

Technical Proposal - Nebraska Longitudinal Data System

The Nebraska Department of Education (NDE) and the Nebraska Department of Labor (NDOL) are currently partnering in the development of a website built around national career clusters and Nebraska's six career fields. This website will also integrate the Nebraska Department of Economic Development's (NDED) target industry clusters. The web application will focus on high wage, high skill, high demand (H3) occupations and also contain information on all occupations. The system integrates O*NET, the Workforce Information Database (WID), the NE training and labor exchange system management information system (NEworks), OES, occupational and industry projections, education completer data, career clusters, and several other elements. The information will be displayed for the state and for economic regions within the state both geographically and from dropdown menus. This partnership brings together the education and workforce stakeholders which are the same partners that will be working together on the development of the Nebraska Longitudinal Data System (NELDS) to display current data for educators, students and job seekers.

Development of the NELDS will allow the creation of additional career cluster information to populate the new web system. The NELDS will allow for identification of strategies in the areas of curriculum, performance objectives, cost effectiveness, and measurement criteria to improve the education and workforce system. Without the longitudinal information there isn't a way to identify what works and what doesn't work programmatically for the education and workforce system over time.

NDOL has an 11 year history of coordinated multi-program multi-agency experience with data matching UI wage records to education records for performance reporting, consumer

reports and labor market analysis. However, the education and workforce data matches are performed on an annual basis and have not been maintained for longitudinal analysis due to previous FERPA interpretations. As has and will be shown, NDOL has established the partnerships necessary to develop a NELDS database. Since there is no longitudinal database for maintaining the workforce data, NDOL would be in the category of states without a longitudinal WDQI data system. The NDE has completed all 10 essential elements for their SLDS and has an operating longitudinal data system called the Nebraska Student and Staff Record System (NSSRS).

This was accomplished by the creation of the Nebraska P-16 Initiative, that is a coalition of 31 Nebraska organizations in education, business and government dedicated to improving student success rates at all levels, preschool (“P”) through college (“16”). Senior partners in this effort are the University of Nebraska, the Nebraska Department of Education, and the EducationQuest Foundation, a private, nonprofit organization dedicated to improving college access for Nebraska students. Governor Dave Heineman and his Nebraska Education Leadership Council are in full support of Nebraska P-16. This coalition has guided the development of the NSSRS. The priorities of the Nebraska P-16 Council are to: help increase Nebraska’s two-year and four-year college-going and graduation rates, help increase the education level of Nebraska’s citizenry and work force, thereby enhancing the quality of life and economic competitiveness of our state and help keep well-educated young people in Nebraska. In order to meet the priorities set by P-16, eight goals were established. Goal three is to: develop an effective longitudinal data system, which provides information on the Nebraska educational system from preschool through post-graduate degree attainment and entry into the workforce to help align resources with

strategic goals. NDOL participated in the NSSRS technical work group that developed the structure of the NSSRS.

The receipt of this grant will allow NE to develop the NELDS which will be designed to link with the NSSRS. Below is a description of the participants, systems, data linkages, and capacity in place at this time. A major component on the WDQI grant will be to establish the NELDS. NDOL will maintain secure data storage. NE recently completed a WRIS confidentiality compliance review. That review included a security component in which NE displayed its compliance with National Institute of Standards and Technology (NIST), Internal Revenue Service (IRS), Social Security Administration (SSA), and WRIS data security and confidentiality standards. NDOL, will have control over access to the individual UI employer wage record and program completer data and will implement business rules programmed into the system to enforce confidentiality. This will limit the access to individual data while allowing appropriate research access in order to generate evaluative and informational reports from the NELDS.

The NELDS will contain longitudinal UI employer and wage records, NDOL employment and training program completer records (WIA Title I, Wagner Peyser, TAA), UI benefits, FEDES, WRIS and WRIS2 data. Plans are to include TANF, and Registered Apprenticeship a partner in the NELDS. It will also contain education completer records for ABE, CTE postsecondary and consumer reports education records. Vocational Education is a proposed participant.

Current NDOL Participants and Programs: WIA Title I, Wagner-Peyser, TAA, UI Benefit data, MLS PROMIS, UI Tax wage data, QCEW, OES, LED, BED, employment

projections, Workforce Information Database, FEDES, WRIS, WRIS2, SD, IA and WY. All workforce partners and programs are housed in NDOL and have current MOUs for data exchange within the agency and with neighboring states. See MOUs in Attachment for WIA, Labor Market Analysis and South Dakota as examples.

Current Education Program Participants: CTE postsecondary, Adult Basic Education, Higher Education Authority (Coordinating Commission for Postsecondary Education, CCPE). NDOL maintains MOU's with current education partners NDOL analysts extract data into Access, to create reports and analysis on education completers in the NE workforce, as well as federal reports. NDOL has obtained a letter from the FERPA office that approves of the NE wage matching process (see attachment). WRIS2 will be utilized for additional information on graduates' employment to be used for federal reporting and in NELDS reporting. NDOL has had a data sharing partnership with the CCPE to match graduate data to UI wage records for 11 years. This data matching is performed in accordance with FERPA and NE Employment Security Law. This information was developed to provide consumer reports to participants in NDOL's education and training programs as authorized by the Workforce Investment Act

Proposed Education Partners: Vocational Rehabilitation and Central Community College Institutional Research Office and the University of Nebraska-Kearney. These are more fully discussed in section three.

Status of Longitudinal Education Data System: The NE SLDS (NSSRS) has been designed and is currently being populated and used for federal reporting (see attachment for diagram). This system *does* have flexible data architecture that allows for change and expansion as we develop the NELDS. Nebraska has all 10 of the Essential Elements listed on the Workforce Data Quality Campaign website. Postsecondary education continues using the

NSSRS unique student identifier but also has the SSN's necessary for linking to workforce data under our current MOU's. This is how the NELDS will link to the K-12 system.

Plan Outline

Nebraska does not currently have a formally developed workforce longitudinal database and does not currently systematically link to NSSRS. NDOL currently has a process in place for creating consumer reports by matching education graduates to UI wage records as part of the WIA's Eligible Training Provider activities. NDOL has in place agreements that meet FERPA guidelines for matching current postsecondary graduates with UI wage records (see FERPA letter in attachment). The consumer report as well as federal reporting data are not stored together systematically for longitudinal analysis, and records are not cross-linked against third party state agency datasets for additional matching. Under the proposed plan, Nebraska would develop the NELDS containing unit records derived from the workforce program case management systems to unit records from various state agencies. Included in the development process would be a formalized data exchange system with NSSRS, adhering to agreed upon data standards.

The NDE has completed all 10 essential elements for their SLDS and has an operating longitudinal data system called the Nebraska Student and Staff Record System (NSSRS). Guidance for development came from the P-16 Council. A description of how the NELDS will help to meet several of the unmet actions is contained in section three. See the NE P-16 diagram of NSSRS in the attachment.

The P – 16 Council will participate in providing direction in relation to the NSSRS/NELDS linkages in achieving Goal 3 of the P-16 Council's initiative (A statewide effort

to improve student success and boost the economy by implementing a longitudinal data system to align resources with strategic goals). Currently wage matching for WIA, Wagner Peyser, TAA federal reports are produced from the Nebraska NEworks web based system for the sole purpose of providing the federal reports. These data sets are uploaded separately to the federal agency produced reporting software to produce performance reports for each program. In the proposed NELDS records from the workforce system would be systematically linked across workforce and education programs and for selected state agency datasets. It is not the intent of the grant to replace the current federal workforce reporting systems, it is perceived that the systematically developed reporting from the development of NELDS will provide for the ability to go beyond the limitations of the required reports and measure training performance over time. The NELDS would serve to inform the decision-making process for adult training and education and workforce professionals, as well as key stakeholders at the state and local levels. A unified data repository and analysis of wage record data, workforce case management systems, and training program information from education providers would allow Nebraska to accomplish goals in improving the quality of workforce data by analyzing dislocated worker and non-traditional student data, as well as adult training and education program performance:

Some of the outcomes will include to: 1.) examine and assess adult training and education programs and their outcomes. The addition of an adult training and education program component that assesses outcomes will aid in decisions about the development, improvement, or funding of programs and institutions within a state, region, or local area. This component provides a reliable measure to determine which training and education programs are working within selected local areas and which are not, as well as differences in specific program success. We expect such measures to contribute to the performance management measures that currently

inform program administration and policy makers. 2.) track trends in the employment and earnings of individuals facing economic dislocation. We expect to trace the labor market experiences of individuals who are displaced from their jobs, what efforts they undertake in training and education, and the long-term outcomes achieved in employment and earnings. 3.) allow studies of the articulation between college studies and employment outcomes.

Focused analyses will consider the role of high technology training (science, technology, engineering and mathematics, or STEM) or high wage, high skill, high demand occupations in helping align college preparation with labor market needs. 4.) additionally, the same type of information could be used by local leaders for planning and evaluating their own strategies of improvement and expansion. For example, such a component could provide valuable information to local leaders about: 1.) job growth by industry and occupation in their area and others, 2.) earnings of graduates from different training and education programs, and 3.) information about program enrollments and trends.

Key elements necessary to accomplish the outcomes of the project funded by this grant: ensure confidentiality; the implementation of a linkage with driver's license and claimant data to enhance the quality of workforce data; the development of data quality procedures and data quality improvement reports; the development of research analyses and creation of understandable reports, demonstrating the power of the longitudinal system.

Within 60 days of receiving the grant, the State will develop a detailed project plan and schedule. The WDQI project will be completed within the three year time frame with requirements gathering and design activities occurring in the first six months, followed by implementation. Research activities and report development will occur in the final year of the grant after the technologies are in place and the data are available.

Nebraska realizes that maintaining the NELDS and using it to improve our educational and workforce training systems will require ongoing support in terms of resources and leadership. Individual agencies will be responsible for maintaining their operational systems and ensuring data quality processes are followed. The P – 16 Council and the Governor have established a set of priorities for the education system and have established as one of their goals the development of an effective longitudinal data system, which provides information on the Nebraska educational system from preschool through post-secondary degree attainment and entry into the workforce to help align resources with strategic goals. With the establishment of this grant and the ensuing development of a workforce data warehouse the P – 16 can begin discussions on further integration and funding of analysis and analytics to model predictive outcomes which may include requesting legislative funding.

Description of Partnership Strategies

Current NDOL Program Participants: NDOL plans to continue and strengthen partnerships with WIA Title I, Wagner-Peyser, TAA, UI benefit data, UI Tax wage data, QCEW, OES, LED, BED, DMV, employment projections, Workforce Information Database, FEDES, WRIS, WRIS2, SD, IA and WY. All fields from program management information systems will be stored in the NELDS. NDOL analysts extract data into Access, FoxPro or the NEworks management information system to create reports and analysis, as well as federal reports. See the following MOUs in the attachment: UI Tax-Employment & Training-Labor Market Information WIA Performance Accountability Exchange, the UI Tax-Labor Market Information Labor Market Analysis and the South Dakota example data sharing agreement. See also letters of support from Joan Modrell, NE Director of Employment and Training and Gayle McClure, Chairman of the Nebraska Workforce Investment Board. Upon receipt of the grant,

NDOL plans to pursue expired data sharing agreements with CO, KS and MO. Registered Apprenticeship and TANF have been invited to participate in the NELDS.

NDOL workforce partners participated in the development of NEworks, a web based integrated labor exchange, training case management and labor market information system. This required extensive coordination and teamwork among all Offices (see NDOL Organization Chart in Attachment) within NDOL to produce the final application. (<https://neworks.nebraska.gov/>)

NDOL analysts extract workforce data into Access, FoxPro or the NEworks management information system to create reports and analysis, as well as federal reports. The establishment of the NELDS will allow cost effective, more efficient analysis of workforce outcomes over time. This will be done by tracking current partners' participants over time. Results will show the long term outcomes of training program strategies.

An example of analysis done to improve the workforce system included matching WIA training participants' target occupations, reported occupations upon exit with UI wages and OES entry wages for comparison by local area. This led to the establishment of an H3, high wage, high skill, high demand policy for WIA training participants.

Partnerships with State Education Agencies

Current Education Program Participants: CTE postsecondary, Adult Basic Education, Higher Education Authority (Coordinating Commission for Postsecondary Education, CCPE). NDOL maintains MOU's with current education partners (see NDOL-NDE Adult Education Program UI Information Exchange, NDOL-NDE Career Education UI Information Exchange and the NDOL-Coordinating Commission for Postsecondary Education Information Cooperation example data sharing agreements in the attachment). The Coordinating Commission for

Postsecondary Education is the state's higher education authority. NDOL analysts extract data into Access, to create reports and analysis on education completers in the NE workforce, as well as federal reports. NDOL has obtained a letter from the FERPA office that approves of the NE wage matching process (see the FERPA letter in the attachment. The FERPA office has recommended NE's model to other states. With the expanded interpretation of FERPA NDOL will utilize WRIS2 for additional information on graduates' employment to be used for federal reporting and in NELDS reporting.

Proposed Education Partners: Vocational Rehabilitation and Central Community College Institutional Research Office and the University of Nebraska-Kearney. NDE's Commissioner has is committed to adding Vocational Rehabilitation to the NELDS should we receive the WDQI grant (see support letter from NDE in the attachment). Currently, an agreement is being drawn between NDOL and Central Community College for data exchange and to allow NDOL to obtain WRIS (for WIA consumer reports), and WRIS2 and FEDES (for CTE postsecondary performance). The University of Nebraska-Kearney is also committed to becoming a full partner in the NELDS (see support letter in the attachment).

NDOL has had a data sharing partnership with the CCPE to match graduate data to UI wage records for 11 years. This data matching is performed in accordance with FERPA and NE Employment Security Law. This information was developed to provide consumer reports to participants in NDOL's education and training programs as authorized by the Workforce Investment Act. All community colleges, all state colleges, one private postsecondary career school and one campus of the University system participate. Information is available by institution, by field of study, by degree and has been utilized for many purposes. Prospective students use the information for selecting a program of study. Businesses use the information for

recruiting new employees. Economic developers use the information to attract new businesses to the state. Educational institutions use the information for program planning and enhancement, as well as, for recruiting prospective students. WIB members and policy makers use the information to study and enact legislation regarding education and training. NDOL uses the information for program evaluation and planning. This Graduate Outcomes information is published online annually. The creation of the NELDS will allow for in depth analysis of program performance. Analysis will not only be done looking to the past but will look to the future for predictive outcomes.

NDOL has active MOUs with Iowa, South Dakota and Wyoming to be able to match UI wage data across state lines (see the NDOL-South Dakota Data Sharing Agreement in the attachment). These have not been utilized to a large extent for education exchanges due to the limitations of FERPA. With the new interpretation of FERPA for data sharing between education and labor, this option may become more viable. NE is participating in WRIS2 for cross state education data matches but will also use the MOU with Iowa since they are not yet participating in WRIS2. If we are awarded the grant, we will renew expired MOUs with Kansas, Colorado and Missouri.

The Nebraska Department of Education (NDE) maintains the state SLDS (NSSRS) and has completed all 10 of the state's data elements and three of the state's actions. Establishment of the NELDS will help to meet four of the state's unmet actions. NSSRS and the NELDS will be linked through the NSSRS student ID and SSNs that postsecondary educational institutions have. In this way K-12 may be linked with outcomes into the workforce. Since the P-16 Council will be providing input into the development of the NELDS and information obtained from it, this will enhance the development of the P-20/workforce agenda. Plans for activities that will be

undertaken upon receipt of this grant include promoting the capabilities and breadth of data available through the NELDS. Stakeholders and others will be encouraged to pose research questions that can be answered by the data contained in NSSRS and the NELDS. Promotion will be accomplished through in person and online presentations, as well as, other electronic means. Quarterly dashboard reports from NSSRS and the NELDS sources to stakeholders will aid in meeting the action of implementing timely access to reports.

NDOL is a participant in the P- 16 Council and serves on the Goal 3 Technical Group data structure committee for the NSSRS. In addition, (see Council members in attachment). NDOL maintains MOU's with education partners CTE postsecondary, Adult Basic Education (see example data sharing agreements in the attachment). NDOL also has an MOU with the Higher Education Authority (Coordinating Commission for Postsecondary Education, CCPE) for matching education completers and following them into the workforce for WIA consumer reports. NDOL analysts extract data into Access, to create reports and analysis on education completers in the NE workforce, as well as federal reports. NDOL has obtained a letter from the FERPA office that approves of the NE wage matching process that was developed for WIA consumer reports. The FERPA office has recommended NE's model to other states. With the expanded interpretation of FERPA NDOL will utilize WRIS2 and FEDES for additional information on graduates' employment to be used for federal reporting and in NELDS reports. WRIS will be used for WIA consumer reports but access to individual data in the NELDS will be limited to PACIA members who have signed the WRIS DSA. Currently there are plans to incorporate FEDES into the federal reporting for ABE, CTE postsecondary and WIA consumer reports. This will create a more cost effective and efficient analysis of workforce and education data over longer periods of time.

NE has the internal capacity to develop and operate the longitudinal data system in partnership with education stakeholders. NDOL has been a part of the development of the NSSRS under the guidance of the P-16 Council.

Partnerships with Research Universities or other Research Entities

Current Education Partners: CCPE (the state higher education authority) and Central Community College Institutional Research Office. Currently, NDOL and CCPE have an 11 year history of UI wage record matching with all community colleges, one private postsecondary career school, all state colleges and one campus of the University of Nebraska to produce consumer reports for WIA. Aggregate wage and percent of graduates working in NE is available individually by institution by field of study by degree. Higher level analysis is reported for WIB, Education and NDOL policy makers. The data has not been maintained in a longitudinal database due to the old FERPA requirements. With establishment of the NELDS and the reinterpretation of FERPA in the 2012 regulations, it will be possible to store the data for time series analysis. Individual WRIS records will only be available to education partners in aggregated form provided by PACIA members who have signed the DSAs. NDOL and CCPE will cooperate with the NE Dept. of Education to develop the NELDS complimentary to the NSSRS. Individual student ID's will be linked with SSNs at the postsecondary level in order to perform the analysis for both Education and NDOL. Stakeholders will have access to individual data for analysis except for WRIS and WRIS2. NDOL will coordinate fulfilling data requests from the NELDS for non-governmental entities or for WRIS and WRIS2 data. Primary research may be done by education partners. Reports to the Employment and Training Office of NDOL will be developed for enhance program delivery and effectiveness.

NDOL has been approached by University of Nebraska-Medical Center and the University of Nebraska-Omaha about conducting research projects utilizing the NSSRS and the NELDS created by this WDQI grant. The University of Nebraska-Kearney has committed to being a part of the NELDS. They have been involved in UI wage matches for WIA ETP consumer reports for approximately eight years. Several Administrators expressed interest in pursuing the creation of program evaluation reports via the NELDS.

Partnerships with Additional State Agencies

NDOL will pursue partnerships with the Health and Human Services System to include TANF in the NELDS. NDOL is investigating submitting a WIA Unified five year plan and if this comes about, TANF programs would be more closely aligned with NDOL and the NELDS. MOUs would be needed for their inclusion in the project. The Department of Economic Development is under the leadership of the Commissioner of Labor and is very interested in labor supply data that could come from the analysis of NELDS data. Currently, UI wage data on graduates generated by the WIA ETP consumer reports is used for business recruitment. This includes recruiting individuals to work in NE businesses and recruiting businesses to locate in the state. There is concern over the “brain drain” and consequently considerable interest in the long term outcomes of education completers. No MOUs are needed for DED since they are provided with aggregate data. UI wage record SSNs are matched to Department of Motor Vehicles (DMV) to obtain demographic characteristics of the workforce. Reports on younger/older workers and industry demographics have been published.

Description of Database Design, Data Quality Assurance and Proposed Uses

The database design will help attain stated objectives by 1.) maintaining all records in one secure, linkable arrangement; 2.) including a searchable electronic library of documentation for each partner data set; 3.) including regularly scheduled backup procedures and a disaster recovery plan; 4.) allowing users to access data concurrently in a form that suits their needs; and 5.) providing data security and recovery control.

The NELDS will enable additional program partners to access aggregated data to measure program effectiveness and improvement over time. When implemented, the NELDS will enhance gap analysis between demand, education, and employment of completers by labor market area within the state. The addition of postsecondary enrollees and secondary graduates from NSSRS will complete the education and employment relationship picture and offer more complete analysis.

The Nebraska Department of Labor is in the process of developing a data warehouse (DW) strategy for existing Unemployment insurance system. A Data Warehouse (DW) is a database that stores information oriented to satisfy decision-making requests. In general a Data Warehouse is constructed with the goal of storing and providing all the relevant information that is generated along the different database of an enterprise. The Architecture for the NELDS is shown in the NELDS Partners and Minimum Data Fields attachment to this document.

Personal Identifier

The NELDS will be housed on NDOL servers, the state's employment security agency and will use the SSN for as the unique identifier. Except for some Wagner Peyser records, SSNs

are collected for workforce programs and will be used to track participants' movement in and out of education and workforce systems. Missing Wagner Peyser SSNs can be mitigated by merging these files with Department of Motor Vehicle (DMV) and UI claims files on name, date of birth, gender, and residence address to obtain the associated SSN to increase matches.

For education programs, the NSSRS unique student ID and SSN will be maintained. The majority of postsecondary files carry SSN's. This will create a link between K – 12 records from the NSSRS, postsecondary records and SSN. There will be written agreements, following FERPA guidelines, between educational institutions and NDOL. Social Security numbers will be replaced with the NSSRS identifier or another unique identifier when the NSSRS identifier is not available. This is how current WIA consumer reports wage matches are performed and will continue with all other data sources. SSN's will be stored in a high security separate table with the unique identifiers so that the records may be re-matched if necessary.

Data Quality Measures

Agencies/programs are responsible for the maintaining the accuracy and quality of their program data. The partners will work together to develop measures and incorporate automated methods to ensure data accuracy and quality. This will be much more important as data from many sources are integrated into the NELDS. Currently, workforce and education programs perform data validation and perform independent data quality checks for data consistency and accuracy. Education and workforce data is analyzed for data errors such as out-of-range data, missing values and anomalous frequency distributions. Providers will be asked to address or explain logical inconsistencies between variables and within variable values, based on documentation obtained from each provider. NSSRS has a web-based validation system accessed via the NDE web portal and used to validate and verify the accuracy of submitted data. Features

include; validation errors and warnings which enforce business rules and are processed automatically and verification reports summarizing data submitted to ensure data is complete and accurate.

The development of the NELDS and the ability to begin matching data over time will generate opportunities to improve data quality in all agencies. As part of this project's data mining capabilities, reports will be developed to identify data quality issues. Development of exception reports that can be used as feedback to source data providers will help improve the quality of the data stored in the NELDS. Participants will receive reports summarizing the number of matches, records with missing data elements and other pertinent information determined by the development team. Once the longitudinal system is in operation, additional data quality initiatives will become apparent and reported to NELDS partners.

Scope of the Longitudinal Data

This grant will provide funding for Nebraska to take the next step in the development of performance measures and information that will improve the quality of Nebraska's workforce. Data elements from each programs' management information system for federal reporting will be included in the NELDS. These will include WIA Title I, Wagner-Peyser, TAA, TRA, UI benefit claims and demographic data, UI Tax data, FEDES data, WRIS and WRIS2 data, CTE postsecondary, Adult Basic Education, Department of Motor Vehicles (DMV), data for WIA eligible training provider consumer reports, Vocational Rehabilitation, Registered Apprenticeship and TANF are planned for the NELDS. Currently, UI wage matching for all but Vocational Rehabilitation, Apprenticeship and TANF are being performed. The NELDS will allow for maintenance of the data over time while keeping within FERPA and WRIS, WRIS2

guidelines and Employment Security laws. The NELDS will link to Education's NSSRS through the SSN / Unique Student ID. The SSN/NSSRS unique ID link at the postsecondary level will provide researchers with ability to incorporate fields such as K-12 data, test scores, teachers, graduation rates and transcripts information with postsecondary and workforce outcomes. The workforce portion of the SLDS containing SSNs will be housed in the NELDS since NDOL is the agency that houses all the state's workforce data.

From matching wage records to the programs listed above, program managers and policy makers can determine whether individuals are employed, what their earnings and industry employment are if they are employed, whether they have been or become unemployed, whether they collect unemployment insurance benefits, what workforce and training services they may have received and what the workforce outcomes are upon completing training services.

Examples of the types of analysis and research projects include: Analyzing how the length of training for WIA Title I, TAA, TANF and Vocational Rehabilitation (certificate, diploma or degree) impacts post education earnings immediately and over time. Are participants receiving training in high wage, high skill, high demand occupations and how does this affect earnings post training and over time? What industries are these individuals employed in and what are the future prospects for those industries? Are UI claimants able to equal or exceed their previous earnings, what workforce services did they receive, were they moving to different industries, and were there additional periods of unemployment over time? The ETP consumer reports files from all community colleges, all state colleges and part of the university system contain demographics as well as major and degree. Currently, it is possible for potential students to see average wages for recent Operations Management and Supervision Bachelor's degree graduates from the University of Nebraska-Kearney working in NE. With institution of the

NELDS it will be possible to determine if the graduates remain working in the state. Similar files are used for CTE postsecondary federal reporting. NDOL, Education, College and University researchers will be able to determine employment over time in the state using UI wage records and FEDES. NDOL analysts will be able to access WRIS and WRIS2 data to add aggregated data to help complete the employment picture. Which programs produce graduates likely to remain in NE, what are the earnings, do these programs align with state economic development efforts and do they address worker shortages? For CTE, relating back to NSSRS to look at whether career academies, and CTE dual credit graduates are graduating in related fields and entering the workforce in NE. In addition to allowing research and evaluation of education and workforce systems the NELDS will provide a centralized location to help identify outcomes of services but perhaps help identify factors that bring people to need these services.

Security Measures

The NELDS will be housed in the State computer system and meet all the state and federal (FISMA –NIST) security and confidentiality requirements. The National Institute of Standards and Technology (NIST) publication 800-122 guidelines for maintaining personal and financial information furnished to us is protected against unauthorized use, inspection, or disclosure. We are committed to evaluate all NIST security controls and incorporate them into every aspect of our environment including but not limited to Policy, Project management, System development, Auditing, Incident Response, etc. All NDOL systems must be compliant with National Institute of Standards and Technology (NIST) guidelines to provide a secure environment for all confidential data. All staff are trained and required to sign specific policies relating to protection of confidentiality of PII. Transmission of data will be protected through encryption. Least privileged will be enforced for access to all data allowing NDOL to enforce

the most restrictive set of rights/privileges and accesses needed by users. NELDS files will only be available to individuals employed by state LMI and IT offices and access granted only to persons with documented need. NDOL is in the process of building next generation data warehouse platform for UI LDS which will reside on DB2 platform. The DB2 Server platform allows layers of user permissions and access controlled by the Database Administrator (DBA). Access can be granted to individuals at several layers of permission from the Database owner which allows universal right to read only or no permission at all.

Currently, education records containing SSNs are matched to the UI wage records, the SSNs are then replaced by an individual identifier or unique student ID from the SLDS. The SSNs are stored separately with extremely limited access. Individual data without personally identifiable information may then be analyzed. This method received written approval from the FERPA office in March 2004. This type of protection for PII will be used in the NELDS with flags or separate tables for WRIS or WRIS2 data so that no data is ever released in cells containing less than three records and only authorized individuals are allowed access.

The NELDS will be designed and developed by NDOL staff in consultation with database administrators from CCPE and NDE, NDOL research analysts, College and University Institutional Research Officers and stakeholders with program data in the NELDS guided by the P-16 Council. Data will be stored on NDOL servers with varying levels of access to folders. Data owners will have access to their own data. WRIS and WRIS2 data will only be available to NDOL PACIA staff who have signed the appropriate data handling acknowledgement forms. NDOL will only have access to education SSNs records with signed releases or when covered by signed agreements in compliance with the 2012 FERPA regulations. Research questions may be submitted by WIBs, the legislature, press or others. These will be answered in the aggregate by

the most appropriate individual who has access to the data. Primary duties for answering these questions will fall to NDOL analysts and the higher education authority database administrator.

Planned Reports/Deliverables

The Nebraska Department of Labor will disseminate deliverables/planned reports online through SAP Business object portal. The Nebraska department of Labor will collaborate with partners to better understand how information from these reports can be used to evaluate program performance in order to enhance the probability the partners will attain workforce and educational performance goals.

The strength of the NELDS is founded on the availability of data collected from many sources. The breaking down of traditional program based data silos which started under the WIA program has allowed the possibility of workforce longitudinal data systems to become a reality. While NDOL will maintain and mature these systems as described in this plan, it is recognized that this process is “backward” looking. The information derived from these systems essentially reflects what we knew about the past practices and experiences of our workforce and the business community.

Through this grant NDOL plans to explore a new predictive analytic approach to its system through an outside source. Next-generation analytics are nonlinear in nature and therefore much closer to the way things work in real life. Instead of starting with a small number of predictive variables, they look inside massive databases for characteristics that correlate with certain behaviors. These approaches have no preconceived notions or ideas about what might be causing humans to do what they do; they simply have the capacity to look back and forth between behavior and characteristics, characteristics and behavior, over and over again until they

find a set of characteristics that are highly correlated with a certain behavior. And then, once they have this set (which could number a hundred variables or more); these models have the capacity to find other people with similar characteristics. New analytics represent a sea change in the way we extract value from data. These are analytic tools for the era of data explosion, built to leverage and continuously learn from massive amounts of information. And they are best suited for revealing patterns, correlations, and segmentations hidden deep within enormous data pools.

The ability to link other program data like DMV data UI wage records adding demographics to this file, UI Benefit records (claims and demographics), Wagner-Peyser, WIA, TAA, Quarterly Census of Employment and Wages, or FEDES data with NSSRS will not only allow for performance measures but a variety of research projects. Research projects such as; multiple job holding; tenure with employer; industry experience; probability of permanent labor market exit; wage progression; household wage and salary income; and the geospatial relationships of employers to workers in commuting patterns, tracking cohorts to create histories of earnings, employment, and education to name a few.

For all partners, data will be analyzed using program specific data along with wage records to determine employment, employment retention, unemployment and earnings over time. This information will aid the individual stakeholders in setting priorities and making resource decisions within their programs. These reports will also provide policy makers and economic developers valuable information on labor supply and skills within the state.

Examples of specific reports might include Adult Basic Education completers will be tracked to determine how much time it takes to obtain employment, wages or wage gains from pre-ABE levels and sustained employment over time. These reports would go beyond federal

reporting and capture those individuals who were not employed in the first quarter after exit but find employment in the second and succeeding quarters and over time.

Wagner Peyser supply/demand analysis that examines the attributes of job seekers and their success in finding employment in the state. Using the state's labor exchange data from NEworks, UI wage records industry data. NDOL has done survey research on new hires from Wagner Peyser and from WIA Title 1 to determine the skills brought to the job and those required by the employer. The NELDS would allow us to follow new hires over time.

Anecdotal and other state evidence indicate that students who have received dual college and high school credit while in high school have higher graduation rates, college going rates, retention rates and college graduation rates. The NELDS will allow us to follow the outcomes from high school through college and into the workforce. If the data shows these trends, additional funding for dual credit will be pursued in the legislature.

In some research, veterans have higher unemployment rates than the general public. Veteran unemployment and employment may be analyzed to design service strategies to aid this population.

The Nebraska Department of Labor will disseminate deliverables/planned reports online through SAP Business object portal. Reports for the public will be posted on the NDOL website. Notices that the reports have been posted will be included in the Nebraska Workforce Trends monthly newsletter and/or the email updates to stakeholders. Reports for WIA local areas, State and Local WIBs will be printed, emailed and/or presented as PowerPoint presentations at WIB and or WIB staff meetings. Applicable data will be incorporated in the new career cluster

website that is under development. Stakeholders will identify desired reports that will be provided back to them as quarterly dashboard and other reports.

Staffing Capacity

NDOL will be the employer for staff working on the development of the NELDS and have current staff with experience in the positions listed below. See NDOL organizational charts in attachment. The database management staff from partner education and other agencies will advise development staff on their needs from the system and field layouts from NSSRS and other data systems.

IT Project Supervisor/Manager to oversee and coordinate project timelines to ensure the completion of all State Workforce longitudinal systems business requirements, solution strategies, service delivery models, business case, and project deliverables are completed on schedule. They will also: 1.) provide project oversight by establishing the project time framework to meet objectives, milestones, plans, and work breakdown structure; 2.) collect and develop business and technical requirements for projects 3.) manage and oversee the schedule and scope for completion of the design and development of NELDS deliverables 4.) coordinate and manage, as necessary, the schedule and scope of the NELDS project team, internal and external subject matter experts and stakeholder representatives to facilitate and document project meetings decisions related to the development of WDQI Deliverables 5.) leading discovery/working sessions with business partners to determine current state processes.

The **Database Manager** is responsible for overseeing the hardware/software systems. The database manager is responsible for the performance, integrity and security of WDQI. The

Database Manager should have knowledge of: 1.) SQL Language; 2.) database logical and physical design, normalization, and storage capacity management; and 3.) database backup and recovery systems. Specific responsibilities include: (a) establishing the needs of users, controlling access and monitoring security; (b) monitoring performance; (c) mapping conceptual design ; (d) refining the logical design and allocating storage capacity translating into a specific data model; (e) generating complex queries in response to customer needs; (f) developing a data dictionary, models, metadata repositories and other data management tools. (g) Identifying complex problems to develop and evaluate options and implement solutions.

The **Data Warehouse Architect** is responsible for the architecture, design, development, and maintenance of Data Warehouse; Data Marts, Staging and Archival Databases Life Cycle from business requirements to development of logical design, translation to physical design, ETL architecture and code development. The Data warehouse architect should have knowledge of :

- 1.) Technical expertise in Database design;
- 2.) Architecting Data warehouse and Data marts;
- 3.) Strong in Data Modeling ;
- 4.) Strong expertise in ETL tools;
- 5.) reporting and analytics;
- 6.) Working with large databases and performance issues related to modeling techniques and overall database architecture

The **Data Warehouse Modeler** will be responsible for developing high level design for the data warehouse/ data marts. The candidate must have extensive experience with Star Schemas, Dimensional Models, and Data marts. The Data warehouse Modeler should have knowledge of: 1.) Star Schemas, Dimensional Models, and Data marts; 2.) Building new data sets and data structures as required to support business needs; 3.) generating complex queries in response to customer needs; 4.) Understanding of normalization and denormalization Design; 5.)

Strong SQL development experience (ETL experience coding SQL statements); 6.) Strong Erwin experience.

The primary responsibility of the **Data Analyst** will be to generate statistical analysis of the WDQI in order to meet the objectives and deliverables described in WDQI proposal. The knowledge and abilities data analysts' must possess include knowledge of 1.) qualitative and quantitative analysis; 2.) ability to analyze and present information clearly and concisely to inform agency partners and public; 3.) documentation of all or part of a data life cycle in terms of business functions and processes; 4.) Writing SQL queries and stored procedures; 4.) ETL experience, Reporting Experience

Data Warehouse Reporting Team is responsible through the design, creation and implementation of cost-effective reporting tools and solutions that support management and business users in reporting, analysis and decision making. The Data warehouse Report Developer should have knowledge of 1.) reporting solutions with reliable access to information in the data warehouse, data marts, and source systems as required; 2.) empower the customers to effectively use the information and tools for optimal decision making, through proactive business support and advisory services; 3.) development of management dashboards and key performance indicators for decision support and exceptions management; 4.) development of a common web-based Reporting portal to provide one-stop secured and reliable access to information in the corporate data warehouse.

Labor Market Information Director is responsible for the administration of all BLS contracts, ETA grants, state funding, as well as work accomplished under MOUs to a range of public and private entities. The LMI Administrator will be responsible for the administration of

the NELDS. The primary role of LMI Director will be to serve as liaisons with partners and to organize priorities for system development with partners input. LMI Director will manage analysts to ensure data integrity steps are implemented, technical issues resolved, that documentation is obtained and understood, and equitably distribute workload.

Research Analysts' primary responsibility will be to generate analysis of the NELDS in order to meet the objectives and deliverables. The knowledge and abilities research analysts' must possess include knowledge of 1.) statistical methodologies, including modeling techniques; and 2.) the ability to analyze and present information clearly and concisely to inform agency partners and the public. Experience which makes a candidate highly qualified for planning, implementing and conducting analyses with the NELDSS includes administering longitudinal and other databases, and conducting longitudinal wage records research and analysis. Research Analysts will work with partners in order to develop meaningful analysis to evaluate the performance of both workforce and education programs and the reports needed on a quarterly, annual or ad hoc basis.

Other Data Linkages

Current Linkages: NDOL has signed the WRIS2 Data Sharing Agreement and will offer participating state wages to our education partners. Currently, NDOL has an MOU with CTE and performs the UI wage matches for the employment part of the CTE postsecondary federal performance reports. Beginning in the fall of 2012, FEDES and WRIS2 will be added in with the NE UI wages and aggregated for CTE postsecondary federal performance reports. NDOL has MOUs with Adult Basic Education and Vocational Rehabilitation to perform UI wage matches for federal reporting. In 2012 FEDES data will be added to ABE UI data. WRIS2 will also be

added but NDOL will need to aggregate any data from WRIS2. NDOL is pursuing a similar arrangement with Vocational Rehabilitation. CTE, ABE and VR all plan to participate in the NELDS (NDE support letter in the attachment). Data fields from their management information systems will be included and will follow WRIS2 DSA requirements, FERPA and Employment Security laws.

Proposed Linkages: NDOL plans to solicit participation of the TANF program to utilize FEDES and WRIS2 and partner in the NELDS. Registered Apprenticeship has been invited to participate in the NELDS.