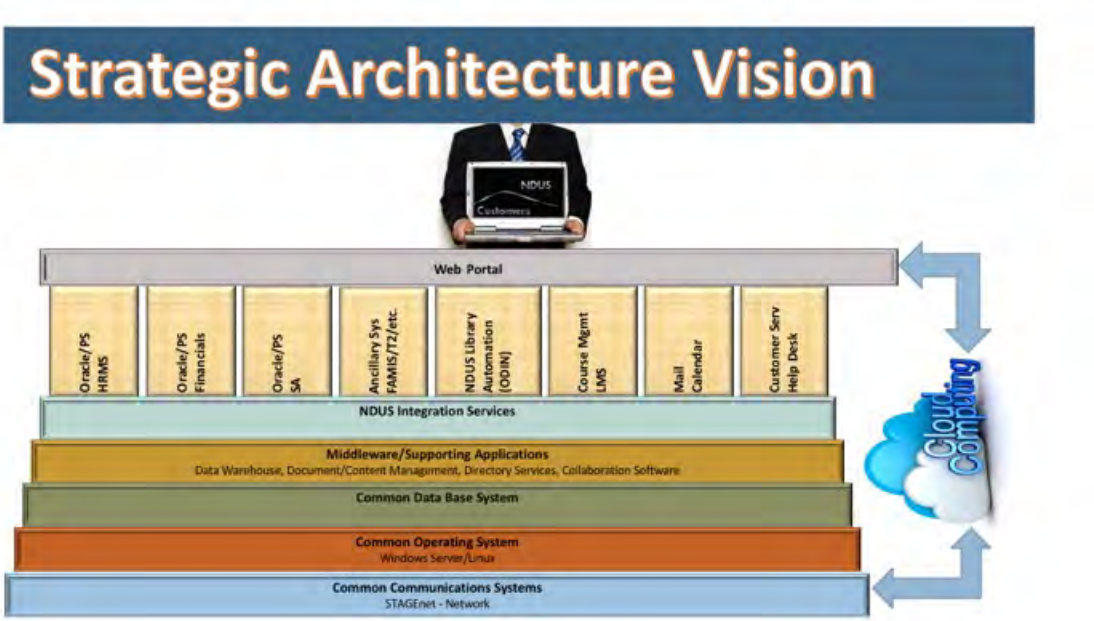
The North Dakota University System Data Center, located at the University of North Dakota campus, is the primary hosting site for NDUS enterprise systems. CTS built it to Tier 3 specifications meaning that it has redundancy built into critical electrical and mechanical support systems and has the ability 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 should 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.

STRATEGIC ARCHITECTURE

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

NDUS institutions implementing an IT service or application must receive approval from the NDUS CIO prior to purchase. This helps 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 following visual best describes Core Technology Services' strategic architecture:



Starting on the lowest layer, the "foundation" that all else is built on, is the Common Communication System. This utilizes 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 accept 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 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 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, you need a database management system. This collection of programs enables us 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 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.

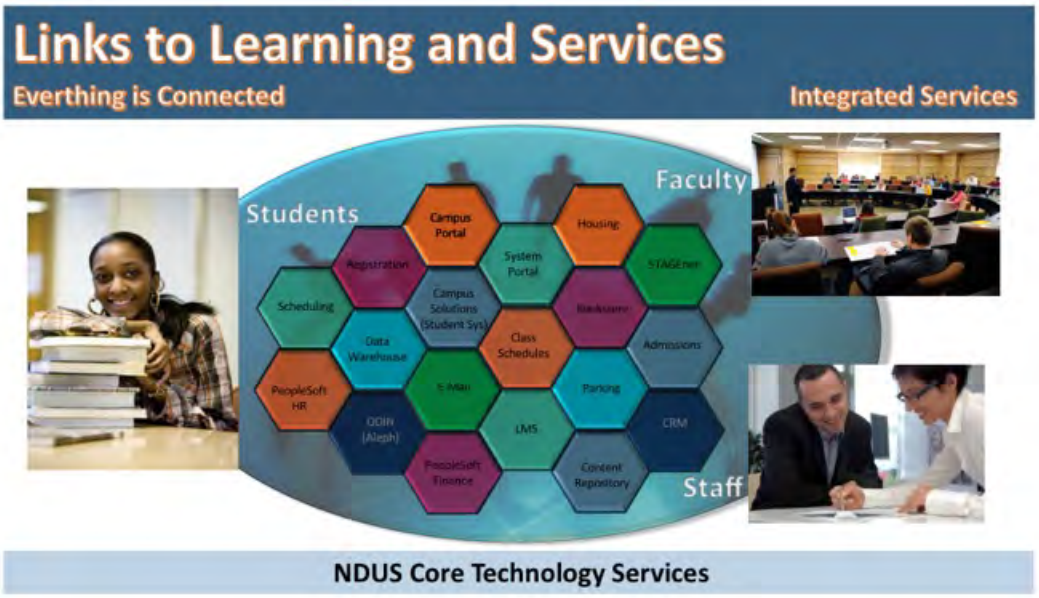
The Web Portal is the seventh layer. The portal is the window that is used to access applications.

Today, more and more Enterprise level services are becoming cost-effective, secure, and available through the "Cloud." The Cloud could be an internal Cloud located and managed by CTS or an

external Cloud provided by a vendor. The Cloud could be any of the layers represented. These "X" as a service (XaaS) could consist of anything represented by the "X." It may be Communications as a Service (CaaS), Desktop as a Service (DaaS), Disaster Recovery as a Service (DRaaS), Infrastructure as a Service (IaaS), Monitoring as a Service (MaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and many others.

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 affect 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 we make any action/change and requires more effort in ongoing support and 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 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 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 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.

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, 2014 and June 30, 2015 (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

- **Information Security–**
  IT security, data protection and intrusion detection are items one must always be vigilant of and CTS has taken additional measures regarding information security. Examples include:
  - New governance structure.
    - Director of Information Security reporting to Office of the CIO.
    - Hired an additional security analyst.
    - Security audits and assessments.
    - Monthly employee security training.
  - Revised and updated data classification and IT Security Standard.
  - Technology enhancements in the areas of:
    - Intrusion prevention and detection.
    - Multi-factor authentication.
    - Vulnerability management.
    - Password management.

- **P3/M –**
  Created a unit within the Office of the CIO responsible for deploying or assisting with deploying strategic initiatives. P3/M stands for Planning – Procurement – Project/ Management. *(While the concept had been under development for some time, the core of functions were established Dec 2014)*
  - Current staffing consists of the Director, Associate Director and Chief Procurement Officer, one additional Procurement Officer and two Project Managers. Depending on quantity of projects in their implementation phase, CTS staff with proper training/experience or contracted individuals may take on project management roles for certain projects.
  - The 2 – 5 year plan is to add two Business Analysts in the Planning area, one additional Procurement Officer, and Project Managers where needed.
  - Revised all project management templates used by CTS and available to all NDUS, and published them on the new inside.NDUS site.
  - Brought project management training to Grand Forks for CTS and UND staff.

- **Work Management System (WMS) –**
  The TeamDynamix Work Management System is a key system for CTS to manage resources and track work effort performed by staff. Additionally, it is a portfolio management system used to manage projects and to assign time slots for projects dependent on available resources.

  CTS began the implementation of the WMS in March 2015. Initial rollout, which includes deployment of the Project Analysis and the Resource Management applications in the system is scheduled for July 1, 2015. The WMS provides CTS with the ability to monitor resource capacity, review the progress of multiple projects concurrently, and run what-if scenarios to see how decisions affect current and planned projects at a portfolio level. Additionally, the

WMS will provide CTS management with the ability to generate customized reports for portfolio, project, and resource management. Deployment of the WMS ticketing applications, workflows, and a service catalog will begin rollout in Fall 2015. *(System became operational for CTS staff's use June 2015. We will activate additional functionality as an ongoing operational process.)*

- **Data Center Manager –**
  CTS issued a RFP to bring in a data center manager for 14 months to manage the NDUS Data Center, analyze the operations of the Center to determine what changes in standard operational procedures are needed for maximizing operations of the Tier 3 data center including current "industry best practices", and provide CTS management with these results. Additionally the data center manager will update documentation needing revision.
  - CTS awarded a contract to Vision Technologies. CTS can extend this contract should CTS decide it would be favorable to do so.

- **Functional Consolidation –**
  The 64th Legislature passed House Bill HB 1003. Section 8 of this Bill added new code to North Dakota Century Code N.D.C.C. chapter 15-10 that requires all entities under the State Board of Higher Education (SBHE) to utilize a centralized service for email, file server administration, database administration, research computing, storage, application server, and hosting services. It also requires the SBHE to establish policy and guidelines for the delivery of these services. CTS has started the project charter and planning phases for this project.

- **Skype for Business –**
  We previously listed this project as Lync. Microsoft has since renamed the Lync unified communications initiative to Skype for Business with their acquisition of Skype. The project is on hold at this time to allow time for CTS to complete the ADFS/DirSync project. ADFS/DirSync is required for a hybrid system using Office365 and storing voice mail messages in the Office365 Cloud based email inbox while the Enterprise telephony servers reside in an on-premise based environment. *(Expectation is to restart this project in late Fall or early Winter of 2015)*

- **inside.NDUS –**
  NDUS launched an Intranet based on Microsoft's SharePoint in August of 2014. SharePoint combines various functions, which have traditionally required separate applications. Specific functions include internal communication, content/document/web management, enterprise search, and workflow management. The NDUS Intranet is called inside.NDUS and is currently being used internally by the System Office and Core Technology Services. It is also being used as a communication and workflow tool between the System Office/CTS staff and the NDUS institutions. Into the future, this Intranet will be available for campus use, enhancing the collaboration among campuses while maximizing the investment in the technology. The University of North Dakota has already started this process. *(Implemented and launched August 2014)*

- **Network Firewall Devices –**
  NDUS worked with the State's Information Technology Department (ITD) to install network firewall devices in the State's STAGEnet network to help protect NDUS institutions from cyber threats and unknown malware. Having these devices in the STAGEnet network reduces unwanted/harmful data traffic from reaching campuses and reduces harmful attacks perpetrated on campus networks and their users. *(Completed Spring 2015)*

Tactical/Operational

- **ImageNow –**
  ImageNow is a document-imaging project to migrate NDUS institution's documents to a

centralized NDUS ImageNow instance. This is a multi-year project. The project team completed migrations of Bismarck State College, North Dakota State College of Science, University of North Dakota, Williston State College, and North Dakota University System Legacy documents in the last year. Minot State University is scheduled to begin migration in September 2015 and North Dakota State University in January 2016 with completion by June 2016. In addition to migrating existing instances of ImageNow to the centralized instance, CTS has also been adding institutions that did not have a document imaging system. This project team has on-boarded Mayville State University and Lake Region State College. Valley City State University will be completed by end of June 2015, Dickinson State University is scheduled for a project kick-off in September 2015, and Dakota College Bottineau is scheduled for a kick-off in January 2016. *(Expected completion by June 2016)*

- **NDUS Bio-Demo Synchronization –**
  An original goal of the PeopleSoft implementation was to improve service to students and employees by having only one true source of bio-demo data. Name, address, gender, race, date of birth, social security number, etc. This data is now synchronized between all three major PeopleSoft applications (Campus Solutions, Human Resources, Financials). Prior to this year, an individual would need to contact multiple departments on a campus to change their information in each application. Now, people need only notify one office on a campus to have their information changed and that information changes automatically in all three systems.

- **Financial System Upgrade 9.2 –**
  The ConnectND Financials team completed the financial system upgrade to Version 9.2. The Production system upgrade started on May 15, 2015 and successfully completed on May 16, 2015. Users identified very few issues after go-live. *(Completed May 16, 2015)*

- **Student Refunding moved from Campus Solutions to Financials –**
  Oracle's strategic roadmap is moving the payroll functionality out of the Campus Solutions product. In order to stay in line with this strategy, NDUS moved that functionality into Accounts Payable in the Financial system to produce student refund checks.

- **Financials Query Environment Deprecated –**
  As an efficiency initiative, CTS transferred query writing from the Financials Query environment to the Financials 9.2 Production environment. Individual environments are expensive to maintain, and query writers wanted access to real-time data. The risk of allowing query writing in production has declined over the years, through PeopleTools evolution and experience of query-writers.

- **Budget Module –**
  The budget module, a CTS built and maintained application using PeopleTools, was used for the third annual budget cycle. CTS had to make a significant number of changes to meet the needs of the largest campuses, but this resulted in the module being used by all thirteen NDUS business units for the first time. Only one campus is not currently using the application to its full, integrated workflow potential.

- **Absence Management & Time and Labor –**
  Implementation of two PeopleSoft modules, Absence Management and Time & Labor, began in February 2015. These two initiatives target the improvement of existing manual processes to take advantage of efficiencies, reduce overall time requirements and risk of introducing errors. The implementation of these modules will provide a consistent and systemized process whereby all NDUS employees are able to log their time, submit leave requests and leave taken forms via PeopleSoft self-service. These modules will provide the ability to generate consistent reporting at both a unit level and at the NDUS System level. The project is currently in the configuration and design phase. Testing of the modules will begin

in Spring 2016 and training will begin late Spring. *(Go-live is anticipated July 1, 2016)*

- **UPK Upgrade and Documentation –**
  CTS upgraded the User Productivity Kit (an Oracle software tool that provides end-user help/training in a variety of formats from within PeopleSoft) to version 5.1. The software was then used to provide over 125 (and still growing) training scenarios.

- **Grants Reporting –**
  Grants and Contracts staffs at Minot State University, North Dakota State University, and University of North Dakota have been requesting additional reporting tools for a number of years. This year CTS provided four major reports: 1) Awards Received, 2) Award/Project Summary, 3) Detailed Transaction, and 4) Sponsored Program Asset Transaction Detail.

- **Mobile Applications –**
  As Oracle separated the Campus Solutions and Human Resource Management (HRM) products, HighPoint Mobile also separated their overlaying application accordingly. CTS took advantage of this change to conduct both an upgrade of HighPoint Mobile and a separation of the NDUS implementation. The Campus Solutions HighPoint instance remains hosted in Grand Forks whereas the HRM HighPoint instance is now hosted at the State's Information Technology Department (ITD) in Bismarck. This will allow the teams to make changes independently, without having to coordinate schedules. With the upgrade, end-users will see a much more user-friendly interface. *(The upgrade/split goes live July 21, 2015)*

- **CTS Administration Reorganization –**
  - Reorganized the accounting functions between that CTS performs and those that UND performs in partnership with us.
  - Improved the procurement process.
    - CTS has been reworking its purchasing and procurement practices. We are in the process of uploading all open contract documents into inside.NDUS. This should improve the monitoring and management of all contracts and give others in NDUS access to that information..
    - Established improved communications between accounting and procurement.
    - Have clearly delineated delegation authority for both procurement and purchasing (signature authority).
    - The NDUS legal team approved the revised contract template submitted by CTS and this template has been used successfully with vendors several times. This has cut contract turnaround time significantly. One contract was initiated, reviewed by the vendor and NDUS legal, and was signed in approximately one week.

- **iDashboards –**
  iDashboards, a dashboarding software purchased by UND has been in use since May, 2013. In collaboration with UND's Institutional Research, NDUS System Office has created and expanded the use of the software for internal and State Board of Higher Education use. Several dashboards have been published for the consumption of the general public including dashboards directly related to the strategic goals of NDUS.

- **Office365 Student Tenant Consolidation –**
  This project consists of taking seven campuses who currently had/have their students in a different Office365 tenant from their faculty/staff and migrate them to the NDUS tenant. This puts them in the same tenant as the faculty/staff; opening up additional collaboration features. Dakota College at Bottineau was the first pilot institution. They migrated to the NDUS tenant in November 2014.

  Bismarck State College was the 2nd pilot and they migrated at the end of January 2015. Lake Region State College, Williston State College, Dickinson State University, and the North

Dakota State College of Science all completed their migrations on schedule by early April. The University of North Dakota was originally scheduled to migrate in June; however, have chosen to push their move to October 2015.

- **Microsoft Symposium –**
  - The Annual Microsoft Symposium was held on April 15 and 16, 2015. This symposium includes participation of Microsoft specialists, NDUS, State Government, and K-12 information technology staffs. The symposium is where Microsoft brings in specialists to present on topics of interest we requested and shares a "roadmap" to help us plan for future system upgrades/implementations. *(Completed April 2015)*

- **ODIN Library System –**
  During this past year, ODIN staff not only performed a major upgrade of the Aleph 500 library software from Version 20 to Version 22 but also added functionality and updated training materials including:
  - Automated the process to build library system client software for ODIN libraries.
  - Enhanced and added functionality to ODIN's database authentication application. All libraries in North Dakota use this system to manage access to licensed electronic library materials.
  - Conducted training throughout the ODIN libraries, including 43 individual site visits, and over fifty WebEx, Lync and Skype sessions.
  - Created or significantly updated/modified 53 training materials.
  - Upgraded ODIN's web site used to provide public access to library materials, to provide library training materials and support to library staff functions.

- **North Dakota Internet2 K20 Liaison –**
  In addition to representing higher education and North Dakota K-12 by serving Research and Education (R&E) network organizations in various capacities, below are a few highlighted activities/initiatives undertaken during this past year:
  - Attended the North Dakota R&E Stakeholders meeting that included representatives from the North Dakota University System, and representatives from each of the public universities, technical colleges, Tribal Colleges, K-12 education technology services and the state Information Technology Department. Highlighted was an R&E use case featuring the Earth Resources Observation and Science/United States Geological Survey (EROS/USGS) Center in Sioux Falls, SD. *(Completed February 2015)*
  - Supported outreach and collaboration across the NDUS institutions and North Dakota Tribal Colleges:
    - Representation in the North Dakota EPSCoR strategic planning meeting. *(October 2014)*
    - Represented IT in serving on research resources and data-privacy working groups.
    - Developed and facilitated the first annual Researcher's Coffee. The purpose is to bring researchers together for discussion and visioning related to services provided by campus level departments and focused on identifying current and future needs of research.
  - Developed and implemented K-12 outreach activities including collaborations in teaching, learning and research across the K-12 and higher education communities. This includes a variety of curriculum-based projects that utilize the Northern Tier Network (NTN) to support access to videoconferencing, remote instrumentation and data repositories as tools for planning and collaboration. Other outreach activities included:
    - The Dakota's K-12 STEM initiative.
    - Internet2 K20 Initiative's "Human and Civil Rights". The Presidential Primary Sources Project now in its third year, this project is a collaborative program sponsored by the U.S. Presidential Libraries and Museums, National Park Service, the Internet2 K-20 Initiative, the Library of Congress and related primary source stakeholders.

- North Dakota Teacher Resource Coalition (NDTRC) Annual Summer Workshop with a focus on Humanities and Digital Content.
- Continued work with ND EduTech who facilitates and supports curriculum-based content programs and international classroom collaborative projects involving resources available through global R&E networks.

- **UND Intranet –**
  CTS, through a Memorandum of Understanding, provides IT support to the University of North Dakota (UND) and one of the initiatives at UND is implementation of an Intranet. A project plan for the implementation and adoption of a UND Intranet is currently being developed. The purpose of this project is to implement Microsoft's SharePoint for all faculty and staff. The UND Intranet will allow for easy data entry, distributes content in a collaborative fashion, and provides a centralized platform for integration with existing systems/applications/tools.

- **Starfish –**
  Starfish is the student intervention tool and was implemented at the University of North Dakota. Multiple departments use the software including UND's One Stop Shop, Counseling Center, and other academic departments. UND expanded the functionality to provide support during orientation to incoming freshman and transfer students. The software was also integrated with Predictive Analytics Reporting (PAR) extracts to identify students who drop 3 and 6 credit hours at the beginning of a semester in order to provide intervention.

- **Listserv System –**
  The NDUS Listserv system, previously administered by North Dakota State University, was brought under CTS management in 2013. Over the years, the number of listserv lists has grown. In order to maintain the system efficiently, a cleanup effort of the listservs is underway. Currently over 4500 listservs exist in the system. Some of the listserv owners are no longer associated with the listserv list and/or the listservs are no longer in use. The initial cleanup will allow for creation of an auditing procedure that CTS can follow each year in order to keep the system manageable. CTS has contacted all institutions and ITD regarding their listservs.

- **LiquidFiles –**
  CTS is piloting LiquidFiles, a secure file transfer system. There is a need for a secure file transfer system capable of transferring large files that are encrypted, supports two factor authentication, integrates with existing directory services and environment, and is scalable. LiquidFiles has these capabilities and file size is limitless (although controlled by administrative settings).

- **SAIP Implementation with Minot's Blackboard –**
  Discussions are underway to implement Oracle's PeopleSoft Enterprise Student Administration Integration Package (SAIP) with Minot State University's Blackboard system. This allows for a more efficient means of transferring data between the two systems.

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