Foreword

Transforming Government, Education, Healthcare, and Communities, the Nebraska Information Technology Commission’s annual statewide technology plan, focuses on six strategic initiatives which promote the effective use of technology both within the State of Nebraska’s operations and throughout the state.

Two strategic initiatives—State Government IT Strategy and Nebraska Spatial Data Infrastructure (NESDI)—address the need to take an enterprise approach to IT in order to achieve the State’s IT priorities of security, availability, and consolidation.

The statewide technology plan also addresses the use of technology in education, economic development, and health care. Access to technology and broadband service is becoming increasingly critical for students, businesses, and health care. Four strategic initiatives—Network Nebraska, Digital Education, Rural Broadband and Community IT Development, and eHealth—promote the effective use of technology, while also highlighting the need to address the divide between those with access to technology and the skills to effectively use it and those without.

I would like to thank the NITC Commissioners, members of the NITC’s advisory groups, and the NITC staff for their contributions to the statewide technology plan.

Ed Toner
Chief Information Officer
Chair, Nebraska Information Technology Commission
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NITC
Commissioners & Staff

Commissioners

Ed Toner, Chair, Chief Information Officer, Office of the CIO, State of Nebraska

Senator Bruce Bostelman, Nebraska Legislature, Ex-officio member

LaShonna Dorsey, Senior IT Consultant, Mutual of Omaha

Shane Greckel, Owner/Operator, Greckel Farms LLC

Dr. Terry Haack, Superintendent, Bennington Public Schools

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Lori Lopez Urdiales, Administrative Assistant
Executive Summary

The Nebraska Information Technology Commission (NITC) was established by the Legislature in 1998 to provide advice, strategic direction, and accountability on information technology investments in the state. The NITC is chaired by Ed Toner, Chief Information Officer for the State of Nebraska. Commissioners are appointed by the Governor and represent elementary and secondary education, postsecondary education, communities, the Governor, and the general public. Much of the NITC’s work is conducted through its advisory groups: the Technical Panel, the Community Council, the Education Council, the State Government Council, the eHealth Council, and the GIS Council.

The vision of the NITC is to improve the quality of life of all Nebraskans by promoting the use of information technology in education, health care, economic development and all levels of government. To achieve this vision, the NITC has identified five goals:

- Support the development of a robust statewide telecommunications infrastructure that is scalable, reliable, and efficient;
- Support the use of information technology to enhance community and economic development;
- Promote the use of information technology to improve the efficiency and delivery of governmental and educational services, including homeland security;
- Ensure the security of the State’s data and network resources and the continuity of business operations;
- Promote effective planning, management and accountability regarding the state’s investments in information technology.

In accordance with the Legislature’s directive (Neb. Rev. Stat. § 86-516) to “annually update a statewide technology plan,” the NITC, with input from its advisory groups and other stakeholders, has identified six areas on which to focus. These initiatives are projects that are of strategic importance to the state and require an enterprise approach, involvement by the NITC, and/or cooperation of multiple entities for their success. The strategic initiatives and the action items which support them are the core of the statewide technology plan. The NITC’s current strategic initiatives are:

- State Government IT Strategy
- Nebraska Spatial Data Infrastructure (NESDI)
- Network Nebraska
- Digital Education
- Rural Broadband and Community IT Development
- eHealth
NITC Overview

The Office of the Chief Information Officer provides support for the NITC, its Councils, the Technical Panel, and ad hoc groups.

Mission

The mission of the Nebraska Information Technology Commission is to make the State of Nebraska’s information technology infrastructure more accessible and responsive to the needs of its citizens, regardless of location, while making investments in government, education, health care and other services more efficient and cost effective.

Vision, Goals

The vision of the NITC is to improve the quality of life of all Nebraskans by promoting the use of information technology in education, health care, economic development and all levels of government. To achieve this vision, the NITC has identified five goals:

• Support the development of a robust statewide telecommunications infrastructure that is scalable, reliable, and efficient;
• Support the use of information technology to enhance community and economic development;
• Promote the use of information technology to improve the efficiency and delivery of governmental and educational services, including homeland security;
• Ensure the security of the State’s data and network resources and the continuity of business operations.
• Promote effective planning, management and accountability regarding the state’s investments in information technology.

Core Values

• We strive to know our customers and stakeholders and understand their needs.
• We inspire cost-effective solutions.
• We encourage collaboration for the sharing of resources.
• We encourage public participation in the technology development process.
Advisory Groups

Much of the NITC’s work is conducted through its advisory groups:

- The **Technical Panel** provides analysis and recommendations to the NITC on technical issues.

- The **Community Council** is composed of representatives from business and economic development, work force development, public libraries and local government. It was formed to identify, prioritize, and coordinate user needs with respect to community information technology.

- The **Education Council** is a 16-member advisory committee composed of representatives from K-12 and postsecondary education. It identifies, prioritizes, and coordinates user needs with respect to educational information technology.

- The **State Government Council** is a 23-member advisory committee composed of agency directors, state IT professionals, and a representative of the private sector. It provides direction and oversight for the development of vision, goals, and policy related to the use of information technology in state government.

- The **eHealth Council** is composed of representatives from public health, consumers, state and federal government, employers, eHealth initiative groups, health care providers, and other resource providers. It was formed to identify, prioritize, and coordinate issues within the realm of healthcare and technology.

- The **GIS Council** is composed of representatives from federal, state, local government, education and private individual and associations. They coordinate statewide GIS initiatives.

Strategic Initiatives

In order to advance its vision and goals, the NITC, with input from its advisory groups and other stakeholders, has identified six key initiatives which promote the effective use of technology within the State of Nebraska, as well as education, economic development, local government, and health care. By emphasizing selected strategic initiatives, the NITC hopes to encourage funding of these initiatives and to encourage state agencies to work together to advance these initiatives.

The first two strategic initiatives—State Government IT Strategy and Nebraska Spatial Data Infrastructure (NESDI)—address the need to take an enterprise approach to IT in order to achieve the State’s IT priorities of security, availability, and consolidation.

The last four strategic initiatives address the use of technology in education, economic development, and health care. Access to technology and broadband service is becoming increasingly critical for students, businesses, and health care. Four strategic initiatives—Network Nebraska, Digital Education, Rural Broadband and Community IT Development, and eHealth—promote the effective use of technology while also highlighting the need to address the divide between those with access to technology and the skills to effectively use it and those without.
A brief description of each strategic initiative follows:

State Government IT Strategy. The objective of this initiative is to develop and implement a comprehensive strategy for the use of information technology by Nebraska state government. The strategy will utilize a hybrid centralization model combining elements of both the centralized and decentralized IT management models. Enterprise technologies will be centralized, and agency-specific activities will remain with the agencies.

Nebraska Spatial Data Infrastructure (NESDI). The objective of this initiative is to develop and foster an environment and infrastructure that optimizes the efficient use of geospatial technology, data, and services to address a wide variety of business and governmental challenges within the state. Geospatial technologies and data will be delivered in a way that supports policy and decision making at all levels of government to enhance the economy, safety, environment and quality of life for Nebraskans.

Network Nebraska. In order to develop a broadband, scalable telecommunications infrastructure that optimizes the quality of service to every public entity in the state of Nebraska, the Office of the CIO and the University of Nebraska engaged in a collaborative partnership that used existing and new resources to aggregate disparate networks into a multipurpose core backbone extending from Omaha, Lincoln, Grand Island to Scottsbluff.

Benefits of Network Nebraska include lower network costs, greater efficiency, interoperability of systems providing video courses and conferencing, increased collaboration among educational entities, new educational opportunities, more affordable Internet access, and better use of public investments. All of the Nebraska public school districts (244), Educational Service Units (17) and all public higher education entities (13) participate in Network Nebraska, benefitting from one of the lowest commodity Internet rates in the entire country. Network Nebraska’s low commodity Internet rates are made possible through aggregation of demand and statewide bidding. Network Nebraska’s new action item focus will be on better performance metrics and more effective communication to participants and stakeholders.

Digital Education. The primary objective of the Digital Education Initiative is to promote the effective and efficient integration of technology into the instructional, learning, and administrative processes and to utilize technology to deliver enhanced digital educational opportunities to students at all levels throughout Nebraska on an equitable and affordable basis. This initiative will involve the coordination and promotion of several major systems and applications that have either been developed mostly at the local level or have not been replicated statewide. Action items will focus on the technical challenges for students in the transition from secondary to post-secondary education, and addressing the need for equitable broadband access for students and their families to access digital education resources.

Rural Broadband and Community IT Development. Broadband availability, widespread adoption of broadband technologies, and a skilled IT workforce have become requirements for communities wishing to grow their economies. This initiative is being refocused to address the need for better broadband availability in unserved and underserved rural areas of the state. As gigabit broadband has become available in an increasing number of communities in Nebraska and in the United States, the gap in service availability has grown between areas with access to very high speed broadband and those areas without access to Internet at speeds of 25 Mbps down/3 Mbps up which is the FCC’s current definition of broadband.

eHealth. Electronic health information exchange (HIE) allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient’s vital medical information electronically—improving the speed, quality, safety and cost of patient care. This initiative supports the adoption of health information exchange technologies in Nebraska and the use of health IT to help patients access their health information and better manage their care. Health information exchange in Nebraska is primarily conducted through the Nebraska Health Information Initiative (NeHII), which is one of the largest statewide health information exchanges in the country with over 6,000 HIE users and 7,000 Prescription Drug Monitoring Program users. NEHII includes data on millions of individuals.
State Government
IT Strategy

Overview

**Objective:**
To develop and implement a strategy for the use of information technology by Nebraska state government.

**Description:**
Develop and implement a comprehensive strategy for use of information technology by Nebraska state government. The strategy will utilize a hybrid centralization model combining elements of both the centralized and decentralized IT management models. Enterprise technologies will be centralized with agency-specific activities remaining with the agencies.

**Top Priorities:**
- Security
- Consolidation
- Availability

**Strengths/Assets:**
- Leadership support
- Use of a hybrid centralization model allows the OCIO to handle enterprise technologies while agencies maintain authority over agency specific activities and functions.

**Challenges/Issues:**
In order for the hybrid structure to work, there has to be strong cooperative and collaborative management between OCIO and agency IT management.

**Collaborators:**
- OCIO, State Government Council, Technical Panel, and State Agencies

**Recent Accomplishments:**
- A single Help Desk solution has been implemented for multiple agencies.
- Enhanced server virtualization and optimization.
- Established a Risk Mitigation and Compliance team within the Office of the CIO.
Metrics

Physical Servers in the OCIO Data Center by Cabinet Agencies

Action Items

1. **Action: Same Sign-on**
   - Lead: OCIO
   - Participating Entities: OCIO; State Agencies
   - Timeframe: April 2021
   - Funding: None
   - Targets/Deliverables:
     1.1 Implement same sign-on for certain enterprise applications.

2. **Action: IT Cost Efficiencies**
   - Lead: OCIO
   - Participating Entities: OCIO; State Agencies
   - Timeframe: June 2021
   - Funding: None
   - Targets/Deliverables:
     2.1 Implement a configuration management database (CMDB) and full asset management processes.
3. **Action: Operationalize IT and Project Governance**
   Lead: OCIO
   Participating Entities: OCIO; DHHS
   Timeframe: December 2020
   Funding: None
   Targets/Deliverables:
   3.1 Enhance enterprise project governance at DHHS.

4. **Action: Consolidate on STN Domain**
   Lead: OCIO
   Participating Entities: OCIO; State Agencies
   Timeframe: June 2021
   Funding: None
   Targets/Deliverables:
   4.1 Implement phased migration.

5. **Action: Data Center Consolidation**
   Lead: OCIO
   Participating Entities: OCIO; State Agencies
   Timeframe: December 2020
   Funding: None
   Targets/Deliverables:
   5.1 Implement phased migration.

6. **Action: Network Migration (New World)**
   Lead: OCIO
   Participating Entities: OCIO; State Agencies
   Timeframe: June 2021
   Funding: None
   Targets/Deliverables:
   6.1 Implement phased migration.

7. **Action: Application Process Maturation (DevOps)**
   Lead: OCIO
   Participating Entities: OCIO; State Agencies
Timeframe: June 2021  
Funding: None  
Targets/Deliverables:  
7.1 Identify a single software configuration management tool.  
7.2 Create a DevOps team.  
7.3 Consolidate DBA team.  
7.4 Identify .NET and Java programmers.  
7.5 Develop process and procedures.

8. Action: Staff Onboarding, Offboarding, and Transitioning  
Lead: OCIO  
Participating Entities: OCIO; State Agencies  
Timeframe: September 2020  
Funding: None  
Targets/Deliverables:  
8.1 Implement phased migration.  
8.2 Create a job scheduling team.

9. Action: Application Portfolio Management  
Lead: OCIO  
Participating Entities: OCIO; State Agencies  
Timeframe: June 2021  
Funding: None  
Targets/Deliverables:  
9.1 Complete application inventories by agency.  
9.2 Complete critical application assessment.  
9.3 Complete application health check.  
9.4 Complete application remediation.

10. Action: Enterprise Content Management  
Lead: OCIO  
Participating Entities: OCIO; State Agencies  
Timeframe: June 2021  
Funding: None  
Targets/Deliverables:  
10.1 Complete infrastructure review and modernization.  
10.2 Complete application review and modernization.
GIS and the COVID 2019 Pandemic

The state Geographic Information Office (GIO) team located in the Office of the Chief Information Officer (OCIO), along with other OCIO staff assisted and collaborated with staff from the Department of Health and Human Services.

This dashboard has over 3 million views. The purpose of the site is to inform the public regarding the COVID 19 pandemic. There has been multiple upgrades to the dashboard to show additional data to help keep the public informed about the pandemic.

The GIO team also created a site within NebraskaMap to show all the different dashboards that were created by county and local health districts, along with dashboards from University of Nebraska Medical Center (UNMC) and John Hopkins University.
Nebraska Spatial Data Infrastructure (NESDI)

Overview

Objectives:

- To develop and foster an environment and infrastructure that optimizes the efficient use of geospatial technology, data, and services to address a wide variety of business and governmental challenges within the state. Geospatial technologies and data will be delivered in a way that supports policy and decision making at all levels of government to enhance the economy, safety, environment and quality of life for Nebraskans.

- Facilitate the creation, maintenance, analysis and publishing of quality and authoritative data and information systems. Priority layers include: imagery, elevation, street centerlines, point addressing, and land records.

- Formalize data stewardship and encourage data sharing and provide widespread access to data and services through NebraskaMAP.gov.

- Facilitate technical assistance and education outreach opportunities for furthering the adoption of the NESDI and geospatial applications.

- Achieve sustainable and efficient allocation of resources to support the implementation and wise governance of GIS services and geospatial data.

Collaborators:

- The State of Nebraska
- Local and County Government
- League of Municipalities
- Nebraska Association of County Officials
- Nebraska GIS LIS Association
- Natural Resources Districts
- Public Power Districts
- Federal Agencies
- Private Industry
- K-12, College, and University of Nebraska

Strengths/Assets:

- The GIS Council, established by Neb. Rev. Stat. § 86-572(2), provides an existing governance structure, representing a broad range of stakeholder interests.

- Standards which are foundational to the NESDI are in place and being reviewed as needed

- Existing State GIS Coordinator and three GIS staff member in CIO GIS Shared Services Office.

- Several strong state agency and local county-based GIS programs.
• Several NESDI data layers and applications exist with coverage in priority areas or statewide.
• Strategic Plan completed in 2012 with stakeholder input from across the state. It serves as roadmap to setting statewide priorities and was used to develop the NESDI strategic initiative and action items.
• Nebraska Enterprise Geographic Information Systems (NEGIS) Infrastructure. This is an enterprise platform for both hardware and data (vector and raster formats).
• NebraskaMap is the state geospatial clearinghouse

Challenges/Issues:
• Insufficient legislative or executive sponsor to support GIS Council efforts.
• Resources are inadequate to develop and maintain all framework layers.
• Funding to make NEGIS sustainable
• Getting agencies to utilize GIS or utilize it more effectively.
• Outreach and training needs of GIS and geospatial data use and applications are broad given the level of different users.
• Lack of understanding of standards and no authoritative enforcement to data stewards not following standards. Local counties do not see NITC standards as a requirement but a guideline.
• Datum change for 2022 and its implications and educating the effects of the datum change on GIS users

Recent Accomplishments:
• Standards updated for, imagery, street centerlines and addresses.
• Lidar collections (Quality Level (QL) 2 and QL3) for entire state. Parts of the state are being recollected to update QL3 areas to QL2
• Established NEGIS, an enterprise data and hardware infrastructure for state agencies. This allows for the data stewards to provide authoritative data to others.
• Added a Precision Agriculture Industry representative to the GIS Council

Recommendations:
• Continue this initiative. Current GIS Council goals are in line with strategic initiative and objectives.

Metrics
The metrics below are used to evaluate the State’s status of the NESDI and overall GIS program.

Status of Nebraska Based on NSGIC Coordination Criteria
The National States Geographic Information Council (NSGIC) has published a listing of “9 Criteria for a Successful Statewide GIS Program.” While these are not firm, binary criteria, they provide a measure by which different states can be compared. In general, the most successful states tend to have these things in common.
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<th>Criterion</th>
<th>Status</th>
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<td>1. A full-time, paid coordinator position is designated and has the authority to implement the state’s business and strategic plans:</td>
<td><strong>Partially meets criterion.</strong> NITC has a full-time State GIS Coordinator. Authority to implement Business and Strategic Plans will come through NITC and Office of the CIO. Limited funds are available to carry out specific action items.</td>
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<tr>
<td>2. A clearly defined authority exists for statewide coordination of geospatial information technologies and data production:</td>
<td><strong>Partially meets criterion.</strong> NITC GIS Council provides governance to statewide coordination efforts along with the Office of the CIO based on statutory authority for state entities. Rely on partnerships from local involvement.</td>
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<td>3. The statewide coordination office has a formal relationship with the state's Chief Information Officer (CIO):</td>
<td><strong>Meets criterion.</strong> The State GIS Coordinator is positioned in the Office of the CIO.</td>
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<td>4. A champion (executive and other legislative champions) is aware and involved in the process of geospatial coordination:</td>
<td><strong>Meets criterion.</strong> There is a strong, active executive champions (CIO) currently involved in the process. Other Executive Agencies are aware of GIS within their agency. There is no legislative champion identified at the present time because there isn’t a current need for legislation regarding geospatial activities. This could change in the near future</td>
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<td>5. Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned:</td>
<td><strong>Meets criterion.</strong> A complete Nebraska Spatial Data Infrastructure (NESDI) has been developed. The NebraskaMAP state clearinghouse exists, and has been upgraded to utilize current technologies.</td>
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<td>6. The ability exists to work and coordinate with local governments, academia, and the private sector:</td>
<td><strong>Partially meets criterion.</strong> These entities are represented on the NITC GIS Council. There is some evidence of local government involvement with state functions, but overall GIS adoption across the state remains low.</td>
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<td>7. Sustainable funding sources exist to meet project needs:</td>
<td><strong>Partially meets criterion.</strong> There is funding for the State GIS Coordinator and various resources for projects through other agencies. However, long-term, sustainable funding and allocation of resources is still needed. Have developed cost rates to work toward a sustainability model</td>
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<td>8. GIS Coordinator has the authority to enter into contracts and become capable of receiving and expending funds:</td>
<td><strong>Meets criterion.</strong> The State GIS Coordinator in the Office of the CIO can enter into contracts.</td>
</tr>
<tr>
<td>9. The Federal Government works through the statewide coordinating authority:</td>
<td><strong>Partially meets criterion.</strong> The Federal Government recognizes the Nebraska GIS Council and their efforts and has worked with the state (e.g. via NAIP, 3D Nation, LiDAR, FEMA, NebraskaMAP)</td>
</tr>
</tbody>
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Action Items

1. **Action: Formalize the definition of the Nebraska Spatial Data Infrastructure (NESDI) and data stewardship**

   GIS assists in solving complex issues by providing the ability to understand spatial relationships among various spatial data sets. In many cases, the spatial analysis capabilities of a GIS can identify trends from among many datasets to solve problems. Selected datasets have such widespread utility in a GIS that they have been identified as “Framework Datasets” and due to their significance are accorded special attention by the GIS community. Traditionally, these data sets have been developed independently for a relatively narrow range of purposes. However, the use of geospatial data and the range of applications it is used for is growing rapidly. This places increasing demands on individual data in terms of accuracy and completeness, and especially upon those inherent spatial relationships among datasets.

   This action item will begin to better define the NESDI and identify the necessary relationships among the various NESDI data layers. The document will provide an illustration of the “big picture” of Nebraska’s framework including:
   - A common understanding of framework
   - A context for prioritizing the components of the framework
   - A context and justification for future funding requests
   - A basis for identification of potential stewards and stewardship roles and responsibilities

   The context of the framework themes will be explored at the local, state, regional and national levels. This will benefit the overall coordination, development, revision and promulgation of the relationships among various GIS framework data standards. It will aid in development, implementation and revision of stewardship guidance and procedures for the various GIS framework themes. In addition, it will provide additional direction on NESDI governance, management practices, policy development, and outreach with the statewide community.

   **Lead:** State GIS Coordinator, GIS Council Representatives
   **Participating Entities:** GIS Council, NESDI Data Stewards
   **Timeframe:** Ongoing
   **Funding:** No initial funding required for this action item other than personnel time to meet, develop and communicate plans.
   **Target/Deliverables:**
   1. Develop a document that defines the NESDI and the role of data stewardship to support the NESDI.

2. **Action: Geodetic and Survey Control Inventory and Assessment**

   Spatial data deployed in an enterprise environment generally has higher requirements for accuracy and quality than does a single-purpose dataset. Geodetic and survey control is essential for the development of spatial data that can be analyzed in combination with other layers.

   A careful examination of our current survey and geodetic control data across the state based will be conducted on various criteria for its use in the development of NESDI framework layers. This action item will identify methods and linkages through NebraskaMAP.
to communicate and provide access to relevant data to users and stakeholders.

In 2022 there will be a new datum model to represent the shape of the earth. The GIS Council has been briefed by the Nebraska State Surveyor on the implications of the new 2022 datum.

Lead: State GIS Coordinator, GIS Council Representatives

Participating Entities: Nebraska Department of Natural Resources, Nebraska Department of Transportation, State Surveyors Office, various Licensed Land Surveyors, Federal Partners including NOAA – National Geodetic Survey and Army Corp of Engineers

Timeframe: 2020-22

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans.

Target/Deliverables:

1. Prepare and Educate agencies and partners about the 2022 datum changes and its implications

2. **Action: Nebraska Statewide Elevation Program**

Surface elevation databases are critically important for a wide range of GIS applications and as such have been determined to be a priority database for development by the GIS Council. Elevation databases have been determined by the Federal Geographic Data Committee (FGDC) to be a Framework Database because of their use by a wide cross-section of geospatial data users. LiDAR (Light Detection and Ranging) is a proven remote sensing technology that enables the efficient collection of highly accurate surface elevation data for large geographic areas. This dataset serves as a basis for other derived geospatial data products in its relationship to the overall NESDI. More importantly, this data set strengthens the geodetic control context for the development of other framework layers.

Pursuant to the objectives outlined in the Strategic Plan, the GIS Council is responsible for identifying and coordinating the use of digital elevation LiDAR technologies to develop enhanced surface elevation data for Nebraska. This involves:

a) An assessment of the current status and perceived adequacy of existing Nebraska surface elevation data, relative to the perceived short and intermediate-term needs;

b) An exploration and documentation of the likely costs and benefits of utilizing LiDAR technology to collect enhanced surface elevation data for large geographic areas of Nebraska;

c) Recommendations related to possible future Nebraska LiDAR initiatives including technical standards, possible lead agencies, funding strategies, and timelines; and

d) Identification of methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Elevation Working Group

Participating Entities: Nebraska Department of Natural Resources, Nebraska Department of Roads, Nebraska Natural Resource Districts, Public Power Entities, Federal Partners including Army Corp of Engineers, USGS, USDA-NRCS, and USDA-FSA.

Timeframe: Data Collection is Ongoing

Funding: Future funds are required for meeting objectives outlined in the business plan, such as cost sharing for state specific deliverables.

Target/Deliverables:

1. Implement a LiDAR Collection web map application

2. Share final version of the 3D Nation report with partners
4. **Action: Nebraska Statewide Imagery Program**

Imagery is a required spatial data framework layer needed for a multitude of mapping applications. It is important that imagery is accurate, current, and easily accessible to end users. This dataset serves as a basis for other derived geospatial data products in its relationship to the overall Nebraska Spatial Data Infrastructure (NESDI). The acquisition of updated, orthorectified (corrected for camera tilt and the slope of the earth’s surface) imagery requires a significant public investment, but if done collaboratively, on a regular periodic basis, these costs can be minimized and shared across a broad user community. It is expected that this effort will be largely integrated into the larger Nebraska GIS Strategic Planning process. Efforts will be made to learn from, and build on, existing collaborative imagery acquisition efforts such as the Nebraska-Iowa Regional Orthoimagery Consortium (NIROC) and the USDA Farm Services Agency – National Aerial Imagery Program (NAIP). This initiative will:

- Research and develop recommendations for standards, policies, infrastructure, and funding to support collaborative efforts by state, local and federal agencies to periodically acquire updated orthoimagery.
- Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.
- Research new cost models (subscription based) from various vendors in order to maximize the state’s investment.

**Lead:** State GIS Coordinator, GIS Council Imagery Working Group

**Participating Entities:** Nebraska Department of Natural Resources, Nebraska Department of Roads, Nebraska Natural Resource Districts, Public Power Entities, City and County Governments, Federal Partners including USGS and USDA-FSA.

**Timeframe:** Ongoing

**Funding:** Future funds are required for meeting objectives outlined in the business plan and to look at alternatives because of the uncertainties beyond 2020 with the current NAIP program

**Target/Deliverables:**

2. Identify partners and possible funding, should the NAIP program significantly change after 2020.

5. **Action: Street Centerline-Address Database**

This action item will:

- Develop and maintain a statewide seamless street centerline and address referencing system used for various transportation, public safety (ie, NexGEN 911), economic development and other related applications.
- Initiate assessment of current street centerline data.
- Implement a data model and workflow guidelines for QA/QC of existing and future maintenance of street centerline data.
- Develop data model for address points and use of data in relationship to street centerlines and other NESDI framework layers.
• Further develop partnership efforts that support NexGEN 911 or combinations thereof who needs to be involved in the process of using street centerline and address point data.

• Research and develop recommendations for standards, policies, infrastructure, and funding to support collaborative efforts by state, local and federal agencies to periodically acquire updated a seamless street centerline-address database.

• Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Street Centerline and Address Working Group
Participating Entities: GIS Council, State Government Council, Nebraska Department of Transportation, Public Service Commission, and the E 9-1-1 community
Timeframe: Ongoing
Funding: To be determined
Target/Deliverables:
1. Collect and develop a statewide Nebraska Street Centerline Database (NSCD) and a Nebraska Address Database (NAD) datasets.
2. Implement a Nebraska Street Centerline Database (NSCD) and a Nebraska Address Database (NAD) datasets into NebraskaMap in support of NG-911

6. Action: Statewide Land Record Information System

This action item will:
• Develop an integrated statewide land records system capable of providing reliable online access to this critical data, maintaining restricted privacy access as necessary, and supporting a variety of applications by multiple agencies.

• Develop guidelines for a common geodatabase model that can provide public data for use in a multitude of state government applications.

• Implement a geodatabase model to maintain baseline data.

• Work with local governments, state agencies, and the private sector to develop a collaborative plan, standards/guidelines, and the infrastructure necessary to encourage and facilitate the ongoing integration of separately-maintained state, city, and county land records.

• Develop data workflows with local county assessors to obtain parcel (spatial and attribute) data for use in various state government applications.

• Revise the current NITC Land Record Information and Mapping Standards that have been adopted with the goal of enabling the integration of local government land records into a statewide dataset.

• Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Land Records Working Group
Participating Entities: GIS Council, State Surveyors Office, Department of Revenue, County Assessors, and various licensed Land Surveyors
Timeframe: Implementation timeline determined by Business Plan
Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.
Target/Deliverables:

1. Review the current NITC 3-202 Land Record and Information Mapping Standards for standard land record product(s) that will meet the majority of stakeholder requirements and expectations in a cost-effective manner.

2. Work with department of Revenue to develop yearly Statewide Parcel Geodatabase Development and Maintenance Plan.

7. **Action: NebraskaMAP - A Geospatial Data Sharing and Web Services Network**

   This initiative will:
   - Enhance NebraskaMAP beyond its current geoportal status to an enterprise-level geospatial platform.
   - Provide necessary communication and mechanisms for public and private access to peer-reviewed Nebraska SDI data, maps, and GIS web services.

   NebraskaMAP started as a metadata portal to inventory and provide linkages to several data sets. Enhancements will involve expanding services to upload, review and share NESDI data either through direct download, REST services, or accessing through web services. This system would also provide conduit to authoritative data sets, linked and shared base maps to reduce data storage costs, and a coordinated security system, including the possibility for limited data access and password protection for specific data sets. The State agencies are developing a statewide GIS Enterprise system in order to conduct daily business operations. This systems will also coincide with the interoperability, data sharing, and workflows planned for NebraskaMAP.

   **Lead:** State GIS Coordinator, GIS Council NebraskaMAP Working Group

   **Participating Entities:** GIS Council, State Agencies, State Government Council

   **Timeframe:** Ongoing

   **Funding:** No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

   **Target/Deliverables:**

1. Continue to build current NebraskaMAP into a more robust statewide data clearinghouse enterprise platform.
Network Nebraska Aims to Increase Bandwidth and Lower Costs

Network Nebraska began as a statewide network in 2007 with 88 educational entities and has grown to 293 participants in 2020. Over the course of its history, the State Purchasing Bureau has conducted over 20 RFPs for internet and fiber Ethernet circuits, with the objective to “aggregate demand and reduce costs whenever feasible” (N.R.S. 86-5,100). By synchronizing the service term and expirations of state contracts, it means that a “mega-RFP” occurs every four years. This year, 2020, was one of those years, with over 250 fiber circuits out for bid.

Fourteen middle-mile companies responded to State RFP 6206, and 10 of the 14 companies were awarded service contracts. The historic trend lines of Dollars per Megabit ($ per Mbps) are presented below with a sampling of historical cost data from school districts within Educational Service Units 01 (Wakefield), 02 (Fremont), 08 (Neligh), 09 (Hastings), 10 (Kearney), 11 (Holdrege), and 17 (Ainsworth).

In general, when two or more companies compete for a circuit, the cost decreases dramatically. If more than one company is required (last mile + middle mile carrier) to connect the school district to Network Nebraska, then the cost is generally higher. As the level of bandwidth increases, the cost per Mbps generally decreases.

As the number of computing devices increases, and as more and more content is digitized and moved to the cloud, the amount of bandwidth needed per student increases. Below is a chart of the historic trend lines related to Kbps per student across the same seven ESUs, showing a doubling or tripling every four years.

More detailed Network Nebraska circuit data from 2019-20 is available at this NebraskaMap.
Network Nebraska

Overview

Objective:
To develop a broadband, scalable telecommunications infrastructure that optimizes the quality of service to every public entity in the State of Nebraska.

Description:
Network Nebraska interconnects several hundred education entities to a multipurpose core backbone extending from Omaha to Lincoln to Grand Island and Scottsbluff, and provides aggregated Internet and commercial peering services extending out to the furthest corners of the state.

Collaborators:
• Collaborative Aggregation Partnership: Office of the CIO, University of Nebraska Computing Services Network, Nebraska Educational Telecommunications, Public Service Commission, Nebraska Department of Education, Nebraska Information Technology Commission
• Network Nebraska Advisory Group: 8 K-12 members; 8 higher education members
• Educational Service Unit (ESU) Coordinating Council, ESU-Network Operations Committee, ESU-Distance education Advisory Committee, higher education chief technology officers

Strengths/Assets:
• Almost every K-12 school district, educational service unit, and public college and university participate in Network Nebraska and share in its annual costs.
• Network Nebraska is a completely voluntary, self-funded project, which contributes to its resilience, sustainability and focus on customer service.
• Shared personnel support within the Office of the CIO, Administrative Services, and the University of Nebraska contribute to its ultra-low operational costs and affordability.
• Having all of the K-20 education entities on Network Nebraska provides not only a sense of pride in ownership of the network, but the daily offsets in Internet access peaks between K-12 and higher education also saves on the cost of Internet access.

Challenges/Issues:
• The absence of full-time network employees reduces the capacity for such services as marketing, communications, research & development, and customer follow-up.
• The Network Nebraska cost recovery rates, although small in comparison to other state networks, are still above what small rural public libraries and private K-12 schools are accustomed to paying for Internet service provision alone.

Recent Accomplishments:
• Increased public school district participation to 100%
• Achieved 100% membership among public and tribal colleges and universities
• Provisioned thousands of Zoom videoconferencing licenses to education entities in the midst of the COVID-19 pandemic response
• Achieved one of the lowest commodity Internet rates in the entire country, made possible through aggregation of demand and statewide bidding
• Achieved 100% retention of voluntary membership, now reaching 292 entities

Recommendations:
• Continue this initiative.
• Position Network Nebraska to provide services such as network monitoring and management, mitigation of Distributed Denial of Service (DDoS) attacks, statewide 24/7 helpdesk, aggregated invoicing, and coordinated E-rate filing
Metrics

Network Nebraska-Education Membership by Year

Network Nebraska Internet Access Cost (Average $ per Mbps/month)
Action Items

1. **Action:** Prepare for the future of Network Nebraska as a statewide, multipurpose, high capacity, scalable telecommunications network that shall meet the demand of state agencies, local governments, and educational entities as defined in section 79-1201.01.

   Lead: Education Council
   Participating Entities: Collaborative Aggregation Partnership (CAP); Network Nebraska Advisory Group (NNAG), OCIO/NITC staff
   Timeframe: 2020-22
   Funding: Additional funding and/or resources will be required for this action item out of the Network Nebraska Participation Fee, which is a participant-funded budget.
   Targets/Deliverables:
   1.1 NNAG and CAP will guide Office of the CIO (OCIO) decisions regarding network capacity, services, and reliability.
      1.1.1 **Measurables:** A) NNAG co-chairs will attend monthly CAP meetings and share information. B) CAP liaisons will attend bi-monthly NNAG meetings and share information.
   1.2 Evaluate the effectiveness of the current Network Nebraska fee structures and address changes related to the associated business models as related to core functions and additional services.
      1.2.1 **Measurable:** A) NNAG will convene a retreat and present suggested modifications to the Education Council’s Network Nebraska task group and to the Chief Information Officer

2. **Action:** The Education Council, OCIO/NITC staff, and Network Nebraska support staff will sufficiently and appropriately communicate to, and in support of, current and potential Network Nebraska Participants.

   Lead: Education Council; OCIONITC Staff, Network Nebraska support staff
   Participating Entities: Collaborative Aggregation Partnership (CAP); Network Nebraska Advisory Group (NNAG)
   Timeframe: 2020-22
   Funding: Additional funding and/or resources will be required for this action item out of the Network Nebraska Participation Fee, which is a participant-funded budget.
   Targets/Deliverables:
   2.1 Develop and implement a communications strategy.
      2.1.1 **Measurables:** A) Specific data and reports in an online newsletter or other form of communication to members outside of the annual fee memo. B) Designated representatives send timely notifications of changes in procedures affecting member relations with the Network Nebraska Support Team.
   2.2 Conduct a periodic survey of Participants to guide direction and service development.
      2.2.1 **Measurable:** A) Survey is conducted, and data from the survey is compiled for sharing with NNAG, CAP, and the NITC Education Council.
   2.3 Develop, publish, and maintain a catalog of Network Nebraska services comprised of services offered directly by Network Nebraska as well as member-offered services to other members.
2.3.1 **Measurable:** Catalog of services is published and updated annually

2.4 Enhance communications regarding change control events affecting Network Nebraska membership.

2.4.1 **Measurable:** The Network Nebraska Support Team use OneCallNow and NN_INFO listserv to communicate change control events to Network Nebraska members.

3. **Action:** Identify needs and deliver advanced services to Network Nebraska members, including security, cloud computing, and education infrastructure, to meet the growing needs of its membership.

Lead: Education Council; CAP; NNAG; NU-ITS Staff  
Participating Entities: ESU-NOC; Higher Education CIOs  
Timeframe: 2020-22  
Funding: Additional funding and/or resources will be required for this action item out of the Network Nebraska Participation Fee, or from consumption-based billing.

**Targets/Deliverables:**

3.1 Develop applicable practices and strategies for advanced services to be delivered across Network Nebraska in educational environments and determine how to incorporate them into the Network Nebraska business model.

3.1.1 **Measurable:** A) Formulation of a Strategy document

3.2. Select and implement additional services for Network Nebraska members.

3.2.1 **Measurable:** A) Additional services added to Network Nebraska services list or provided by member “centers of excellence” throughout the Network Nebraska framework.

**Other Recommended Measurables:**

- Network Nebraska backbone uptime  
- Network Nebraska Internet access uptime  
- Network Nebraska backbone bandwidth utilization (actual)  
- Network Nebraska membership growth  
- Network Nebraska Internet growth (purchased and actual)  
- Network Nebraska unit cost of Internet  
- Number of public, non-public, and non-education entities connected to Network Nebraska
Nebraska Public Service Commission approves Special Construction Matching Funds for Libraries and Schools

Long before the COVID-19 pandemic confined citizens to their homes for work, school, and telehealth, the Rural Broadband Task Force (RBTF) was hard at work deliberating and making recommendations to improve the broadband environment in rural Nebraska. Created by the Legislature in 2018 (N.R.S. 86-1102), the Nebraska RBTF presented its first seminal report to the Executive Board of the Legislative Council on November 1, 2019. (https://ruralbroadband.nebraska.gov/reports/index.html)

Chock full of data about Nebraska, and comparisons with neighboring states, over 20 recommendations were presented by the RBTF, including six that helped address the “Homework Gap” (defined as the inequitable opportunities afforded students with, and without, home internet). One of the six recommendations reads, “Encourage the Nebraska Public Service Commission to implement an E-Rate Special Construction matching fund program with funding from the Nebraska Universal Service Fund to incentivize new fiber construction to public libraries and schools, starting in FY 2021-22.”

Public comment and RBTF discussions substantiated the role that rural public libraries play in student internet access when away from school. Many villages and towns in rural Nebraska lack advanced telecommunications services to public libraries, whereas nearly all public schools are connected by fiber to Network Nebraska.

The Special Construction Matching Fund program was created by the Federal Communications Commission (FCC), for states to incentivize new fiber construction by matching, dollar for dollar, an additional 10% E-rate discount for schools and libraries if a state funding source would contribute the additional 10%. For example, a public library with a 70% E-rate discount could receive an additional 20% in state and federal support, and only have to pay for 10% of the construction costs (instead of 30%) when installing new fiber. “Special Construction” is defined by the FCC as including: A) Construction of network facilities; B) design and engineering; and C) project management. Nebraska will become the 26th state to be considered eligible for this program: https://www.usac.org/e-rate/applicant-process/before-you-begin/fiber-summary-overview/additional-discount-to-match-state-tribal-funding-for-special-construction/

Other states have used their community anchor institutions to act as anchor tenants for new fiber construction in rural areas, allowing telecommunications providers to pick up additional customers along the way.

The Nebraska Public Service Commission (PSC), chaired by Commissioner Mary Ridder, originated docket NUSF-117 to explore the matching fund program and solicit comments from interested stakeholders. The PSC issued the final order approving the program on May 19, 2020. The PSC will make available one million dollars to be allocated over the four years of the program to school and public library applicants approved by both the state and federal programs. Ridder said, “We encourage any libraries and schools that lack a fiber connection to consider participating in this effort as we work to provide broadband to the unserved and underserved in our state.” Applications must be submitted by mid-December, with the PSC issuing notices of approval by mid-January, 2021, and the first projects to be completed by July 1, 2021.

Rod Wagner, Director of the Nebraska Library Commission, stated, “We welcome this matching fund program as a way to improve the connectivity to our rural public libraries and we commend the PSC for creating and funding this program to the benefit of all Nebraskans.”

For more information about the Nebraska Special Construction Matching Fund program, contact Cullen Robbins, PSC Director of Telecommunications & NUSF, Cullen.robbins@nebraska.gov, or 402-471-3101.
Overview

Objective:
To promote the effective and efficient integration of technology into the instructional, learning, and administrative processes and to utilize technology to deliver enhanced digital educational opportunities to students at all levels throughout Nebraska on an equitable and affordable basis.

Description:
The Digital Education initiative will involve the coordination and promotion of several major systems and applications that heretofore have either been developed mostly at the local level or have not been replicated statewide.

Initiative progress will be dependent upon adequate Internet connectivity and transport bandwidth for learners, instructors, administrators, and for educational attendance sites. A minimum acceptable level of classroom technology will have to be established for the initiative to be successful.

Collaborators:
- Educational Service Unit (ESU) Coordinating Council and advisory groups
- Public and private K-12 schools
- Nebraska Department of Education
- University of Nebraska
- Nebraska State College System
- Nebraska Community College System
- Council of Independent Nebraska Colleges Foundation

Strengths/Assets:
- The enhancement of Digital Education is the combined focus of public and private K-12 entities and public and private higher education entities working together through Network Nebraska.
- The recent developments in learning management software, content management software, and longitudinal data tracking and depiction make it a particularly important time to improve on the statewide deployment of these systems.
- The high bandwidth transport and Internet capacity of Network Nebraska makes it possible to implement private cloud and public cloud applications to every education entity on Network Nebraska.
Challenges/Issues:
While collaboration among entities is strong, the initiative lacks a “champion” and any additional implementation funding is a scarce commodity.

Recent Accomplishments:
- ESU collaborators have developed BlendEd briefing materials and the TLT Learning Group.
- The Nebraska Department of Education has made progress on the Adviser project involving all but four Nebraska school districts.
- The Nebraska Department of Education’s Future Ready Nebraska Digital Learning Plan was developed by a statewide committee and a Digital Profile is maintained on every school district.
- NITC Education Council and Community Council have collaborated on the design of several technology solutions that may reduce the Homework Gap and improve digital equity among economically challenged students.
- The Nebraska Library Commission, in partnership with the State Office of the CIO, has assisted the Nebraska Public Service Commission with the development of the Nebraska Special Construction Matching Fund grant program to incentivize new fiber construction for schools and libraries.
- The Nebraska Department of Education and ESU Teaching and Learning with Technology group have launched the Nebraska OER Hub with open education resources for teaching and learning.

Recommendations:
- Continue and refocus this initiative.
- Encourage and/or incentivize collaborators and stakeholders to be more results-oriented using project management techniques.
- Build on the excellent foundation and success of Network Nebraska to deliver high quality digital educational opportunities that provide a framework for student success.

Action Items

1. **Action: Disseminate information in the form of reports, effective practices, qualitative and quantitative data, and national trends to insure the success of Nebraska digital education.**
   
   Lead: Education Council
   
   Participating Entities: K-12 and Higher Education professional and advisory groups, Nebraska Department of Education, and the Coordinating Commission for Postsecondary Education.
   
   Timeframe: 2020-22
   
   Funding: Additional funding may be required for this action item

   Targets/Deliverables:
   
   1.1 Conduct a collaborative project to identify the scope and usage of digital education across all levels of education across the state of Nebraska.
1.1.1 **Measurable:** The report is created and distributed statewide.

1.2 Identify the metrics and measure the impact of the use of digital education in student academic preparedness.

1.2.1 **Measurable:** The metrics are identified and the impact of the use of digital education has been measured.

1.3 Evaluate the effectiveness of the use of flexible learning technologies and create a guide for effective practices in the use of flexible learning technologies (e.g. flipped classroom, blended learning, OER, fully online instruction, etc....)

1.3.1 **Measurable:** Flexible learning technologies have been evaluated and a guide has been written and distributed.

2. **Action: Expand awareness and address the need for equity of access as it relates to digital education.**

   **Lead:** Education Council  
   **Participating Entities:** NITC Community Council, K-12 and Higher Education professional and advisory groups  
   **Timeframe:** 2020-22  
   **Funding:** Additional funding may be required for this action item

   **Targets/Deliverables:**

   2.1 Education Council will work in collaboration with other Nebraska stakeholders, such as the Community Council Broadband Initiative, to find solutions for available, accessible, reliable, secure and affordable Internet access to support academic success.

   2.1.1 **Measurable:** NITC Education Council members meet regularly with Community Council Broadband Initiative members and other stakeholders.

   2.2 Identify opportunities and actions to ensure equitable access for students when away from school or campus.

   2.2.1 **Measurables:**  
   A) Members of the NITC Education Council will work with the Nebraska Department of Education and the Nebraska Rural Broadband Task Force to explore telecommunications services and technologies to reach unserved and underserved students.  
   B) The Nebraska Special Construction Matching Fund grant program will provide resources for affordable access through Nebraska public libraries.

**Other Recommended Measurables:**

- Published research regarding infrastructure, pedagogy, equity of access, and impact on learning
- Number of K-12 students who have gained home Internet access through Digital Inclusion initiatives
- Number of public libraries that have gained faster Internet access by reaching Network Nebraska, either directly or indirectly
A public-private partnership between public power districts, telecommunications providers, wireless internet service providers, and Paige Wireless may make southwest Nebraska and eventually the rest of the state a leader in the use of sensors and other connected devices for agriculture and the power industry. The partnership also aims to improve broadband availability in the area.

Identify Mutual Benefits to Public & Private Partners

The partnership started with a discussion between NPPD and Paige Wireless on the benefits of Paige Wireless’s low bandwidth wireless network using the LoRaWAN® protocol. According to Julie Bushell, president of Paige Wireless, LoRaWAN is beneficial in rural areas where cellular connectivity is scarce and where low-cost remote telemetry is needed.

“The benefits of LoRaWAN are very, very low subscription rates and an incredibly long battery life on sensors,” said Bushell. “The sensors we deploy average between a 5- and 10-year battery life depending on the application. Typically, for a cellular data plan that is about $30 a month. LoRaWAN is about $2 a month. The goal of LoRaWAN is to realize the true potential of everything connected, so the sensors are very cost effective as well.”

NPPD realized the benefits of LoRaWAN for both agriculture and for the power industry.
“The LoRaWAN low-speed sensor network is potentially a huge value for a utility,” said Dave Webb, the director of technology integration at NPPD.

The Electric Power Research Institute (EPRI) has a whole set of advanced sensors for utility transmission operation and substations. The institute is converting all of its sensors to LoRaWAN. Nebraska will be a primary test site for the use of these sensors, explained Webb.

Some of the agricultural data collected on the network such as soil moisture probe and weather data is also helpful for load management for utilities.

**Facilitate Discussions with Customers & Providers**

NPPD invited telecommunications providers and rural public power districts to meet with Paige Wireless to better understand the initiative and the benefits of LoRaWAN.

“And then the relationship grew into essentially helping us deploy our network, and I would say that most of that help has been through facilitation,” said Bushell.

**Streamline Identification of Assets, Colocation of Facilities**

NPPD helped Paige Wireless identify the locations of their towers and power poles that could be potentially leveraged.

“We have communications towers and structures that we let any communications company attach to through a standard process, but we are hoping we can streamline that process and make sure that they have knowledge of where our towers are,” said Webb.

**Aggregate Broadband Requirements & Facilitate Partner RDOF Efforts**

The need for better broadband for backhaul and high bandwidth agricultural applications also emerged from the discussions among Paige Wireless, public power districts and telecommunications providers.

A pilot in southwest Nebraska was initiated in late 2019 to identify and aggregate the need for backhaul services for Paige Wireless and wireless internet service providers as well as the backhaul and overall e-Connectivity needs of McCook, Southwest, Twin Valleys, and Dawson Public Power Districts. However, as more information became available about the Rural Digital Opportunity Fund (RDOF), it made sense to consider a larger, potentially statewide effort. To that end Pat Pope, NPPD’s former CEO, invited Public Power Districts from all over the state to participate in a network design and RDOF enabling effort with the National Rural Telecommunications Cooperative.

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**LoRaWAN** stands for Long Range Wide Area Network and is a low power networking protocol designed to connect battery-operated sensors and other devices to the internet.

It is being used for a number of applications including monitoring soil moisture and ground water levels and collecting weather station data. The number of applications is expected to grow as network availability grows.

Paige Wireless anticipates covering all of Nebraska with its LoRaWAN network by the summer of 2020.
The NRTC, made up of rural electric and telecom COOPs nationwide, specializes in designing a network and plan that optimizes the use of electric infrastructure to satisfy both the e-Connectivity needs of the utility and in our case, enable better business cases and RDOF bids for any private telecom partners who are involved. Pope stated, “We hope this effort can be coordinated with other statewide efforts. When the FCC looks at Nebraska’s effort we want them to say ‘WOW! This is how to get it done!’ If we work together, Nebraska could be the blueprint for the nation for rural e-connectivity deployment.”

Pilot Will Demonstrate Precision Ag Technologies

The pilot in southwest Nebraska will also serve as a demonstration project for precision ag technologies.

“We want to bring in some very interesting technologies that will require real-time data transfer, and also autonomous vehicle pilots on tractors and planters in the pilot area, so that we can really show what this awesome connectivity can do for the rural communities and the precision ag that surrounds them,” said Bushell.
Rural Broadband and Community IT Development

Overview

Objective:
To support efforts to accelerate the deployment of broadband services in unserved and underserved rural areas of the state and to address issues related to the adoption and utilization of broadband technologies.

Description:
Broadband availability, widespread adoption of broadband technologies, and a skilled IT workforce have become requirements for communities wishing to grow their economies. In the past, the Community Council has focused primarily on encouraging the widespread adoption of broadband technologies. However, as gigabit broadband has become available in an increasing number of communities in Nebraska and in the United States, the gap in service availability has grown between areas with access to very high speed broadband and those areas without access to internet at speeds of 25 Mbps down/3 Mbps up which is the FCC's current definition of broadband. Accordingly, this initiative is being refocused to address the need for better broadband availability in unserved and underserved rural areas of the state.

Rural Areas of Nebraska Lag in Broadband Availability
A rural-urban broadband gap exists in both Nebraska and the United States. Broadband of at least 25 Mbps down and 3 Mbps up was available to 89.8% of Nebraskans, but only 66.8% of rural Nebraskans in 2019. Nebraska lags the U.S. in broadband availability, with broadband of 25 Mbps down and 3 Mbps up available to 94.8% of Americans and 79.3% of rural Americans in 2019.


<table>
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<tr>
<th></th>
<th>U.S./State (Urban and Rural)</th>
<th>Rural Areas</th>
<th>Urban Areas</th>
<th>Tribal</th>
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<tr>
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<td>94.8%</td>
<td>79.3%</td>
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<tr>
<td>Nebraska</td>
<td>89.8%</td>
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<td>98.3%</td>
<td>48.2%</td>
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</tbody>
</table>

Source: FCC’s Broadband Map using June 2019 Form 477 data

The map on the following page shows areas of the state that have broadband availability of 25 Mbps download/3 Mbps.
Ninety Percent of Nebraskans Have an Internet Subscription

Nebraskans subscribe to broadband at a higher rate than the U.S. population. Approximately 90% of Nebraskans and 88.3% of those in the U.S. have a broadband internet subscription. This includes those who access the internet using a smart phone with a mobile data plan and those who have an internet subscription for service below 25 Mbps down/3 Mbps up. See the table below.

<table>
<thead>
<tr>
<th>Percent Population with Broadband Subscription 2018</th>
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<tbody>
<tr>
<td>Total population</td>
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<tr>
<td>United States</td>
</tr>
<tr>
<td>88.3%</td>
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<tr>
<td>Under 18 years</td>
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<tr>
<td>65 years and over</td>
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<td>76.1%</td>
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</tbody>
</table>

Source: U.S. Census Bureau 2018 American Community Survey 1-Year Estimate

Note: The percent population with broadband internet subscription from the U.S. Census Bureau 2017 American Community Survey 5-Year Estimate includes those who subscribe to cable, fiber optic, or DSL, satellite or a fixed wireless service as well as those who only use mobile broadband plans for internet access.

Some Nebraskans subscribing with internet service in lower speed tiers or relying on mobile-only access have found that they were limited in their ability to work at home, participate in online learning or access health care via telemedicine during the COVID-19 pandemic.

Many Nebraska Libraries Lack 25/3 Mbps Broadband

Libraries are key partners in addressing the digital divide, providing public access to computers and the internet. However, approximately 50% Nebraska libraries have internet service which does not meet the FCC’s definition of broadband (25 Mbps down/3 Mbps up or greater) according to the Nebraska Library Commission’s 2019 survey of libraries. While this is an improvement from 2018 when 65% of Nebraska libraries had internet service of less than 25 Mbps down/3 Mbps up, a significant number of libraries in Nebraska lack sufficient broadband to serve multiple patrons at a time.
The Nebraska Library Commission and the Nebraska Public Service Commission are taking steps to improve library broadband. In the spring of 2020, the PSC approved an E-Rate Special Construction Matching Program for schools and libraries which do not have fiber. Staff of the Nebraska Library Commission are working to prepare libraries to participate in the program.

**Homework Gap Impacts Online Learning**

The term “homework gap” is used to describe the challenge that students who lack home internet access face in completing online assignments. In some schools, the percent of students without internet access may be greater than 30% according to data from a 2019 survey of Nebraska teachers.

As many schools moved to online learning in the spring of 2020 due to the COVID-19 pandemic, the impact of the homework gap became more pronounced. Funding from the CARES Act is being used to help address the need for student devices and connectivity.

**State Broadband Activities and Developments**

Nebraska’s Rural Broadband Task Force, created by LB 994 in 2018, brought together stakeholders to learn more about rural broadband and to make recommendations. Those recommendations are providing a framework in which to address the challenges of improving rural broadband. More information on the task force and the report is available at [https://ruralbroadband.nebraska.gov](https://ruralbroadband.nebraska.gov).

The Nebraska Legislature, Nebraska Public Service Commission, Governor Pete Ricketts, the Nebraska Department of Economic Development, NITC Community Council and Education Council, and the Nebraska Public Service Commission have engaged in activities which support the recommendations of the Rural Broadband Task Force.

- Legislation introduced in 2020 would implement several of the Rural Broadband Task Force’s recommendations. LB 992 introduced by Senator Friesen would establish a process to use electric utility easements for communications, establish a broadband coordinator position, establish an E-Rate Matching Program, and would amend rules regarding leasing dark fiber by public entities. LB 996 introduced by Senator Brandt would create the Broadband Data Improvement program.

- The PSC has taken steps to address the need to improve rural broadband and to address the homework gap:
  - In the spring of 2020, the PSC approved an E-Rate Special Construction Matching Program for schools and libraries which do not have fiber.
  - The PSC also approved a $1 million broadband adoption program to reimburse telecommunications carriers for providing service to low-income families as a part of the response to the COVID-19 emergency.
  - The docket to explore implementing a reverse auction of Nebraska universal service funds is moving forward. Draft rules are in place and a hearing was held in May.
  - The Nebraska Library Commission is encouraging libraries to improve their internet and is preparing libraries to apply for the E-Rate Special Construction Matching Program. The NITC Education Council is providing assistance with this effort.
  - Governor Ricketts and Tony Goins, Director of the Nebraska Department of Economic Development, have identified improving broadband availability in Nebraska as a
priority. On June 12, 2020 Governor Ricketts announced details about the Remote Access Broadband Grant program funded through the CARES Act.

Federal Broadband Activities and Developments
At the federal level, there have been a number of developments related to broadband development.

• The FCC is implementing the Rural Digital Opportunity Fund reverse auction to allocate funding to rural areas lacking broadband. The auction is scheduled to commence on Oct. 29, 2020. The Nebraska Department of Economic Development with assistance from the NITC and PSC, hosted meetings and webinars to encourage counties and regions to partner with telecommunications providers to leverage RDOF funding.

• The federal Broadband Data Act passed in 2020 directs the FCC to implement improvements to mapping broadband availability.

Challenges/Issues:
Broadband is expensive to deploy in rural areas. Although programs such as Nebraska’s Rural Broadband Remote Access grant program, the Nebraska Universal Service Fund and the FCC’s Rural Digital Opportunity Fund are providing funding for broadband, funding remains a barrier to broadband deployment.

Maps showing where broadband is not currently available can overstate coverage—especially in rural areas. This makes it more difficult to target funding to areas which are unserved or underserved.

Collaborators:
• Nebraska Information Technology Commission
• Nebraska Public Service Commission
• Nebraska Department of Economic Development
• Nebraska Library Commission
• Other stakeholders

Recent Community Council Accomplishments Related to Broadband
1. NITC staff together with staff from the Nebraska Public Service Commission provided support to the Rural Broadband Task Force.

2. The NITC Community Council partnered with the Nebraska Library Commission to produce broadband fact sheets for all Nebraska counties. The fact sheets can be a tool to start community discussions about broadband availability and the need for better broadband in libraries. The facts sheets are available at http://nlc.nebraska.gov/stats/broadband/

3. The NITC Community Council as well as the Nebraska Public Service Commission assisted the Nebraska Department of Economic Development in outreach efforts to encourage counties and regions to partner with telecommunications providers to leverage funding from the FCC’s Rural Digital Opportunity Fund to build fiber to the premise networks.

4. The NITC Community Council developed a handout on six steps to better broadband which is available at https://ruralbroadband.nebraska.gov/resources/Sixsteps.pdf.

5. The NITC Community Council developed a series of case studies highlighting models and strategies that communities can use to improve broadband availability.
6. The NITC Community Council invited stakeholders to the Feb. 19 Community Council meeting to discuss building a collaborative effort to work with communities to improve broadband availability.

7. NITC staff has provided assistance to the Nebraska Department of Economic Development in implementing the Rural Broadband Remote Access Grant program.

Metrics

![Broadband Availability in Nebraska 25/3 Mbps 2016-2019](chart1)

![Broadband Availability in Nebraska 100/10 Mbps 2016-2019](chart2)
Action Items

1. **Action:** Work with the Nebraska Department of Economic Development and other stakeholders to explore the development of a collaborative broadband outreach effort to help communities improve broadband availability.

   Lead: NITC Community Council and Nebraska Department of Economic Development
   Timeframe: 2020-2021
   Funding: Leveraging existing resources
   Targets/Deliverables:
   1. Schedule meetings with the directors of Economic Development Districts, University of Nebraska Community Vitality Educators, and League of Nebraska Municipalities, and NACO to share information on resources available, identify needs and to explore how to work together.

2. **Action:** Develop a series of case studies illustrating successful strategies and models that communities can use to improve broadband.

   Lead: NITC Community Council
   Timeframe: 2020
   Funding: Leveraging Existing Resources
   Targets/Deliverables:
   1. A booklet of at least 8 case studies
   2. A marketing/social media plan to share information on the case studies
State takes steps to implement task force recommendations, leverage CARES Act

Rural Broadband Task Force Recommendations
On Oct. 31, 2019, Nebraska’s Rural Broadband Task Force submitted its recommendations to Governor Ricketts and the Legislature. The task force recommended that the State:

• Leverage the FCC’s Digital Opportunity Data Collection program, or an alternate broadband mapping program created through federal legislation, to improve Nebraska’s broadband map.
• Encourage the Nebraska Public Service Commission to investigate using a state-run reverse auction to spur broadband build-out in rural areas.
• Support public-private partnerships by:
  • Encouraging local and regional broadband planning, including communications planning between telecommunications providers and public power districts and cooperatives.
  • Addressing the use of electric utility easements for broadband
  • Retaining the existing prohibition on retail provision of broadband service by public entities.
  • Exploring ways to make it easier for public entities to lease dark fiber.
  • Encouraging local governments to make their rights of way and permitting processes less burdensome for telecommunications providers.
  • Increase the number of public libraries applying for E-Rate support.
• Encourage school districts, ESUs, public libraries, and communities to implement strategies such as Wi-Fi on buses or lending hotspot devices to reduce the number of students who lack internet access to do homework.

Implementation
Steps have already been taken to implement these recommendations:

1. On May 20, 2020, the Nebraska Public Service Commission (PSC) has issued an Order establishing the E-Rate Special Construction State Matching Grant Program as a way to help facilitate the build-out of new fiber to Nebraska libraries and schools.
2. The Nebraska Public Service Commission has continued to investigate using a state-run reverse auction to spur broadband build-out in rural areas.
3. LB 992 introduced by Senator Friesen would fund a broadband coordinator position to encourage local governments and regions to engage in broadband planning and to form public-private partnerships, ease restrictions on leasing dark fiber by public entities, establish a process to allow easements for electric utilities to be used for telecommunications.

4. LB 996 introduced by Senator Brandt would establish a Broadband Data Improvement Program to leverage federal mapping effort and encourage crowdsourcing efforts to improve broadband data.

5. The Nebraska Library Commission has increased efforts to encourage library participation in E-Rate.

6. The Department of Economic Development with assistance from the PSC and NITC/Office of the CIO hosted a series of meetings to encourage communities and counties to explore forming public-private partnerships to leverage the FCC’s Rural Digital Opportunity Reverse Auction.


8. The NITC Community Council has developed a series of case studies illustrating strategies and models that communities could use to improve broadband.

9. The Nebraska Library Commission and NITC Community Council have worked to develop broadband fact sheets for all 93 counties.

**CARES ACT**

Additionally CARES ACT funding is being utilized to support broadband deployment and access. Rural Broadband Remote Access Grant administered by the Nebraska Department of Economic Development allocates $40 million to provide broadband to unserved and underserved communities in Nebraska.
eHealth

Overview

**Objectives:**
- To support the adoption of health information exchange technologies in Nebraska.
- To support the use of health IT to help patients access their health information and better manage their care.

**Description:**
The use of health information exchange technologies allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient’s vital medical information electronically—improving the speed, quality, safety and cost of patient care. The Nebraska Health Information Initiative (NEHII) is one of the largest statewide health information exchanges in the country with 6,000 HIE users and 7,000 PDMP users. NEHII has data on over 4 million individuals. Health information technologies (i.e., patient portals, personal health records, and apps for smartphone and tablets) can also be used to help patients access their health information and better manage their care.

**Strengths/Assets:**
- NEHII is one of the largest statewide health information exchanges in the U.S. with over 6,000 users. Over 60 data sharing hospitals, over 180 data sharing clinics/ambulatory facilities and 212 long-term, post-acute care facilities participate in NEHII.
- Nebraska has an innovative Prescription Drug Monitoring Program which requires dispensers to report all medications effective Jan. 1, 2018. Having more complete medication history is improving medication safety in addition to reducing opioid abuse. The PDMP is a partnership effort of the Nebraska Department of Health and Human Services Division of Public Health and NEHII. The PDMP was funded by grants to the Nebraska Department of Health and Human Services from the Department of Justice Bureau of Justice Assistance and the Centers for Disease Control and Prevention. The PDMP has been queried over 612,000 times.
- The Nebraska Department of Health and Human Services Division of Medicaid and Long-term Care is working with NEHII to receive federal Medicaid funding to support health information in Nebraska.
- The Centers for Medicare and Medicaid Services (CMS) and the Office of the National Coordinator for Health IT (ONC) published the final interoperability rules on May 1, 2020 with compliance dates ranging from November 2020 through spring 2021.
- NEHII has built a framework that aligns closely to the ONC and CMS guidelines and
rules, which should facilitate meeting the new interoperability guidelines.

- When the COVID-19 pandemic began impacting the U.S., NEHII was well positioned to implement COVID-19 data monitoring efforts in cooperation with the state Department of Health and Human Services. NEHII’s COVID-19 Response Team launched real-time data dashboards that provide health care providers up-to-date information including:
  - Test results for Nebraskans,
  - The availability of beds in the state,
  - And medical supply resources to help fight the spread of the disease.
- NEHII immediately began the process to rapidly include health care facilities, health care providers and labs that were not currently data sharing through NEHII to send admission, discharge, laboratory and other pertinent data related to COVID-19.

**Challenges/Issues:**
- Health care providers may be challenged to meet the interoperability guidelines published by CMS and ONC.
- Additional efforts may be needed to better integrate health IT into provider workflows.
- Adoption of technologies which allow patients to access their health information and better manage their care may require outreach efforts and education for both health care providers and patients.
- Blocking of health information by health systems and vendors is an issue identified by the Office of the National Coordinator for Health IT.
- Broadband availability and subscription is a barrier to the use of telehealth technologies.

**Collaborators:**
- Nebraska Department of Health and Human Services
- NeHII
- UNMC
- Other stakeholders

**Action Items**

1. **Action:** Learn more about data governance and discuss follow-up steps including possibly forming a Data Governance Work Group

   **Lead:** NITC eHealth Council
   **Participating Entities:** NITC eHealth Council and others (to be determined)
   **Timeframe:** 2020-21
   **Funding:** Leveraging existing resources
   **Targets/Deliverables:**
   1. The eHealth Council discuss this issue and make initial recommendations as to next steps at its next meeting.
Community Council

Rural and Community IT Development

Pam Adams, American Broadband
Jay Anderson, NebraskaLink
Rod Armstrong, Co-Chair, AIM Institute
Randy Bretz, TEDxLincoln, Curator
Shonna Dorsey, AIM Institute
Connie Hancock, University of Nebraska Extension
Johnathan Hladik, Center for Rural Affairs
Timothy Lindahl, Wheatbelt Public Power District
Megan McGown, Great Plains Health
Judy Petersen, Central Nebraska Economic Development District
Nicole Reiner, Nebraska Department of Economic Development
Danny Rockhill, BankFirst
Mehmet Can Vuran, University of Nebraska-Lincoln

Libraries and Local Government

Chris Anderson, City of Central City
Jessica Chamberlain, Norfolk Public Library
Steve Fosselman, Grand Island Public Library
David Young, City of Lincoln
Holly Woldt, Nebraska Library Commission
Mary Ridder, Nebraska Public Service Commission (At Large)
Education Council

Post Secondary

Bret Blackman, University of Nebraska—Omaha
John Dunning, Wayne State College
Chuck Lenosky, Creighton University
Greg Maschman, Nebraska Wesleyan University
Mary Niemiec, Co-Chair, University of Nebraska
Tom Peters, Central Community College
Carla Streff, Northeastl Community College
Dr. Paul Turman, Nebraska State College System

K-12

Burke Brown, District OR-1 Palmyra/Bennet Public Schools
Matt Chrisman, Mitchell Secondary School
Dr. Ted DeTurk, Educational Service Unit 2
Stephen Hamersky, Daniel J. Gross Catholic High School
Dr. Dan Hoesing, Schuyler Community Schools
Trent Kelly, Hastings Public Schools
Alan Moore, Educational Service Unit 3
Gary Needham, Co-Chair, Educational Service Unit 9

Non-Voting Liaisons

Dr. Mike Baumgartner, Coordinating Commission for Postsecondary Education
SuAnn Witt, Nebraska Department of Education
Ed Toner, Office of the CIO, Nebraska Department of Administrative Services
Ling Ling Sun, Nebraska Educational Telecommunications Commission
eHealth Council

The State of Nebraska
Linda Wittmuss, Division of Behavioral Health

Health Care Providers
Kevin Borcher, Nebraska Methodist Health System and Nebraska Board of Pharmacy
Marty Fattig, Nemaha County Hospital
Cindy Kadavy, Nebraska Health Care Association
Brian Sterud, Faith Regional Health Services
Bridget Young, Visiting Nurse Association

eHealth Initiatives
Anna Turman, Western Nebraska Health Information Exchange and Chadron Community Hospital

Public Health
Kathy Cook, Lincoln-Lancaster County Public Health Department
Gary Cochran, UNMC
Dave Palm, UNMC
Ashley Newmyer, Department of Health and Human Services

Payers and Employers
Jan Evans, Blue Cross Blue Shield
Allison Wisco, Nebraska Department of Health and Human Services, Division of Medicaid and Long-Term Care

Consumers
Jina Ragland, AARP

Resource Providers, Experts, and Others
Dr. Jim McClay, UNMC
Todd Searls, Praesidio Healthcare Consulting
GIS Council

Devarsi Majumder, Nebraska Game and Parks Commission
Steve Rathje, Department of Natural Resources
Casey DunnGossin, Nebraska State Patrol
John Beran, State Surveyor’s Office
Claire Inbody, Department of Transportation
Han Liu, Department of Health and Human Services
Ruth Sorenson, Department of Revenue
Tim Erickson, Legislative Research Office
Chad Boshart, Nebraska Emergency Management Agency
Kea Morovitz, Nebraska Public Service Commission
Gary Morrison, Department of Environmental Quality
James W. Ohmberger, Office of the Chief Information Officer
Trinity Chappelear, Governor’s Policy Research Office
Doug Hallum, Conservation and Survey Division, University of Nebraska-Lincoln
Eric Herbert, Omaha Metro Area - Sarpy County GIS
Vacant, Federal Liaison USGS Nebraska Water Science Center
Jeff McReynolds, Lincoln Metro Area, City of Lincoln, Lancaster County, Nebraska
John McKee, Nebraska Association of County Officials - Jefferson-Saline County Emergency Manager
Danny Pittman, Nebraska Association of County Officials - Sarpy County Assessor
Bailey Gibson, Member at large, Hall County GIS Office
Lesli Rawlings, Nebraska Geospatial Professional Association
Michael Schonlau, Member at large Douglas County, City of Omaha
Matt Tinkham, Member at large - Professional Surveyors, Lamp Rynearson & Associates
Chuck Wingert, Nebraska Association of Resources Districts
Don Linquist, Member at large Precision Agriculture Industry, Mitchell Implements
Lash Chaffin, League of Nebraska Municipalities
Timothy Cielocha, Public Power Districts, Nebraska Public Power District
State Government Council

John Albin, Department of Labor
Don Arp, Jr., Crime Commission
Chris Ayotte, Department of Revenue
John Bolduc, Nebraska State Patrol
Dennis Burling, Department of Environmental Quality
Colleen Byelick, Secretary of State
Trinity Chappellear, Governor’s Policy Research Office
Dean Folkers, Department of Education
Jill Gradwohl Schroeder, Workers’ Compensation Court
Dorest Harvey, Private Sector
Jason Jackson, Department of Administrative Services
Rhonda Lahm, Department of Motor Vehicles
Kelly Lammers, Department of Banking and Finance
Kim Menke, Department of Natural Resources
Jim Ohmberger, Office of the CIO, Enterprise Computing
Gerry Oligmueller, State Budget Administrator
Jayne Scofield, Office of the CIO, Network Services
Robin Spindler, Department of Correctional Services
Corey Steel, Supreme Court
Ed Toner, Chair, Chief Information Officer
Devin Townsend, Department of Transportation
Vacant, Department of Health and Human Services
Rod Wagner, Library Commission
Technical Panel

Bret Blackman, University of Nebraska Computing Services Network
Kirk Langer, Chair, Lincoln Public Schools
Ling Ling Sun, Nebraska Educational Telecommunications Commission
Jeremy Sydik, Assistive Technology, University of Nebraska
Ed Toner, Nebraska Office of the Chief Information Officer