In December of 2006, the Wisconsin Department of Public Instruction (DPI) submitted its first Annual Report nine months into its IES Statewide Longitudinal Data System grant project. The following is from the Executive Summary of that report:

The vision of the Wisconsin LDS project is to create a longitudinal data decision support tool kit that will facilitate knowledge-based curriculum, assessment, and school operational decisions to improve education effectiveness and delivery. The LDS is being designed to integrate key program area silos of data to produce value-added, on-demand, multi-dimensional analysis' which answer key business and education improvement questions that currently cannot be attained from the data silos.

Specific goals of the Wisconsin LDS include:

1. *Create a comprehensive Wisconsin DPI data model that incorporates all siloed program area data and makes all collected data available for value-added and other education data research,*
2. *Define key tools and decision reports that deliver critical information to DPI program areas and Wisconsin school districts,*
3. *Develop and deploy a variety of end-user reporting tools that are web-based, self-service, and capable of ad-hoc analysis and reporting and statistical forecasting,*
4. *Create a comprehensive reporting tool that will provide data submission for the Education Data Exchange Network (EDEN) and other federal reporting requirements.*

Now, in September of 2009, the DPI is submitting the Final Report for the LDS grant project and is pleased to report significant accomplishment with all four goals and sustained efforts to continue the development.

The DPI is presenting this Final Report through a discussion of seven project objectives. These objectives represent the work accomplished throughout the life of the project – specifically the work done during this final reporting period which includes the last 18 months.

The first project objective was to build the Wisconsin DPI's production LDS environment. The production environment was completed in the summer of 2008 using a combination of HPUX, Linux and Windows servers and Oracle Data Warehouse Builder 10g. Although the original project plan included options for hosting the production environment offsite, DPI management decided that it was important for the DPI to have immediate control and access to the server environment. In addition, DPI hired outside consultants to support the hardware and base technology enabling the small internal IT staff to concentrate on building data sets, reports and business solutions.

The second project objective was to build an EDEN reporting tool. Prior to the LDS project, the DPI was unable to provide any EDEN submissions without the services of a third-party vendor. Currently all EDEN submissions come directly from the DPI. Based on data from the State Plan Execution Report; the DPI's 2004-2005 EDEN submission included 28 file submissions (SEA Level, LEA Level and School level combined). The 2007-2008 submission included 160 file submissions – an increase of 571% in three years. The EDEN submission portion of the LDS project also included extensive application documentation, the creation of development specifications, and the mapping of EDEN data requirements to specific data sources within DPI. These three initiatives enabled the work to be performed by a much larger team.

The third project objective was to create data sets to enable data analysis. The DPI Applications Development team worked with the DPI Office of Education Accountability, the Division for Learning Support: Equity and Advocacy, and with consultants from the University of Arkansas's National Office for Research on Measurement and Evaluation Systems (NORMES), to model several multidimensional analysis data sets and new reporting tools. This outside perspective enabled DPI to consider new ways to use existing data and jump start the development of secured reports.

Currently two new reporting tools have been made available to the DPI program areas and some school districts: the Wisconsin School Performance Report (SPR) and the Wisconsin Multidimensional Analytic Tool (MDAT). These full featured web-based tools allow the DPI and educational professionals to use newly created data sets to perform local data analysis.

The fourth project objective was to design and build the Enterprise Data Store (EDS). This data warehouse was created to house all student level data collected by the department through many separate data collections throughout the year. Data currently in the data warehouse can be categorized in three areas: accountability data and test scores, demographic and Title program data, and specific data collections such as ACT and AP testing. The data warehouse was built based on a data model design that began as soon as the LDS grant project started in February of 2006 and was completed in the summer of 2008. Included in this data store are tables of student level and summarized data loaded from the program area production systems which previously had been stored in silos and unavailable for research or analysis.

The fifth project related to the creation and implementation of a state wide data dictionary for education. Though this effort took a number of unforeseen turns, including an effort to secure and implement the data dictionary originally built in Colorado, it was finally determined that to meet the technical and end-user needs of Wisconsin, we would need to build our own. In the summer of 2009 we took the steps necessary to follow this direction.

The sixth project objective was to develop and build a data reporting solution. The application development and database administration team have loaded in some cases four years of individual, student level data, into the Wisconsin LDS. This presents the DPI and the Wisconsin LEAs an unprecedented opportunity to view and manipulate student level longitudinal data in order to provide information and support decision making. The most challenging task, even more challenging than loading the data, has been to securely, effectively, and accurately report the data back to the DPI program areas, the LEAs, and the public. Currently the data security focus has been on "Level I" reporting back to the school districts: District Level Data. In 2009 security work will begin on "Level II" reporting: School Level Data.

The seventh and final project objective was to implement and create professional development for the Wisconsin LDS. Proactive contact with a wide variety of potential system users developed end-user familiarity with the LDS as well as substantive input to guide development. A cross-agency team was convened to plan for the effective implementation of the system by focusing on how the LDS will and can be used at the classroom, school, district, and state levels. The LDS Implementation Team was charged with soliciting input in order to guide the development of the tool.

The team has also begun the development of modules to lead users through the critical issues for analyzing student data appropriately. Implementation Team members are developing seven modules focused on improving the quality and use of data to impact instruction, covering basic principles of data analysis and assessment, cautions in using different types of data, the use of data from multiple sources for educational decision-making, and data privacy issues.

Budget Summary:

In February of 2007, the DPI requested changes to the original approved project budget which were approved by NCES. In November of 2008, the DPI requested a project extension through the summer of 2009 which was approved by NCES. These changes and modifications have allowed the DPI to utilize the grant funds in the most effective way possible and the DPI appreciates the flexibility and willingness of the NCES to work with us during our budgeting process.

Throughout the project staffing issues have created challenges for the LDS management team. Due to State of Wisconsin government staffing rules and regulations, the DPI was limited in its ability to hire new staff with the ability to create and develop the LDS. The DPI also had difficulty finding and hiring competent contract staff who understood both the requirements of an Education Data Warehouse and the new technologies and tools the DPI purchased with the grant funds.

While there were some changes to the original approved budget, the expenditures in the final LDS grant budget match very closely the original thought process in developing the grant application and the 2006 cost estimates came very close to actual spending. The complete three-plus-year budget and expenditures are attached.

Final Performance Report Questions and Conclusion:

The Wisconsin LDS was built in-house from the ground up using state-of-the-art technologies and a data warehousing life-cycle strategy that emphasized the importance of high quality data. A key result of the LDS grant was the successful implementation of a student-centric data warehouse. Today this data warehouse has over 11 million rows of cleansed, consistent, student-level data including a unique student master record with key characteristics such as demographic information, disability determination, and income status. This data set is now the primary data source for the Wisconsin Information Network for Successful Schools (WINSS) public reporting, EdFacts federal reporting, other compliance verification reports, and research being conducted by the University of Wisconsin. This "single version of the truth" has become an invaluable resource as we work in Wisconsin to incorporate the use of data in the business of education.

As a result of the successful implementation of the technology, data, systems and working relationships put in place by this grant, Wisconsin plans to participate in the Race To The Top discussion and grant process. Without the foundation created or put in place by our first LDS grant this discussion would be unthinkable. In addition, DPI leadership now has a much better understanding of the capabilities and complexities of building a decision support system and how we might approach PK20 in Wisconsin.

 A number of challenges were encountered and addressed as this project progressed; including trying to manage the project scope in a changing education data environment and how project resources should be directed. The complexities of FERPA and State of Wisconsin laws presented a barrier by making it difficult to determine exactly what can be done to share data and create flexible access to these datasets for LEA. The need to secure access to student level data by LEA was understood, however the need to record this access was a late discovery.

The DPI feels that the LDS grant project funded by NCES has been successful and this project can serve as an example of how future collaborative projects between USED, SEAs and LEAs can be designed and executed. The DPI appreciates the help and direction we received from NCES staff and management.