Public Schools of North Carolina
State Superintendent of Public Instruction
Department of Public Instruction

Report to the North Carolina General Assembly

Improve Education Financial and Information Transparency:

Annual Progress Report

S.L. 2017-57, Section 7.16.(f)

NC DEPARTMENT OF PUBLIC INSTRUCTION
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SCHOOL BUSINESS SYSTEM MODERNIZATION
March 2018 Annual Progress Report

Submitted to:

Joint Legislative Education Oversight Committee
and the Fiscal Research Division of the General Assembly

Prepared by

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FOREWARD

School Business Systems Modernization (BSM) is specified in *Session Law 2017-57* as follows:

IMPROVE EDUCATION FINANCIAL AND INFORMATION TRANSPARENCY

SECTION 7.16.(a) The Department of Public Instruction shall implement the School Business System Modernization Plan, as proposed by the State Board of Education in the report required by Section 8.15(b) of S.L. 2016-94, using the funds appropriated by this act for that purpose. It is the intent of the General Assembly to fund a multiphase, multi year project to (i) modernize State and local education financial, human capital, and school information systems, (ii) provide for a common reporting system and analytics system, (iii) integrate financial, payroll, human resources, and related human capital systems through the use of a new software as a service enterprise resource planning (ERP) solution, make enhancements to existing local systems, or both, and (iv) link the State licensure system with the upgraded local systems. The State Superintendent of Public Instruction (State Superintendent) shall review and improve business processes in the Department of Public Instruction, as appropriate, and modernize State systems at the Department.

The NC Office of the Superintendent of Public Instruction provides this report pursuant to Section 7.16.(f) that specifies:

The State Superintendent shall submit annual reports to the Committee and the Fiscal Research Division by March 15 of each year on the expenditure of funds for the project and progress of implementation until the completion of the project.

BACKGROUND

The 2016 NC General Assembly directed the development of a plan to modernize the systems used by the Department of Public Instruction (NCDPI), Financial and Business Services Division, to manage and deliver funds and technical support services to local school administrative units and charter schools (*S.L. 2016-94, SEC. 8.15*). The School Business Systems Modernization plan was presented to the General Assembly in 2017, and the 2017 General Assembly provided initial funding and directed that the State Superintendent implement the plan. Key elements of the plan include modernized local systems that interact with NCDPI systems, modernized NCDPI systems that support and interact with local systems, and modernized data integration, analytics and reporting for improved transparency.

School Business Systems Modernization (SBSM) builds upon successful infrastructure programs and on the establishment of State-level DIT support functions.

SCHOOL BUSINESS SYSTEMS MODERNIZATION OVERVIEW

Vision: Every school district has up-to-date financial, business, and technology systems to serve its students, parents, and educators.

Mission: The School Business Systems Modernization program will focus on providing timely and transparent data from scalable systems on modern infrastructure, while providing intuitive systems and software that improve process efficiency and consistency and allows users the flexibility to retain their uniqueness and autonomy.

Goals:

1. Enable near real-time position visibility and control
2. Provide data management and advanced analytics for decision support
3. Replace discontinued and obsolete systems
4. Simplify monitoring and compliance
5. Eliminate unnecessary duplication
6. Increase efficiency of operations

Initiatives:

➢ State and Local Systems (ERP) Modernization
➢ Data Transparency
➢ Human Capital & School Information Systems Modernization

SCHOOL BUSINESS SYSTEMS MODERNIZATION PROGRAM ACCOMPLISHMENTS TO DATE

In the first few months of operation of the SBSM Program Office, much planning and budgeting was done after an initial review of Inflight projects like PowerSchool®, ECATS, Applicant tracking System (ATS) and Licensure. The Program vision and objectives have been communicated at many venues including NCASO, Quarterly Finance Summit, B12 Superintendents Quarterly Meeting and the NCTIES Conference. The following is a summary of some of the key accomplishments, expenditures, and encumbrances over the past months.

1. Friday Institute contract executed
2. Program Director hired, Program Office formed and initial staffing complete.
3. GDAC Data Transparency Scope of Work, MOA and MOU executed.
4. ERP RFP released publicly.
5. MOU executed to change the Licensure data transfer process in order to transition more than half of the State's LEAs off of obsolete, unsupported hardware.

	2017-18 YTD (Feb.) Expenditures	2017-18 YTD (Feb.) Encumbrances
Data Transparency	$0	$3,000,000
Systems Modernization	$0	$2,327,000
Project Management Office	$151,477	$192,774
Total	**$151,477**	**$5,519,774**

SCHOOL BUSINESS SYSTEMS MODERNIZATION PROGRAM APPROACH

The School Business Systems Modernization (SBSM) program approach solidified around the concept of improving Data Driven Decision Making, or simply stated answering questions quickly using current, accurate and complete Data from all of the Public School System landscape. Currently, accurate and timely reporting and analysis of financial, employee, student, and related data is cumbersome and even thwarted by the independent silos of data. Combined with business processes established decades ago to answer a different set of questions on a different timescale, the current business systems are at the end of their useful life.

A modern data management environment will provide automated access to the most current data. Advanced analytics will be applied to data on a continuous basis to help the State, districts, and individual schools make the best decisions to support the operation of schools and the education system. All of this needs to be delivered on a more modern infrastructure both within NCDPI and at all of the LEAs, as the Core State financial systems and many LEAs are hosted on aged mainframe and AS400 hardware, originally deployed in the 1980s. To accommodate new State and Federal requirements, numerous applications, both customized off the shelf solutions and home grown, using a myriad of technologies have been built to supplement the core State financial systems. This resulted in dozens of applications that now need to be supported, maintained, and hosted. Currently, within LEAs and at NCDPI, distinct business groups manually input data into parallel systems. In addition to a duplication of effort, this manual input increases errors and inconsistencies with data being reported differently in different reports. A modern system will have an integrated data service at its core that automatically collects data from the single authoritative source systems (e.g., from the ERP system, the student information system, the licensure system) that feeds reporting, analytics, and data visualization systems.

A modern data management and reporting environment coupled with modern infrastructure within NCDPI and at the LEAs will enable consolidation of reporting applications. Legacy applications, workflows, and supporting systems can be retired, thereby reducing total cost to the State and improving the Data Driven Decision making. This program allows the State, NCDPI and the LEAs to make better informed decisions faster, and implementing them faster, thus improving the value to the State by *reducing the time to decision value*.

In planning for the School Business Systems Modernization (SBSM) Program it became clear that Data was at the heart of the new modern infrastructure landscape. Based on that premise the program was broken down into three (3) focus areas:

- Data Transparency
- State and Local Systems (ERP) Modernization
- Human Capital & School Information Systems Modernization

Data Transparency Initiative

The **Data Transparency** initiative is a joint program between NCDPI and GDAC (*S.L. 2017-57, Sᴇᴄ. 7.16(d)*) to "ensure all internal and external stakeholders have access to data and reports via state of the art systems". Data Transparency has been the driving force for much of the planning. By working from the finished product backwards we have been able to identify many gaps in our infrastructure and data schema, governance and proliferation, as well as completeness and currency of the data. Major objectives are to:

1. Enable near real-time position visibility and control

Currently, calculations and reports related to teachers are stitched together using at least three disparate sources – payroll code data, licensure data, and course code data. There is no single authoritative source for employee records. A modern system will provide robust position control that allows public schools to manage a single view of positions through allotment, budget, payroll, applicant tracking, onboarding, and human resource management. Position data will roll up to NCDPI data systems that will then provide enhanced reporting capabilities on licensed and unlicensed positions. Contemporary reports and dashboards will present timely views that include certified position counts, payroll summaries, contract days, and more.

2. Provide data management and advanced analytics for decision support

In general, accurate and timely reporting and analysis of financial, employee, student, and related data is cumbersome and even thwarted by independent silos of data. Combined with business process established decades ago to answer a different set of questions on a different timescale, the current business systems are at the end of their useful life. A modern data management environment will provide automated access to the most current data. Advanced analytics applied to data on a continuous basis will help the State, districts, and individual schools make the best decisions. This modern decision support system will allow for:

- Improved tracking of expenditures against allotments.
- Regular access to the count of certified and non-certified personnel (and vacancies) per school, grade, subject, and mapping of current role.
- Modeling student-teacher ratios to support effective school management.
- Tracking teacher turnover within and between school LEAs.

Status:

Contract, MOU, and MOA in place with the Governmental Data Analytics Center (GDAC) with the following deliverables in 2018:

- Modernized school budget highlights and class size reporting (soft releases March – April 2018)
- Reporting ODS & Data Warehouse in the GDAC (in scoping/development)
- Data Integration Service within the GDAC
- Public and private portal interfaces for reporting (*in progress*)

State & Local Systems (ERP) Initiative

The ERP Modernization Initiative is focused on the replacement of discontinued and obsolete systems at the LEA and Core State financial systems, which are mainframe-based, originally deployed in the 1980s.To accommodate new State and Federal requirements, numerous applications using a myriad of technologies have been built to supplement the core State financial systems, resulting in dozens of applications that now need to be supported, maintained, and hosted. A modern data management and reporting environment will enable consolidation of reporting applications. Legacy applications, workflows, and supporting systems can be retired.

The *Systems (ERP) Modernization* Initiative is focused on modernizing the technology and integration of data in the current dated infrastructure landscape. There are two (2) major parts to the initiative – LEA and DPI system improvements:

1. **Modern ERP Systems for LEAs:**

    Request for Proposals. The first major workstream was to develop the ERP Request for Proposals (RFP) to identify modern Software as a Service (SaaS) partners to be qualified by DPI to be available for the LEAs to select from, in order to move on to the new modernized landscape. This RFP was developed in collaboration with the Friday Institute and internal and local stakeholders. The ERP RFP reflects specifications provided by LEA finance officers and human resource directors.

    Golden Templates for Transitioning Systems. One of the primary reasons that it is cost prohibitive for LEAs to move to modern ERP systems on their own is that the first LEA to move must bear the entire cost of the one-time development of a "Golden Template" to transition from their old system to the new system, including all of the various State systems with which the new system must communicate. Accordingly, the SBSM program is supporting the development of a "Golden Template" – detailed specifications of how to connect to NC systems, table formats, workflows, etc. – that can be used to reduce cost and time for future LEAs that move to any cloud-based solution. This will enable transitioning LEAs to pay only the marginal costs of transition. Wake County Public School System (WCPSS) will transition from Oracle to Oracle's Cloud ERP Software as a Service (SaaS) solution. The SBSM program is supporting the golden template portion of the transition. Identification of pilot LEAs for a second golden template to map the transition off one of the existing multi-LEA legacy systems is also underway.

Friday Institute Contracted 8/24/2017	Program Director Hired 11/13/2017	RFP Complete 1/15/2018	LEA Review Complete 2/2/2018	DPI Review Complete 2/9/2018	DIT Review	Release RFP 3/15/2018

Status:
- ERP RFP has been released publicly.
- SBSM is supporting a "golden template" in Wake County Public School System's (WCPSS) transition to a cloud-based solution (currently underway) and working with other pilot LEAs to support a golden template to map from LEA legacy systems (target date April 2018).

2. **State-level System Modernization.** The second part of the initiative is to focus on updating the aged Agency infrastructure, applications and data access to further improve on the *time to decision value*.
   .
   - A detailed inventory and mapping of NC DPI systems and connections is underway
   - The SBSM Program Director is playing a role with the Department of Information Technology (DIT) on the Agency-led RFP for an ERP Solution for the State's Financial Systems, ensuring coordination between the NCDPI Modernization efforts and the Statewide Financial Modernization efforts.

Additional LEA systems accomplishments to date:

Many of these initial activities are designed to stabilize the LEA infrastructure to secure and stabilize the environment, while the modernization projects are deployed over the coming years. Additionally, the building of an Operational Data Store (ODS) through the Data Transparency initiative will provide a "decoupling" of the LEA, 3rd Party and DPI systems, allowing for the replacement of the systems with minimum impact to other systems.

- Moving LEAs from on premise to education cloud hosted AS400 to reduce hardware costs and streamlined migration process and timeframe. This work relieves the burden on LEA staff running IT infrastructure, allowing them to focus on core mission and improving support and security. There are 24 LEAs where migration work is underway:

Burke County Schools	Mitchell County Schools
Cabarrus County Schools	Mt. Airy City Schools
Clay County Schools	New Hanover County Schools
Cumberland County Schools	Pitt County Schools
Dare County Schools	Randolph County Schools
Davidson County Schools	Rockingham County Schools
Davie County Schools	Sampson County Schools
Gaston County Schools	Union County Schools
Guilford County	Washington County Schools
Harnett County	Wayne County Schools
Henderson County	Wilkes County Schools
Martin County Schools	Yancey County Schools

- Developed a single Licensure File feed to go to ERP providers nightly to save the manual work that occurs at the LEA level to determine changes from a 600,000-line flat file for the few affected teachers. This project will lead to the sunset of 50+ aged AS400s.

- Working with current LEA legacy financial system provider to develop a human resources solution to migrate their users off the NCDPI's retiring HR application and AS400 platforms.

Human Capital & School Information Systems Modernization Initiative

The ***Human Capital & School Information Systems Modernization*** initiative is focused on improving technology and data of the Agency business systems. A thorough inventory and mapping of those systems is currently underway. This workstream will develop further over the next several months pending the result of the ongoing NCDPI operational review (target date May 2018).

Other early actions in this initiative include:

1. Student Information System (SIS): The current vendor is transitioning to a cloud environment. SBSM is using this transition to optimize and improve the SIS performance.

2. A review of the third-party assessment of the Licensure Division has produced recommendations to improve the Licensure application.

3. Working with other NCDPI divisions, software for electronic document handling has been piloted successfully and additional workflows and documents are underway to improve the processing time and oversight and exception handling.

Uniform Education Reporting System. As planning and stability projects were solidified, it became apparent that the strategy to focus first on the end-state visualizations via the Data Transparency goal was sound. Initial data schema findings by the Friday Institute indicated that the data required was not only in multiple sources, it was missing entirely in some applications. Data was constantly being copied and moved and then stranded in applications. Many applications are completely disconnected or only provide the minimum amount of data. The one exception was the financial data, which was well defined and governed by the UERS Policy.

The Uniform Education Reporting System (UERS) Policy states that NCDPI has the legal responsibility to use and disseminate appropriate information as one of its most important priorities. The use of public school data is based upon several state and federal laws including, primarily, the Uniform Education Reporting Systems (UERS) umbrella as required by G.S. 115C-12. This policy was then defined for the financial data required to ensure oversight of the allotments and expenditures in NC public school operations. Other systems such as Student Information Systems (SIS) and Human Resources data, although implied by the policy, is handled in an ad hoc manner. Accordingly, the SBSM office has begun the initial work of extending the UERS Specifications into those areas. A potential future area of "LEA Operations" was also identified, encompassing such information as classrooms, seats, technology and transportation. A preliminary overall model can be represented as follows:
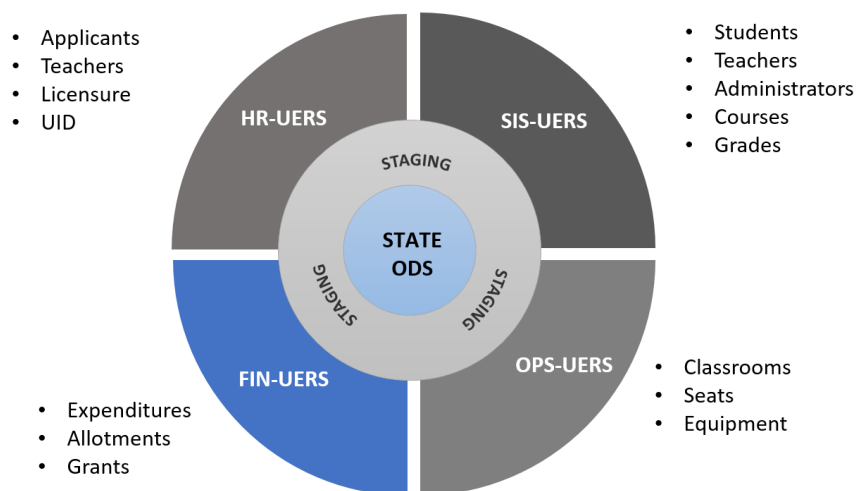
The role of the UERS specifications is to provide the details of the data moving in an out of the Operational Data Store (ODS) via a staging area where the data can be transformed as needed to interface with external systems. With a well governed standard defining and governing the data and data flows, we can be sure we have all the information required in a central location on which to base reporting and analytics.

Integration Bus. An additional benefit of decoupling the applications from each other is that it allows for smoother changes throughout the DPI/LEA infrastructure and future modernization with minimal disruption. Working with NC DIT to select a new Integration Bus to connect and move data leverages the advantage of IT planning as part of a statewide enterprise. Other external systems NCDPI may need to interact with will be on the same Integration Bus and also decoupled, allowing other agencies (i.e. State Controller's Office) to make changes with minimal disruption.

Local ERP Implementation. As the SBSM program moves into the ERP RFP Phase of the Modernization program, other projects will be worked in parallel. Once the ERP RFP selection period is over and partners are identified, the SBSM Program Office will do detailed planning and budgeting based on the new partners and cost data. The intent is to establish master contracts with the partners that LEAs can sign as local contracts. The high-level plan going forward has also been used to drive the budget.

SCHOOL BUSINESS SYSTEMS MODERNIZATION PROGRAM EXPENDITURES

The following table represents the year-to-date expenditures and encumbrances, and the current planning budget for the School Business Systems Modernization Program. It is a preliminary budget, and will be validated and adjusted after RFP award to accommodate the partner landscape, LEA selections and deployment plans.

	2017-18 YTD (Feb.) Expenditures	2017-18 YTD (Feb.) Encumbrances	Actual + Projected 2017-2019 Expenditures
Data Transparency	**$0**	**$3,000,000**	**$3,500,000**
Deliverables 1-3 (Reporting/Dashboards, ODS Scope)	$0	$3,000,000	$3,000,000
GDAC Data Management	$0	$0	$500,000
Systems Modernization	**$0**	**$2,327,000**	**$22,030,000**
Golden Templates	$0	$1,577,000	$3,750,000
RFP Pilot	$0	$0	$3,200,000
Integration Hub	$0	$750,000	$2,250,000
Integration Service	$0	$0	$560,000
AS400 Hosting (EdCloud)	$0	$0	$2,170,000
RFP ERP Transitions	$0	$0	$3,100,000
ERP Service	$0	$0	$2,500,000
Agency Modernization	$0	$0	$4,500,000
PMO	**$151,477**	**$192,774**	**$3,470,000**
FI - Planning & Design	$105,632	$182,774	$510,000
PMO Staff	$43,039	$0	$2,860,000
Operating	$2,806	$10,000	$100,000
Total	**$151,477**	**$5,519,774**	**$29,000,000**

School Business Sytems Modernization Overall Plan & Budget