Introduction

This Solution Brief provides guidelines for the type of roles and skills a State Education Agency (SEA) should have in place for a successful P-20 Longitudinal Data System (LDS) implementation. The recommendations in this Solution Brief stem from eScholar's twelve years of experience working with SEAs, Local Education Agencies (LEAs), and Higher Education Agencies to implement Longitudinal Data Systems. While we feel eScholar's products can help SEAs accomplish their LDS goals, we recognize that technology is only part of the equation. Additionally, an LDS implementation is not a one-off project, but is an ongoing endeavor complete with requirements that may change on relatively short notice. Experience has shown that having the right project skills and staff in place – from IT staff to the Project Sponsor – is a major factor in project success and system longevity.

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Below is an outline of the types of roles and skills that characterize successful P-20 LDS implementations. While it is not necessary to have each role assigned to a specific individual, having each present somewhere on your project team will increase the odds of project success.

Additionally, we provide a sample staffing plan as well as a roles and responsibilities matrix to help you envision when to engage the resources necessary to implement a P-20 LDS using products such as the eScholar Complete Data Warehouse® (CDW).

Description of P-20 LDS project roles and skills

Below we list each recommended project role as well as the responsibilities of the role and the skill set required by the person fulfilling the role.

Project Sponsor

Responsibilities: The Project Sponsor is accountable for the project's overall success. This person articulates the project's goals and objectives and builds support for the project at the State Education agency (SEA) and other agencies, as appropriate. The Project Sponsor has the authority to make decisions critical to the project's success. This person garners the resources necessary to make the project successful and breaks down barriers that others cannot address.

Required skill set:

- Ability to assess whether the project is on track based on information provided by the Project Manager
- Capability to ensure the project team has clearly communicated project goals to all stakeholders
- Can determine when the sponsor needs to intervene to keep the project on track

- Possesses the authority and ability to empower the Project Manager to make as many decisions as possible

Project Manager

Responsibilities: The Project Manager (PM) serves as the main interface with project stakeholders. Project stakeholders include the project team, outside vendors, integrators, and suppliers, but also the user community and anyone at the SEA that the P-20 LDS project will affect. The stakeholder group also includes anyone inside or outside the SEA who perceives that the P-20 LDS project will affect them even though the project may not affect their day-to-day activities. The person in this role sets and communicates expectations to project stakeholders. He or she serves as the facilitator among stakeholders and project team members.

The PM owns and manages the project work plan. The PM tracks progress against the project plan, manages project budget, and oversees project status meetings. The individual in this role determines schedule dependencies and risks, and reviews any dependencies and risks identified by other project participants and stakeholders.

The PM informs Project Sponsor of project status; key dependencies and risks; and risk management and mitigation plan. He or she requests Project Sponsor intervention as required.

Required skill set:
- Excellent project management skills
- Superior communication skills
- Experience deploying enterprise wide systems

P-20 LDS Knowledge Manager/Business Analyst

Responsibilities: The person in this role works closely with the PM and serves as an interface between the user community and the team that manages the systems. This individual is responsible for articulating what the system can do (i.e., what data is included for what period of time and what information the system can be relied on to provide) to the user community. You should note that there are different skills and knowledge required for P-12 & Postsecondary. This fact may mean that there may be multiple people involved in this area.

The Knowledge Manager sets the expectations of the user community. At the same time, this person communicates the user community's wishes to the project and system management teams. This individual is the user community's main interface with the PM and will articulate and prioritize requested enhancements to existing functionality in addition to new feature requests. The project team considers the knowledge manager to be the P-20 LDS Subject Matter Expert.

Required skill set:

- Strong communication skills
- Thorough knowledge of the capabilities of the system in addition the SEA's policies and goals for a P-20 LDS
- Ability to manage the expectations of the user community and, at the same time, communicate the user community's wishes to the team that manages the system
- Willingness and ability to be an advocate for the user community

Source System Subject Matter Expert

Responsibilities: Based on the requirements of the project, its goals, and objectives, this person works closely with the Knowledge Manager/Business Analyst to determine what data sources are the best ones to populate the P-20 LDS. The Source System Subject Matter Expert (SME) creates a data dictionary based on the project data sources. The data dictionary should include each data element name, data element definition, maximum field size, data type (number, date etcetera), list of valid values (if applicable), sample data (desirable), and definitive source of data (source system name). The Source System SME is responsible for either providing the detailed mapping from the source elements in the data dictionary to the target elements in the P-20 LDS , or reviewing the detailed mapping developed by the Knowledge Manager/Business Analyst. The team bases this mapping on the elements contained in the data dictionary. This individual has periodic involvement as the P-20 LDS expands and evolves. As the Source System SME is the ultimate "owner of the source system data, this person is also responsible for resolving data quality issues that arise as the source data extracted is loaded to the P-20 LDS. The Source System SME should review any available data quality reports and resolve data quality issues. Again, you should note that there are different skills and knowledge required for P-12 & Postsecondary. This fact may mean that there may be multiple people involved in this area.

Required skill set:

- Ability to determine the best source of data to populate the P-20 LDS
- Thorough knowledge of the source data
- Thorough understanding of the goals of the project

Data Extract Developer

Responsibilities: This role is responsible for the design and programming of data extract routines to extract data from source systems (e.g., Student Information Systems and data systems at postsecondary locations) based on specifications provided by Knowledge Manager and/or Source System SMEs. The Data Extract Developer automates and schedules data extraction. This person also updates extraction routines as necessary to support the project.

Required skill set:
- Knowledge of:
    - Source system data structure
    - Data extraction capabilities built into source systems
    - Alternative technologies available to develop extraction routines
- Ability to develop and maintain extraction routines based on written specifications
- Understanding of messaging technologies such as Enterprise Service Bus would be beneficial

Report Developer

Responsibilities: The Report Developer designs and programs reports based on specifications provided by the System Super User, Knowledge Manager, and/or Source System SMEs. This individual works with stakeholders to determine reporting needs of groups throughout the SEA. The Report Developer also updates reports as necessary to support the project.

Required skill set:
- Knowledge of LDS data model and reporting capabilities
- Expert knowledge of the BI solution employed by the SEA (e.g., Cognos, Microsoft BI, or Oracle BI)
- Ability to develop and maintain reports based on written specifications
- Understanding of SEA business rules
- Familiarity with data access regulations such as FERPA
- Excellent ability to communicate with stakeholders at all technical levels

Database Administrator

Responsibilities: The Database Administrator (DBA) administers the relational data base management system (RDBMS). The DBA installs and implements enhancements and bug fixes provided by the P-20 LDS developer/vendor. The DBA is responsible for monitoring RDBMS performance and working with the P-20 LDS developer/vendor to plan and execute indexing strategies. Additionally the DBA manages RDBMS backup and restore processes.

Required skill set:
- Thorough knowledge of SEA processes and procedures for database administration including:
    - Monitoring and tuning
    - RDBMS security
    - High availability
- Understanding of best practices in database administration

- Proven skills in administration of the RDBMS that will be used

Data Administrator/Application Administrator

Responsibilities: The Data Administrator interfaces with providers of source data. This person maintains data loading and data refresh calendars and monitors any automated data refresh processes. In addition, the Data Administrator manages valid values on data elements (e.g., code sets) and creates/maintains source data error correction processes. The person in this role monitors and reports on data submission and data quality. The Data Administrator analyzes data delete requests. In short, the Data Administrator oversees the data integrity of the P-20 LDS.

Required skill set:
- Expert knowledge of the P-20 LDS
- Knowledge of required data elements and their associated business rules
- General knowledge of source systems
- Thorough knowledge of data/file format(s) required by P-20 LDS
- Ability to communicate to system stakeholders the processes and procedures required to maintain data integrity

System Administrator

Responsibilities: The System Administrator is accountable for overall system management and troubleshooting. This individual is responsible for the planning and management of the implementation of changes -- including business rule implementation and configuration, software, hardware, facilities and network, and determining and communicating the impact and mitigation strategy. The system administrator installs, configures, and maintains servers. This individual administers servers, including operating system monitoring and maintenance, hardware and operating system error resolution, and other system tasks.

Required skill set:
- Expert knowledge of the P-20 LDS
- Thorough knowledge of SEA's policies for system maintenance
- Ability to test, troubleshoot, monitor, and administer server hardware, operating systems, and network
- Familiarity with LAN and WAN networks in order to analyze and troubleshoot issues
- Ability to monitor and measure the impact of changes in facility environment, security, network, hardware, SAN, NAS and software stack throughout system

Security Administrator

Responsibilities: The Security Administrator administers SEA business rules for access to data. This individual installs, configures, and administers the security management system. The Security Administrator monitors the security management system's performance. He or she monitors and reports on user administration including password administration and associated compliance with business rules. The Security Administrator oversees security rules and their implementation compliance with FERPA regulations. The Security Administrator participates in change management and articulates the potential impact on security of any proposed changes throughout the system architecture.

Required skill set:
- Expert knowledge of the P-20 LDS
- Thorough knowledge of SEA and FERPA policies for data access
- Ability to test and monitor security procedures of SEA policies for system maintenance
- Ability to articulate the potential impact on security of proposed changes throughout the system architecture including:
    - internet connectivity
    - security
    - LAN/WAN
    - operating system
    - hardware
    - FTP
    - Reporting and analysis tools
    - Firewalls
    - Web tier, application tier, database tier on an web enabled, high availability enterprise data warehouse

System Super User

Responsibilities: The Super User is a member of the SEA personnel who has in-depth understanding of the system and the business rules of the various data areas. This individual also serves as the source of reporting requirements. The Super User is the main point of contact between project team (i.e., Business Analyst and Report Developers) and the report end-user community. He or she provides feedback to the project team about experiences using the solution. The Super User serves as a point-of-contact for other system users for questions, etc.

Required skill set:
- Expert knowledge of the P-20 LDS
- Superior technical skills

- Ability to communicate technical information to non-technical staff
- Thorough knowledge of SEA policies for data access and business rules of data areas captured in the LDS.

Quality Assurance (QA) Lead

Responsibilities: The QA Lead authors test scripts created in collaboration with system developers, business owners, end users and other appropriate stakeholders. The QA lead designs the test scripts so that they test system functionality and performance.

Required skill set:
- Ability to communicate effectively with project stakeholders
- Working knowledge of SEA policies, expected system functionality, and end-user needs
- Understanding of how to write and execute test scripts and document results

QA Analyst

Responsibilities: The QA Analyst uses test scripts provided by the QA Lead to test system functionality and performance.

Required skill set:
- Understanding of how to execute test scripts and document results

Training Specialist

Responsibilities: The Training Specialist designs the training approach (e.g., instructor-led classroom training, train-the-trainer, on-line training). This person is accountable for creating training materials. The Training Specialist determines training logistics and manages the training calendar.

Required skill set:
- Ability to communicate effectively with all project stakeholders
- Capacity to tailor training delivery to a specific audience
- Thorough knowledge of system functionality and end-user experience
- Understanding of system documentation

Level 1 Help Desk/ Help Desk Team Leader

Responsibilities: This resource responds to and resolves user questions and issues. The Help Desk coordinates and notifies users of system downtime and maintenance. The Help Desk coordinates application issue resolution with System Administrators and Database Administrators and escalates issues to a Level 2 Help Desk as needed.

Required skill set:
- Thorough knowledge of how the system functions
- Understanding of system documentation

Sample P-20 LDS Implementation Staffing Plan

Below is a sample staffing plan for a P-20 LDS Implementation. The plan provides an idea of what types of resources would be necessary for a successful implementation. It also provides some insight into when you may want to deploy these resources during the project life cycle. The nature of your actual project (e.g., SEA staff members dedicated to project, type of solution, etc.) may affect the actual Full Time Equivalent (FTE) levels required for your project. Please note that you may fill multiple project roles with a single resource. For example, the Data Administrator could also serve as a QA Analyst. Conversely, the scope of your project may require you to assign multiple resources to one or more of the roles listed below. Additionally, eScholar recommends that cross-training take place so at least two people are aware of and can perform the tasks for each role in case of staff turnover or resource issues.

Role or Skill	Project Phase				
	Requirements Gathering	System Design/Develop	Testing	Implementation	Post Implementation Operations
Project Sponsor	0.2 FTE	0.1 FTE	0.1 FTE	0.2 FTE	0.1 FTE
Project Manager	1.0 FTE	1 .0 FTE	0.5 FTE	1.0 FTE	0.5 FTE
P-20 LDS Knowledge Mgr / Business Analyst / Help Desk Team Leader	1.0 FTE			1.0 FTE	1.0 FTE
Source System Subject Matter Experts	1.0 FTE		0.5 FTE	0.5 FTE	0.5 FTE
Data Extract Developer		1.0 FTE		0.5 FTE	0.25 FTE
Report Developer	1.0 FTE	1.0 FTE	0.5 FTE	1.0 FTE	0.25 FTE
Database Administrator		0.5 FTE		0.5 FTE	0.5 FTE
Data Administrator/ Application Administrator		0.1 FTE	0.5 FTE	0.75 FTE	0.75 FTE
System Administrator		0.1 FTE	0.1 FTE	0.25 FTE	0.25 FTE
System Super User	1.0 FTE		0.5 FTE	0.5 FTE	0.5 FTE
Security Administrator		0.1 FTE	0.5 FTE	0.5 FTE	0.25 FTE
QA Lead		0.1 FTE	1.0 FTE		
QA Analyst			1.0 FTE		0.1 FTE
Training Specialist		0.1 FTE	0.1 FTE	2.0 FTE	0 .5 FTE
Level 1 Help Desk/Help Desk Lead				0.1 FTE	0.25 FTE

Sample P-20 LDS Implementation Roles and Responsibilities Matrix

The matrix below provides an idea of the level of engagement required by each role at specific points during the implementation lifecycle. There are times that individual roles or skills may be tangentially involved in the project, but the individuals are not functioning in an FTE role.

Project Phase	Project Sponsor	Project Manager	P-20 LDS Knowledge Mgr / Business Analyst	Source System Subject Matter Experts	Data Extract Developer	Report Developer	Database Administrator	Data Administrator	System Administrator	Security Administrator	Super User	QA Lead	QA Analyst	Training Specialist	Level 1 Helpdesk\Help Desk Lead
Requirements Gathering	A	R	P	P		A	I				A	I			
System Design	A	R	P		P	P	P	C	C	P	P	I		I	
System Development	C	R	C		R	R	P		P	I		I			
Testing	I	R	C	P	P	P	I	P		P		A	P	I	
Implementation	R	R	C			P	P	P	P	P	P			P	P
Post-implementation Operations	I	I	I			P	P	P	P	P	P				P
Legend R= responsible for execution (may be shared) A = final approval for authority					C = must be consulted I = must be informed P = completes/participates in workflow										

Conclusion

Implementing a P-20 LDS is more than just a technology project. Having staff with the right roles and skills will be a key factor in your project's success. In this Solution Brief, we provided a framework for creating a solid team to meet your P-20 LDS goals. eScholar's aim is to help you succeed. If you have any questions, or would like more information, please feel free to visit us on the web at www.escholar.com or contact us at support@escholar.com.

Why eScholar?

- The leader in education data management, providing successful statewide solutions for 11 SEAs, supporting over 3,500 school districts and over 12 million students across the country.
- Focused exclusively on the education data management industry since 1997.
- Comprehensive services, training and support programs to ensure customer success.
- An established, active user community allowing access to best practices, experience, and support from peers nationwide

Today, our products have become the recognized standards in the student and staff identification and educational data warehousing markets. The eScholar Complete Data Warehouse® solution has become an indispensible solution to local and state education agencies for integrating and managing the vast quantity of information they collect on students, programs, teachers and much more. For more information, contact Sales at sales@escholar.com or (877) 328-2969

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