

TRAVELING THROUGH TIME: THE FORUM GUIDE TO LONGITUDINAL DATA SYSTEMS

Not for distribution or citation

DRAFT

National Cooperative Education Statistics System

The National Center for Education Statistics established the National Cooperative Education Statistics System (Cooperative System) to assist in producing and maintaining comparable and uniform information and data on early childhood education and elementary and secondary education. These data are intended to be useful for policymaking at the federal, state, and local levels.

The National Forum on Education Statistics (Forum), among other activities, proposes principles of good practice to assist state and local education agencies in meeting this purpose. The Cooperative System and the Forum are supported in these endeavors by resources from the National Center for Education Statistics (NCES).

Publications of the National Forum on Education Statistics do not undergo the formal review required for products of the National Center for Education Statistics. The information and opinions published here are the product of the Forum and do not necessarily represent the policy or views of the U.S. Department of Education or the National Center for Education Statistics.

Month Year

This publication and other publications of the National Forum on Education Statistics may be found at the National Center for Education Statistics website.

The NCES World Wide Web Home Page is <http://nces.ed.gov>

The NCES World Wide Web Electronic Catalog is <http://nces.ed.gov/pubsearch>

The Forum World Wide Web Home Page is <http://nces.ed.gov/forum>

Suggested Citation:

National Forum on Education Statistics, Longitudinal Data Systems Task Force. (YEAR). *Title: The Forum Guide to Longitudinal Data Systems* (NFES YEAR-###). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

For ordering information on this report, write:

U.S. Department of Education

ED Pubs

P.O. Box 1398

Jessup, MD 20794-1398

Or call toll free 1-877-4ED-PUBS; or order online at <http://www.edpubs.org>

Technical Contact:

Tate Gould

202-219-7080

Tate.Gould@ed.gov

The Longitudinal Data Systems Task Force

A volunteer task force of the National Forum on Education Statistics produced this document. It was developed through the National Cooperative Education Statistics System and funded by the National Center for Education Statistics (NCES) of the U.S. Department of Education. Members of the Longitudinal Data Systems Task Force are:

Chair

Bruce Dacey

Delaware Department of Education
Dover, Delaware

Members

Nancy Burke

Century Elem., Grafton Public School District
Grafton, North Dakota

Corey Chatis

Chatis Consulting
(Formerly of the Tennessee Dept. of Education)
Nashville, Tennessee

Laurie Collins

Schools Interoperability Framework Association
Washington, District of Columbia

Tom Cosgrove

Office of the State Superintendent of Education
DC Government
Washington, District of Columbia

Khaled Falah

Office of the State Superintendent of Education
DC Government
Washington, District of Columbia

Maureen Matthews

Council of Chief State School Officers
Washington, District of Columbia

Consultant

Anthony Garofano

Quality Information Partners, Inc.

Pat Sherrill

Office of Planning, Evaluation and Policy
Development
U.S. Department of Education

Nancy Smith

InfoSynthesis
(Formerly of the Data Quality Campaign)
Austin, Texas

Steve Smith

Cambridge Public School District
Cambridge, Massachusetts

Susan VanGorden

Lakota Local School District
Liberty Township, Ohio

Raymond Yeagley

Northwest Evaluation Association
Lake Oswego, Oregon

Project Officer

Tate Gould

National Center for Education Statistics

Foreword

The National Forum on Education Statistics (Forum) is pleased to present the Forum Guide to Longitudinal Data Systems. One goal of the Forum is to improve the quality of education data gathered for use by policymakers and program decisionmakers. An approach to furthering this goal has been to pool the collective experiences of Forum members to produce “best practice” guides in areas of high interest to those who collect, maintain, and use data about elementary and secondary education. Developing longitudinal data systems (LDS) is one of those high interest areas. These systems hold the promise of revolutionizing the way we educate our students and transforming the way we do business from the policy level, to the school office, and into the classroom.

LDSs are the “future,” and are increasingly becoming the state of the art, in educational data. These systems will take us from relying on blunt aggregate snapshot student data to detailed and timely longitudinal (ongoing) student-level data. LDSs provide us with a tool to not only monitor the success of individual students, but also to identify trends in those students’ educational histories. Freeing educators from guesswork and lessening the burden of painstaking data analysis, these systems provide powerful and timely insight about their students and allow them to tailor instruction to better meet each student’s individual needs. They can show us, with much greater clarity, what effects our policies, programs and decisions have on our schools. These systems allow us to track students across institutions to facilitate appropriate course placement and to determine who has transferred and who has dropped out. And, LDSs offer a new level of sophistication at the business level that can streamline operations, improve data quality, and free up valuable resources previously devoted to inefficient data entry, maintenance, and reporting practices.

For these reasons and many others, it is vital that states continue to develop and expand their LDSs. This guide seeks to identify the issues and concepts central to the LDS development process. It will briefly introduce important topics, offer best practices when possible, and direct the reader to additional sources of information on many issues of importance in the LDS development process.

In this Guide

- The Introduction explains the purpose of this guide and its intended audience.
- Chapter 1 introduces the concept of an LDS, as well as the components and benefits of this type of education information system.
- Chapter 2 discusses the crucial, yet often overlooked, planning stage of the LDS development process, providing direction for LDS initiation, execution, as well as evaluation.
- Chapter 3 covers data governance to help guide effective and efficient data management, ensuring high quality data and security.
- Chapter 4 is intended to help educational communities realize the benefits of an LDS by laying out the various ways to make these new, more comprehensive data available to users along with methods for putting them to good use.
- Chapter 5...
- The Appendixes...

The National Forum on Education Statistics

The work of the Forum is a key aspect of the National Cooperative Education Statistics System. The Cooperative System was established to produce and maintain, with the cooperation of the States, comparable and uniform educational information and data that are useful for policy making at the

federal, state, and local levels. To assist in meeting this goal, the National Center for Education Statistics (NCES), within the U.S. Department of Education, established the National Forum on Education Statistics to improve the collection, reporting, and use of elementary and secondary education statistics. The Forum deals with issues in education data policy, sponsors innovations in data collection and reporting, and provides technical assistance to improve state and local data systems.

Development of Forum Products

Members of the Forum establish task forces to develop best-practice guides in data-related areas of interest to federal, state, and local education agencies. They are assisted in this work by NCES, but the content comes from the collective experience of the state and school district task force members who review all products iteratively throughout the development process. Documents prepared, reviewed, and approved by task force members undergo a formal public review. This public review consists of focus groups with representatives of the product's intended audience, review sessions at relevant regional or national conferences, or technical reviews by acknowledged experts in the field. In addition, all draft documents are posted on the Forum website prior to publication so that any interested individuals or organizations can provide feedback. After the task force oversees the integration of public review comments and reviews the document a final time, publications are subject to examination by members of the Forum standing committee sponsoring the project. Finally, the entire Forum (approximately 120 members) reviews and formally votes to approve all documents prior to publication.

Contents

Foreword	iii
Introduction	1
What is the Purpose of this Guide?	1
Who is the Audience for this Guide?	2
Chapter 1: Longitudinal Data System (LDS) Primer.....	4
Defining LDS.....	4
What Does an LDS Look Like? From Real to Ideal.....	4
Dispelling the Misconceptions: What an LDS is and is Not	13
Putting the ‘L’ in LDS	15
LDS Benefits: Why Should We Build These Systems?	16
Chapter 2: Initiating, Planning, Executing & Evaluating an LDS.....	21
Planning Prerequisites: What to Think About Before Developing an LDS.....	22
Information Life Cycle	23
Systems Development Life Cycle.....	25
Seeing Here, Seeing There: Knowing What You Have and Planning What You Want	27
Engaging Stakeholders: Bringing Everyone Along	28
Self assessment: You are Here... but Where Exactly is That?	31
Enterprise Architecture.....	33
Needs Assessment: Defining ‘There’	37
Data: Knowing What You Have, Identifying What You Need.....	41
Some Critical “abilities”: Interoperability and Portability.....	46
Ensuring System Sustainability: Staying ‘There’	51
Marketing and Communicating about Your LDS	55
Building State-District Relationships.....	60
Getting from Here to There: Developing What You Want	64
Procurement Planning: Build or Buy?	65
LDS RFP ABCs: Writing a Strong Request for Proposals.....	70
Are We There, Yet? Evaluating Your LDS.....	77
References	80
Chapter 3. Managing the Data	
Chapter 4. Using the Data	
Appendixes. ...	
LDS in Legislation	
Recent Publications from the National Forum on Education Statistics	

Introduction

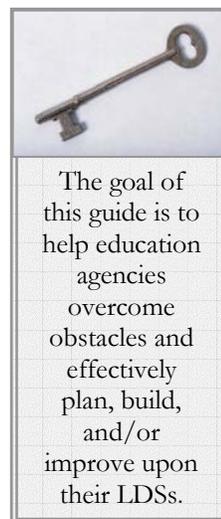
Across the country, educational agencies are hard at work developing longitudinal data systems (LDSs). States and local agencies are working at various stages of the development process – some just getting started while others explore ways to further develop or better harness systems that have been in place for years. The federal government supports LDS development, endorsing it first in the No Child Left Behind Act of 2001¹ and continuing its support through the provision of grants from the Institute of Education Sciences (IES) of the U.S. Department of Education (USED), which have helped many states in their LDS development efforts. Vendors are offering a growing number of products to facilitate the collection, storage and use of longitudinal data. And, a number of national organizations are providing support for LDS development efforts or working to increase awareness of the need for and benefits of these data systems.² By facilitating the collection and use of high quality student-level information, LDSs hold the promise of revolutionizing the way we educate our students and vastly improving the way we do business from the policy level, to the school office, and into the classroom.

What is the Purpose of this Guide?

Many challenges stand in the way of building good LDSs, achieving high quality data, and using this new information effectively. Essentially, the goal of this guide is to help state and local education agencies overcome these obstacles and effectively plan, build, and/or improve upon their LDSs. It offers advice for developers at various levels of your education agency, providing both an aerial perspective and a close-up view from the ground. Its scope is broad, covering a wide range of key concepts and activities, offering best practices and lessons learned from state and district staff, and noting procedural and structural benchmarks for you and your organization to reference throughout the development process.

The reality is, though, that there is no one way to build an LDS and no two of these systems look alike. Each organization takes its own path to its own desired version of an LDS (*e.g.* some education agencies will build a data warehouse, while others will not; some will hire a vendor, while others will do the work in-house). This guide will not present a rigid list of steps that must be followed in order to develop a successful LDS – success, after all, is relative to your specific set of goals. Instead of supplying doctrinaire answers, we hope to provide you with good questions and possibilities with which you can develop the solutions particular to your specific challenges and opportunities (*e.g.* political will, resource availability, agency culture, starting point, staff talent, state laws, etc.).

With special emphasis on the business-level perspective, this guide will walk through many things you need to know or should consider about LDS planning, governance, and system component building and buying, as well as reaping the benefits of the data an LDS can provide. You will need to carefully plan the system in detail with the input of all of the interested parties. Then you should assign specific responsibilities to the staff before breaking ground, constructing a sound foundation, building upward, and putting the system to good use.



¹ Title I, Part A, Section 1111(b), subsection 3(B) of the law states that “each state may incorporate the data from the assessments under this paragraph into a state-developed longitudinal data system that links student test scores, length of enrollment and graduation records over time.”

² See Appendix for a list of the major organizations working in the LDS field.

How to read this guide

Readers should feel comfortable making their way through this guide from start to finish. However, as states and districts may not be at the starting point – that is, have no LDS at all – but rather, at some place along the way, readers may also use it *à la carte*, skipping around and focusing on those sections that are of interest to them and their colleagues. Chapter subsections – presented as narratives, brief checklists, tables, timelines, and questionnaires – are intended to be autonomous pieces. This will allow readers the option of either skipping those parts of this guide that address work already completed and to focus on the pages that discuss project phases that lie ahead, or to review those sections and consider adjusting past or current work based on information offered here.

An additional goal of this guide is to help synergize the LDS community by offering a broad and accessible source of information to those involved in LDS development. This product is designed as a gateway to a wide variety of additional resources to provide the interested reader with more in-depth discussions and examples of the topics introduced here. See the Additional Resources boxes after each section for further information on each subject.

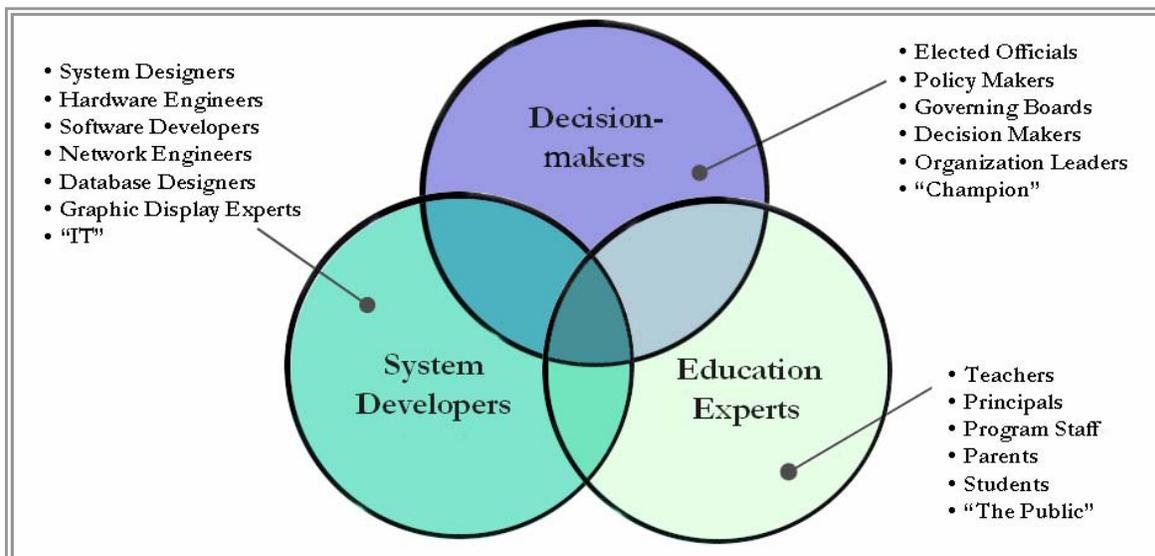
Who is the Audience for this Guide?

While this guide is intended to be useful to a broad range of users at both the state and district levels, it was developed with three main audiences in mind: decisionmakers, education experts, and system developers. Each of these groups is instrumental to the effective design, implementation, and utilization of an LDS. However, in many ways their perspectives on LDSs differ – in terms of what the systems are and what value they hold. Some focus on the nuts and bolts of building the various parts of these systems. Others are interested only in the end products, the data, which they will be able to use for research and data-driven decisionmaking. While these differences can be beneficial – bringing a variety of perspectives, knowledge, and expertise to the table – in a colossal project like the development of an LDS, effective collaboration and communication between these groups are vital to success. This guide views an LDS holistically, seeking to bring the various groups to a common understanding of these systems and to clarify the roles of each in the development process. It's easy to talk about technology, but more difficult to bridge the divide between policymakers and Information Technology (IT). To that end, this guide will focus on areas where their needs and interests overlap, while also seeking to bridge the language gaps that exist between them. The figure below depicts these three primary groups.

District Difference

While the focus of this guide is generally on state-level systems, the majority of the information offered in this product also applies to district-level LDS efforts. Key differences between state and district LDS requirements and best practices are highlighted in boxes like this one.





Decisionmakers drive the LDS mission and create the vision for the project. This group provides policy guidance, funding, and political leadership by sponsoring the development of effective education information systems and deciding if the final product will be a good investment of public funds (from federal to local dollars). They need to ask themselves some key questions up front, develop a clear plan for people who will create the system, and set explicit goals. This group includes elected officials, policymakers, governing boards, and organization leaders who must see the big picture as well as understand much of the development process. These decisionmakers must also understand what their ongoing role in LDS development is. And, as they can also become key users of the system once detailed, longitudinal data are made available, they must know what data need to be included. This guide seeks to help this audience group establish a vision, mission, and expectations for their LDS.

Education experts include people who drive the implementation of the policymakers' plans for an LDS. They are the program area staff (*e.g.*, special education services, Title I, English Language Learner programs), school and district administrators (*e.g.*, principals and directors), and human resources staff who oversee LDS implementation, help define the requirements, provide professional development, and monitor the use of the data. This group also includes researchers and other data consumers like teachers and administrators, parents and students, and those people who are sometimes known as "the public," all of which need to know what to do with the data. Education experts provide insights and understanding about education processes, the use of information in creating and enhancing educational assessment, and the effective teaching of all students. While the decisionmakers may decide if the development of an information system was a good investment, it will be the system users that – either by utilizing or ignoring it – will determine if the information is used to improve education. This guide seeks to define this audience group's unique requirements to help them achieve the decisionmakers' vision, mission, and expectations for the LDS.

Finally, the **system developers** are the technical experts who make the LDS work. System developers, or builders, provide understanding of the strengths and weaknesses of information technology and the developmental trends in relevant future technology and information management processes. This group includes project managers, hardware engineers, software developers, network engineers, database designers, and graphic display experts. The system developers may know little about the processes of education, policy, or the information needs of the stakeholders who will ultimately use the system, but without their expertise the effective and efficient storage and manipulation of education data will be impossible. Focused on the nuts and bolts, they build the system details and want to know about things like how the data are to be housed, secured and maintained. This guide seeks to inform this audience group so they are better able to meet the unique requirements of their education data community.

Conventions

Throughout this guide, important terms and topics will be highlighted in side bars. This notable subject matter will be emphasized using the following devices:

Definitions 	Case studies 	Key points 
Quotes 	Bright ideas 	Tips 

Chapter 1:

Longitudinal Data System (LDS) Primer

An LDS is a business solution, not just an IT project.

In this Chapter

This chapter considers some basic, yet complicated, questions. What is an LDS? What components and capabilities do basic LDSs have and what additional attributes can make them even more useful? What are the common LDS misconceptions? What is the value of this type of data system – that is, what facility and efficiency can it offer?

Sections in this chapter include:

- Defining LDS
- What Does an LDS Look Like? From Real to Ideal
- Dispelling the Misconceptions: What an LDS is and is Not
- Putting the L in LDS
- LDS Benefits: Why Should We Build these Systems?

Defining LDS

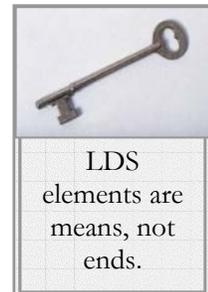
What exactly do we mean when we talk about an LDS? What an LDS looks like will vary from one organization to another, and the perceived value of this type of system will differ depending on who you ask. For these reasons, it is important that everyone involved in the development process gets on the same page early on. We offer the following definition of an LDS: An education **longitudinal data system** is a data system that collects and maintains detailed, high quality student- and staff-level data that are linked to one another across entities and over time, providing a complete academic and performance history for each student, and makes these data accessible through reporting and analysis tools. Though system characteristics and capabilities will vary in the real world, this definition captures what many experts agree is the standard for an LDS.



*An education **longitudinal data system** is a data system that collects and maintains detailed, high quality student- and staff-level data that are linked to one another across entities and over time, providing a complete academic and performance history for each student, and makes these data accessible through reporting and analysis tools.*

What Does an LDS Look Like? From Real to Ideal

LDSs come in as many different shapes and sizes as ways in which they come into existence. While there are a number of fundamental characteristics that all basic LDSs should share, the methods of achieving those features will differ among states and districts. LDSs are often conceived and built over time in a piecemeal fashion, and as follows, the characteristics of real systems are not always those of ideal systems. Ideally though, the design of an LDS should be driven by the organization's questions and desired functionalities. The system should be carefully designed from the outset with an overarching design intended to meet specific state or local needs and goals. The various components and functionalities of the LDS should be seen as means to desired ends, not ends in and of themselves. Table 1 and the text that follows present the core components and characteristics that experts say a basic, yet sophisticated LDS will have (the "basics") as well as those attributes that can



LDS elements are means, not ends.

transform a basic system into a high performance one (the “nice-to-haves”). While the “basics” can allow your organization to meet the common, core goals of a P-12 LDS, the “nice-to-haves” will provide greater efficiencies and capabilities. While attaining all of these characteristics may be challenging – technologically, politically, and financially – their establishment is essential to a fully functioning LDS. For definitions of these items, we rely heavily on the Data Quality Campaign, a leader in the push towards LDS implementation, among other resources.

Table 1. LDS components and characteristics – basics and nice-to-haves

The basics	<ul style="list-style-type: none"> ▪ Student unique identifier system ▪ Student data (enrollment, demographics, and program participation) <ul style="list-style-type: none"> ○ Student-level college readiness test scores ○ Information on untested students ○ Student-level transcript information ○ Student-level graduation and dropout data ▪ Assessment data links from year-to-year ▪ Teacher unique identifier systems and the ability to link teacher and student data ▪ Teacher and staff data ▪ Reporting and analysis tools ▪ Interoperability ▪ Portability ▪ Privacy protection ▪ Data audit system to assess data quality, validity, and reliability
The nice-to-haves	<ul style="list-style-type: none"> ▪ Data warehouse ▪ Finance data linkage ▪ Facilities data linkage ▪ Data sharing beyond P-12 <ul style="list-style-type: none"> ○ Postsecondary ○ Workforce ○ Social services ▪ Role-based stakeholder access ▪ Additional, non-traditional student data ▪ Geographic information system

The basics

To achieve “basic” functionality, a P-12 LDS will include the following core elements, components, and capabilities:

- **STUDENT UNIQUE IDENTIFIER SYSTEM:**

A student unique identifier system is the basis for an LDS. Without this component, tracking students over time is not possible. A unique statewide student identifier is “a single, non-duplicated number that is assigned to and remains with a student throughout his or her P-12 career. Assignment of a unique statewide student identifier to every student in the P-12 system provides a way to follow students as they move from grade to grade and across campuses and/or districts within the state. This component, among other things, can help to show 1) the academic value-added of a school or program, 2) the achievement levels in early grades that indicate that a student is on track to succeed in subsequent grades, and 3) the test scores in early grades which should be thresholds for intervention.”³ [See page # for more information.]

- **STUDENT DATA:**

“Accurate information on student enrollment, demographics, and program participation (*e.g.*, student participation in special education or the free and reduced price lunch program, the most common indicator of student poverty status) is essential to evaluate the effects of schools and programs, and to assess the impact of student mobility and continuous enrollment on learning. With student-level enrollment, demographic and program participation information,

³ Data Quality Campaign, *The 10 Essential Elements in Detail for 2008-09*, http://dataqualitycampaign.org/survey_results/elements.cfm.

policymakers and educators will know: 1) the extent to which free and reduced price lunch enrollment drops off in high school and how that might affect measures of each high school's poverty rate, 2) how the percentage of minority students in gifted and talented programs compares with that of white students, and 3) the rate at which English language learners are entering the state [or district] for the first time in high school and how they are doing on... high school exit exams.”⁴ [See page # for more information.]

Student-level college readiness test scores

“To ensure that students make a successful transition from high school to postsecondary education, it is important for [agencies] to collect and report student performance data on college admissions, placement and readiness tests. Student performance on SAT, SAT II, ACT, Advanced Placement (AP) and International Baccalaureate (IB) exams are important indicators of students' college readiness; [agencies] should collect and report these data on an annual basis. With student-level college readiness test scores, policymakers and educators will know: 1) how participation rates and scores on SAT, ACT, AP and IB exams change over time for low-income and minority students, 2) the percent of students who meet the proficiency standard on the state 8th grade test who also take AP or IB courses in high school and pass the corresponding AP or IB exams, and 3) the percent of low-income students who met the proficiency standard on the state high school test who take the SAT and ACT exams and score at college readiness benchmark levels on those exams.”⁵ [See page # for more information.]

Information on untested students

Education agencies “need to go further than tracking students who do not take the test to find out why they are not tested and then match those records to separate enrollment and program participation databases. This makes it possible to identify patterns associated with specific student populations (*e.g.*, special education students or English language learners) and ensure that all students are held to high expectations.” With information on untested students, policymakers and educators will know: 1) which students were not tested by grade and subject and why, 2) trends over time in the number and percentage of untested students from each student group (English language learners, special education students, different ethnic groups, etc.), and 3) whether or not particular schools and districts have excessive absences on test day or questionable patterns of absences and exemptions across years (these measures can be used in a state's data audit system to ensure data quality).”⁶ [See page # for more information.]



THE MANY MONIKERS OF LDSS

The concept of LDS has been referred to in many ways in education, business, and IT literature. No matter what moniker you choose, however, the key common factor among these systems is student-level longitudinal data that can be tracked over time and across institutions. LDS aliases include:

- Enterprise Education Information System
- Longitudinal Data System
- Longitudinal Data Stream
- Longitudinal Education Information System
- Longitudinal Student Data System
- Student-level Longitudinal Data System
- Student Unit Record System
- State Data Manager

Student-level transcript information

“Many states are encouraging students, particularly low-income and minority students, to take rigorous courses in high school so that they are better prepared for success in postsecondary education and the job market. In most states, however, course taking data is not collected at the

⁴ Data Quality Campaign, *The 10 Essential Elements in Detail for 2008-09*.

⁵ *Ibid.*

⁶ *Ibid.*

state level, making it impossible to monitor the impact of these policies. To fill in the missing information, states should collect student-level transcript information from middle and high school, including courses taken and grades earned. With student-level transcript information, policymakers and educators will know: 1) the number and percent of students who are enrolling in and completing rigorous courses in high school, disaggregated by ethnicity and income status, 2) the middle schools that are doing the best job of preparing students for rigorous courses in high school, 3) whether or not students in more rigorous courses in high school have been more successful in college or in the workplace, and 4) whether or not there is evidence of grade inflation (*e.g.*, students with the same test scores receive dramatically higher grades in the same course in certain schools or districts.)”⁷ [See page # for more information.]

Student-level graduation and dropout data

“A majority of states currently collect annual records on individual graduates and dropouts, but to calculate the graduation rates defined in the new National Governors Association (NGA) compact, [state or local agencies] need to be able to track individual students over time. The calculation of accurate graduation rates also requires the ability to accurately account for what happens to students who leave public education. For example, [agencies] must be able to distinguish correctly between departing students who drop out or get a GED from students who transfer to another school. With good graduation and dropout data in place and the ability to match records to other databases, policymakers and educators will know: 1) when and why students leave the state's public education system, 2) the percent of first-time 9th graders in a given year who graduate from high school within four, five, or six years, 3) the schools and school systems that are doing the best job reducing the dropout rate, and 4) the characteristics of high school dropouts and whether or not there are early warning signs that schools can look for in elementary and middle school.”⁸ [See page # for more information.]

▪ ASSESSMENT DATA LINKS FROM YEAR-TO-YEAR:

“A statewide database of individual student performance on state exams (and state-mandated local exams) should be maintained with the ability to disaggregate the results by individual item and objective, in order to provide good diagnostic information to teachers. Though most states do have annual test records for individual students, only some of these states have created the ability to match records for individual students across time and with other databases (*e.g.*, enrollment, course completion, and graduation databases). With the ability to match individual student test records across years to follow student progress, policymakers and educators will know (by grade and subject): 1) the percent of last year's below proficient students who met the state's proficiency standard this year, and 2) whether or not proficient and advanced students are achieving at least a year's growth every year.”⁹ [See page # for more information.]

District Difference

At the district level, there may also be assessments that are locally-mandated, locally-created, and locally-used. While these may not be related to state assessments, they are of great value to local educators, especially when they can be linked over time to create student performance histories.



▪ TEACHER UNIQUE IDENTIFIER AND THE ABILITY TO LINK TEACHER AND STUDENT DATA:

“Many [agencies] collect data on teacher education and certification, but matching teachers to students by classroom and subject is critical to understanding the connection between teacher training and qualifications and student academic growth. Collecting this data makes it possible to

⁷ Data Quality Campaign, *The 10 Essential Elements in Detail for 2008-09*.

⁸ *Ibid.*

⁹ *Ibid.*

identify which students and which courses are being taught by teachers with different levels and types of preparation or certification, and which forms of teacher training and certification have the greatest impact on students' academic growth in the classroom. With a teacher identifier and the ability to connect teacher and student data, policymakers and educators will know: 1) the teacher preparation programs that produce graduates whose students have the strongest academic growth, 2) how the experience levels of the teachers in the district's high-poverty schools compare with those of teachers in the schools serving affluent students, and how these experience levels are related to the academic growth of the students in their classrooms, and 3) the relationship between the performance of the district's low-income students on the state algebra exam and teacher preparation in that subject.”¹⁰ Teacher privacy must be protected when these links are made. [See page # for more information.]

▪ **TEACHER AND STAFF DATA:**

“Connecting student information with teacher preparation, instructional practices, professional development and working conditions is essential to understanding how and why teachers are able to improve student outcomes.”¹¹ The value of linking student and staff data is limited unless we have detailed data on individual staff. Information on teachers and staff, such as educational attainment, experience, and salary, will help us to better understand issues like the relationship between student achievement and teacher quality, teacher supply and demand, as well as staff attrition and mobility.¹² [See page # for more information.]

▪ **REPORTING AND ANALYSIS TOOLS:**

“Reporting and analysis tools... are essentially the software programs written to calculate the statistics that stakeholders need to evaluate the performance of a student, school, district or state and produce reports (electronic or print) that answer stakeholder questions.”¹³ Without these tools, which provide stakeholders with easy access to the data in both raw form and in standardized reports, it is impossible to reap the full benefits of an LDS and improve student achievement. [See page # for more information.]

▪ **INTEROPERABILITY:**

Interoperability is the quick and easy transfer of data between systems via a common set of technical software standards. “Data interoperability entails the ability of different software systems from different vendors to share information without the need for customized programming or data manipulation by the end user. Interoperability reduces reporting burden, redundancy of data collection, and staff time and resources. ...It depends on systems having common data standards and definitions.”¹⁴ [See Some Critical “abilities”: Interoperability and Portability for more information]

▪ **PORTABILITY:**

“Data portability is the ability to exchange student transcript information electronically across districts and between P-12 and postsecondary institutions within a state and across states. Portability has at least three advantages: it makes valuable diagnostic information from the academic records of students who move to a new state [or district] available to their teachers in a timely manner; it reduces the time and cost of transferring students' high school course transcripts; and it increases the ability of agencies to distinguish students who transfer to a school in a new state [or district] from dropouts. The large interstate movement of students in the wake of Hurricane Katrina made the value of such a system obvious. Data portability is supported by

¹⁰ Data Quality Campaign, *The 10 Essential Elements in Detail for 2008-09*.

¹¹ Berry, Fuller and Reeves. (2007). *Linking Teacher and Student Data To Improve Teacher and Teaching Quality*.

¹² Center for Strengthening the Teaching Profession. *a Comprehensive Teacher Data System*.

¹³ Steiny & Smith. (2007). *Reporting and Analysis Tools: Helping Mine Education Data for Information Riches*.

¹⁴ Data Quality Campaign, *Fundamentals in Designing State P-12 Longitudinal Data Systems*.

the implementation of interoperable systems, but it requires [agencies] that use these systems to have a set of common definitions or protocols.”¹⁵ [See Some Critical “abilities”: Interoperability and Portability for more information]

▪ **PRIVACY PROTECTION:**

“One of the critical concepts that should underscore the development of any LDS is preserving student privacy. An important distinction needs to be made between applying a ‘unique student identifier’ and making ‘personally identifiable information’ available, for example. It is possible to share data that are unique to individual students but that do not allow for the identification of that student. It also is critical to put in place encryption and data security protocols to secure the transmission or transaction of data between and among systems. States should ensure that they bring privacy considerations into the development of each repository and the exploration of each protocol or report.”¹⁶ [See page # for more information.]

▪ **DATA AUDIT SYSTEM TO ASSESS DATA QUALITY, VALIDITY, AND RELIABILITY:**

“Invalid or unreliable reporting by some schools and districts is a problem in a number of states, and this problem is likely to continue in the absence of checks on the accuracy and quality of the data submitted by schools and districts. Without a well-designed and well-implemented state data audit system, the public cannot have confidence in the quality of the information coming out of the state’s public education system. With a robust data audit system in place, policymakers and educators will know: 1) whether or not the disaggregated student information used to rate schools for Adequate Yearly Progress (AYP) is valid, 2) the districts that do the best job of reporting valid and reliable dropout data, 3) whether or not districts are reporting their numbers of untested students and reasons for not testing the students, and 4) the amount and type of data quality problems identified by districts and how those problems are being addressed.”¹⁷ [See page # for more information]

The nice-to-haves

To be highly effective, an LDS would ideally include or allow for:

▪ **A DATA WAREHOUSE:**

“An educational data warehouse is a storage facility, built and maintained by an [education agency], where detailed and reliable educational data from several areas that affect student achievement are stored and integrated.”¹⁸ This LDS component should be district- or state-wide and should link student, school and district information over time.¹⁹ [See page # for more information]

▪ **FINANCE DATA LINKAGE:**

“Creating a comprehensive data system that links longitudinal student outcome data to financial data at the district level — and ultimately, the school or even classroom levels — can help decisionmakers understand not only what works but also what it takes to deliver what works.” Furthermore, “A high-quality financial system that is connected to longitudinal student data supports student learning in a number of fundamental ways: 1) facilitating the identification of resource-effective strategies and schools; 2) providing insight into the most productive ways to structure districts, schools and classrooms to support student outcomes; and 3) increasing

¹⁵ *Ibid.*

¹⁶ DQC. (2006). *Creating a Longitudinal Data System: Using Data to Improve Student Achievement.*

¹⁷ DQC. *The 10 Essential Elements in Detail for 2008-09.*

¹⁸ DQC (September 2007). *How Can My State Benefit from an Educational Data Warehouse?* DQC, September 2007

¹⁹ DQC (October 2006). *Creating Longitudinal Data Systems: Lessons Learned from Leading States.*

transparency for education stakeholders at all levels to ensure that increasingly scarce resources are spent in the most efficient and effective way.”²⁰ [See page # for more information.]

▪ **FACILITIES DATA LINKAGE:**

Data on school facilities offer insight into the physical environment in which students receive their education. Facilities data can inventory schools and describe the condition, design, utilization, management, and funding of these facilities. Facilities data elements may include a wide variety of information such as building identifiers and addresses; date of original construction; renovation and new construction information; site acreage; building area (*e.g.*, sq. footage); building and site condition; safety appraisal information; air conditioning and heating systems; operations management information; building use; etc. Collecting these data and linking them to other educational data can help decisionmakers ascertain the adequacy of these facilities, how they are distributed, and inform decisions about funding, renovation, modernization and infrastructure improvements.²¹ These data should be shared with the state to inform state and national level policy planning and implementation. [See page # for more information.]

▪ **DATA SHARING BEYOND P-12:**

The scope of LDSs is not limited to the P-12 grade levels. Indeed, the value of longitudinal data is even greater when it spans beyond these years into college and the workforce.

Postsecondary

“As states and school systems work to align expectations in high school with the demands of postsecondary education, they need better data on student success when they leave the P-12 system and enter college. Most states today do not have data systems that enable this two-way communication. With the ability to match student records between P-12 and higher education systems, policymakers and educators would know: 1) the percentage of each district's high school graduates who enrolled in college within 15 months after graduation, 2) the percentage of last year's graduates from each high school or school district who needed remediation in college and how these percentages varied by student income and ethnicity, 3) the percentage of students who met the proficiency standard on the state high school test and still needed remediation in the same subject in college, and 4) how the students' ability to stay in and complete college is related to their high school courses, grades and test scores.”²² [See page # for more information.]

Workforce

With a connection between education and workforce data, researchers can answer questions about whether schools, colleges, and universities are preparing students for long-term success in the workplace, what percentage of students graduating from a district/school is unemployed one year after graduation, and how a graduate's earnings are related to academic preparation in high school.²³ [See page # for more information.]

Social services

By linking education and social services data, agencies can answer questions about 1) the impact of school mobility on student achievement for children and youth in foster care, and how it affects success in higher education and the workforce, 2) how services beyond the scope of the classroom (*e.g.*, health care, child welfare, higher education access and public safety) can be better tailored to help each student meet academic goals, 3) how initiatives aimed at improving child

²⁰ Gazerro, P and E. Laird. (May 2008). *Linking Spending and Student Achievement: Managing Inputs, Processes and Outcomes*.

²¹ National Forum on Education Statistics (2003). *Facilities Information Management: A Guide for State and Local Education Agencies*.

²² Data Quality Campaign. *The 10 Essential Elements in Detail for 2008-09*.

²³ Data Quality Campaign (2007). *Linking Education and Social Services Data to Improve Child Welfare*.

outcomes can be better aligned and coordinated among the education, child welfare and judicial systems to improve outcomes and reduce duplication, and 4) what practices/programs have demonstrated to improve outcomes for students, including not only educational achievement, but also social, health and civic progress.²⁴ [See page # for more information.]

▪ **ROLE-BASED STAKEHOLDER ACCESS:**

Depending on the needs and authorization of various users, role-based access to LDS data can be established both to protect sensitive data from getting into the wrong hands and to allow users to easily access data useful to them for educational purposes. For example, with a username and password, teachers can be granted access to personally identifiable data on all of their current students. And parents can be allowed to retrieve data on their children, while being barred from viewing information on their neighbors' kids. Students, administrators, researchers, and the public should also be granted role-based access to the data. [See page # for more information.]

▪ **ADDITIONAL, NON-TRADITIONAL DATA:**

In addition to data that are usually collected on students and staff, other information can be valuable in informing decisionmaking. For example, data about student, parent, and staff perceptions and experiences can provide greater insight into what changes can be made to improve the educational environment. For instance, how do students perceive their relationships with teachers and the expectations teachers have of them? Do parents feel their kids' teachers are committed to students' learning? Do parents have enough time to help their kids with school work after school? Do teachers feel the school has a vision? Are they given ample support? Additionally, school process data, describing programs, curriculum, instructional and assessment strategies, and classroom practices, can provide another revealing window into the classroom.²⁵ And, community demographics such as household income levels, unemployment rates, and adult education levels can also be informative.²⁶ All of this information can add new dimension to analyses, helping us to explore more of the factors involved in student learning and success.²⁷ [See page # for more information.]

▪ **GEOGRAPHIC INFORMATION SYSTEM**

According to the Collegial Centre for Educational Materials Development, "a Geographic Information System (GIS) is a system that integrates hardware, software and data. It is used to collect and analyze geographically referenced information, which creates models that associate attribute data with specific aspects of physical spaces. It allows users to manipulate data so they can address geographic problems by summarizing data, calculating spatial statistics or processing queries, among other things. ... The results are often visualized in the form of a map."²⁸ As an education LDS tool, GIS offers unique functionalities such as providing users with landscape views of population characteristics and growth, achievement data, and redistricting, for instance. Policymakers and parents are often especially interested in this technology. [See page # for more information.]

²⁴ Data Quality Campaign. (October 2007). *Linking Education and Social Services Data to Improve Child Welfare*.

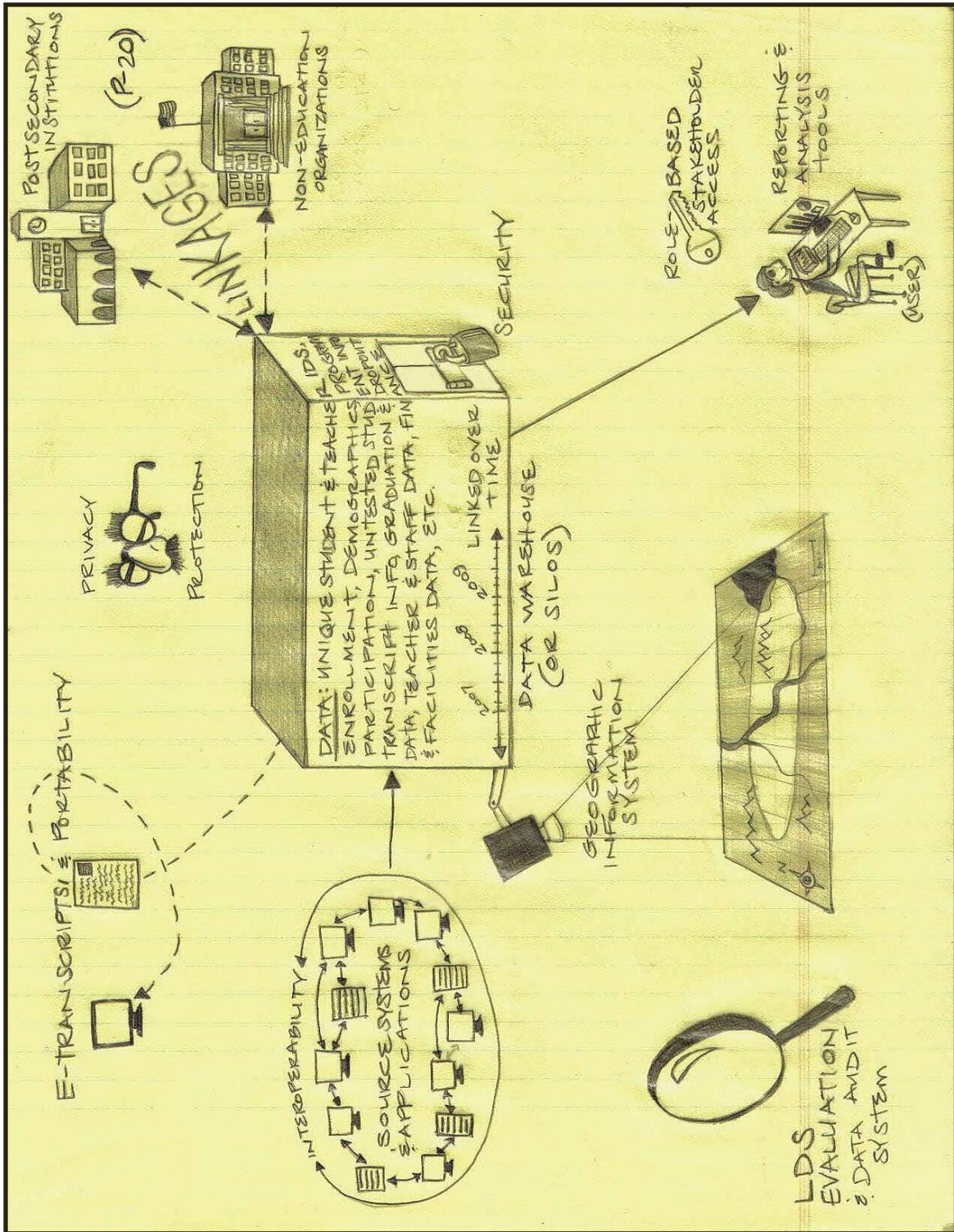
²⁵ Bernhardt, V. L., (2004). Continuous improvement: It takes more than test scores. *ACSA Leadership*. November/December 2004, 16-19.

²⁶ Newby, D. (July 2007). *CCSSO's National Education Data Partnership: Phase Two*

²⁷ Bernhardt, V. L., (2004). Continuous improvement: It takes more than test scores. *ACSA Leadership*. November/December 2004, 16-19.

²⁸ Collegial Centre for Educational Materials Development Geographic Information Systems website: <http://www.ccdmd.qc.ca/ressources/?id=1275>, accessed on September 18, 2008.

The Longitudinal Data System: Crudely



Dispelling the Misconceptions: What an LDS is and is Not

There are many ideas about what an LDS is. What's its purpose? What's its value? How should it be used? How helpful can it be? What components and capabilities should it have (*e.g.*, a data warehouse, reporting and analysis tools, linkages to P-20, interoperability, etc.)? But, while there is plenty of room for differing opinions on these questions, some of the commonly held beliefs about LDSs are simply incorrect. Below are examples of some of the LDS misconceptions you may have heard at a conference or around the office:



"Yeab, sure we have an LDS. We just rolled out our data warehouse."

A data warehouse (DW) is not necessarily an LDS. While a DW can be an extremely valuable LDS component, it is quite possible to build an LDS that draws data from numerous interoperable silos or separate data stores. What matters is not the type of system you use to store the data, but what type of data you are collecting, storing, and making available with it. DWs should not be considered LDSs if they are full of aggregated snapshot data. To be an LDS, DWs need to contain comprehensive student-level longitudinal data that span many years to allow meaningful analyses to be performed.

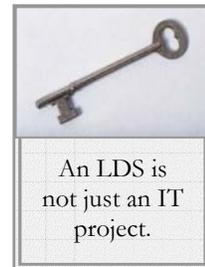


Other types of data systems may also be confused with an LDS. An **operational data store** (ODS) maintains only very recent information, which is frequently updated to reflect the current status of an object (*e.g.*, a student's enrollment). Historical data are not stored in the ODS, so users are only able to make simple queries on small quantities of data.²⁹ While useful for other purposes, due to these limitations, an ODS does not allow for longitudinal analyses and can not substitute for an LDS. Similarly, a **transactional database**, which is designed for recording and processing, but not for reporting, should also be distinguished from an LDS.



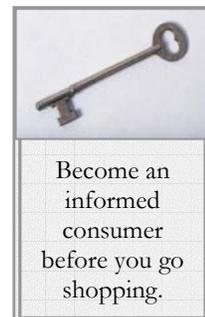
"Call the IT department and tell them to build us an LDS."

An LDS is not just an information technology (IT) project. It's a business solution – a way to meet business needs. IT staff can build an LDS, but the system they develop may not meet user needs. Therefore, education experts must work closely with IT throughout the design and development process to make sure the system will effectively serve the requirements of the end users. Developers must consider how users do their jobs and what functionalities will make their work easier and more efficient. They should also think about how data users access and use the data and how the new system can help them make the most out of the information.



"We'll just buy an LDS and be done with it."

If only it were so easy. The reality is that you can not simply buy an LDS or hire someone to do all the work for you. An education agency shouldn't expect an "out-of-the-box" LDS or LDS component to be a success for a number of reasons. 1) Systems need to be designed or tailored to meet stakeholder needs, which vary among regions and organizations. Agency staff need to take the time to carefully plan the system, learn about the various possible solutions, and figure out how best to please their stakeholders and benefit their students. If you skip these stages, how will



²⁹ Inmon, Bill. "[The Operational Data Store](#)." Info DB, February 1995.

you know if the product you buy is what you actually need? Being an informed consumer is essential to getting a successful system. 2) An LDS is not a one-time purchase. In addition to upfront development costs, ongoing maintenance and updating is required to ensure long-term value. And 3), beyond the technology, an LDS requires a new way of thinking about data throughout the organization. People need to shift their ideas about data, valuing it as a tool rather than seeing it as a burden. A good deal of ongoing planning, communication, and professional development for users is necessary to make this happen. [See the Procurement Planning: Build or Buy? section of this guide for more information.]



“This LDS thing makes me uncomfortable. It’s just going to be used as Big Brother.”

An LDS should not be seen as Big Brother. However, these systems are sometimes viewed skeptically as tools that will be used to monitor and punish staff members. For instance, some fear that analyses of student test score data linked to teachers will be used to determine teacher bonuses or target individuals for termination or transfer. In fact, some states do allow use of teacher-level data for evaluation, as well as pay and personnel decisions, while other states have laws prohibiting such use. The value of LDSs, however, is their ability to help us find out what works, identify ways to improve instruction and tailor approaches for individual students,



LDSs should empower all stakeholders, not just those at the top.



Schools must “use data not as a hammer, but as a flashlight.”

–Aimee Guidera (DQC)³¹

identify problems early on to stem failure and dropouts, and automate and streamline daily administrative operations. Most agree that these systems should be used to empower staff with access to valuable information, not to punish them. State, district, and school leaders must build trust

through clear communication and collaboration within the education community to assuage such fears. [See Chapter 4 for more information on using longitudinal student-level data.]

³⁰ Alpert, E. “New Number-Crunching Links Teachers to Test Scores,” VoiceofSanDiego.org, accessed on October 6, 2008.

Putting the ‘L’ in LDS – Nancy Smith, Data Quality Campaign, May 2008 Newsletter, 3 (3)
(http://dataqualitycampaign.org/file_viewer.cfm?itemID=443)

So what is an LDS? What makes it longitudinal? Many states and districts think that they have a longitudinal data system because they have a data warehouse that has many years worth of data. Others don't have a data warehouse, but do report many years worth of annual graduation rates. So, they say that they have an LDS. Others believe that they have a longitudinal data system because they have a student identifier system.

Longitudinal means that data on a given student can be connected across years. In photography parlance, it is more like being able to watch a video of a student as they go from grade to grade. If you put all those videos of individual students together into a montage, you can usually spot some trends about what happens to students with different types of experiences in the early grades. Usually, though, school districts and state education agencies (SEAs) review 'snapshot' data – pictures taken of a given 3rd grade class one year, the 4th grade class the next year, and the 5th grade class the third year. Some of the same students might be in all three pictures, but it is more likely that some students leave and others join the cohort over the three-year period.

In years past, it was more common for school districts to send summary statistics to the SEA — for example, the count of students receiving special education services or free- or reduced-price lunch, the percent of students passing that statewide exam in the spring, or the number of students in each racial/ethnic category. The SEA could then aggregate or add up all of the school or district numbers to get statewide totals.

Aggregated snapshot data is very valuable to educators and policymakers, especially when they need a way to quickly summarize how schools are performing and see which districts serve which types of students.

However, snapshot data alone do not provide enough information to truly evaluate the impact of student mobility or of dropout intervention programs, the relationship between course-taking patterns and college-readiness, or the ability to calculate a graduation rate while taking into account students who transfer to another school, are retained in a grade, leave for private school or drop out. Only a set of robust longitudinal data on the characteristics and experiences of each student — that tracks students across school years and across campuses within a state and connects that enrollment data with other outcome data (course completion, college readiness, assessment and exit data) — provides the ability to thoroughly investigate the patterns of success and struggle that students experience. Student-level longitudinal data can be aggregated to look at school, district and state trends, but they can also be analyzed at a much finer level of detail than snapshot data to fully understand the relationships between the many factors affecting student achievement.

With the snapshot data that is reported per No Child Left Behind requirements, it is possible to say, for example, that 51 percent of African-American students were proficient on the 10th grade mathematics exam, while 83 percent of White students were proficient. With student-level longitudinal data, it is possible to say that of the 51 percent of African-American students who were proficient on the 10th grade mathematics exam, 65 percent of them were also proficient on the 8th grade mathematics exam, and of those students 78 percent took Algebra I in the 8th grade. With that information, educators and policymakers can understand the importance of preparing students to take Algebra I in 8th grade. This type of longitudinal data shows that students who do not take Algebra I in the 8th grade are less likely to show proficiency on future exams. With this information, administrators can tailor their curricular activities in earlier grades to prepare more students for Algebra I in the 8th grade. Of course, with longitudinal data, the same administrators will also have the data necessary to determine which elementary and middle school students are on track to take Algebra I in the 8th grade and provide the necessary intervention to those who are not yet ready but could get there.

Data warehouses and easily accessible reporting and analysis tools are critical to improving the use of data in education. They are very useful and important tools, even when they are full of snapshot data and statistics. Having these tools, however, does not automatically imply that the state collects student-level longitudinal data or that they are using longitudinal statistics to inform their decisionmaking.

Longitudinal data implies the ability to collect many key pieces of data on individual students (examples include: campus of enrollment each year, programs in which the student receives services, ethnicity, age, statewide and end-of-course exam scores every year, reasons for not taking statewide exams, college-readiness test scores, and exit status (graduate, dropout, transfer, home school)), connect all those pieces, and then aggregate across students according to a set of key variables in order to analyze the impact of and relationship between variables. This ability to analyze and predict performance at the student level is what will ultimately help educators and policymakers at the local and state levels improve the policies that will eventually lead to improved student achievement for all students.

LDS Benefits: Why Should We Build These Systems?

Contrary to what you may have heard, an LDS is not simply a compliance system that will feed the state and federal governments even more data. This type of system holds the potential to make high quality, timely data available to all stakeholders to help them improve student achievement, ease data burdens, and leverage significant culture change. This section looks at the benefits an LDS has to offer.

Better data, deeper questions, more informative answers, enhanced education

An LDS can bring reality into clearer focus. When we zoom in on our aggregate-level data, student-level data are what we see. When staring at a static image on our screen, longitudinal data are what we can observe when we press  and follow the data (e.g. students) through time and space. Combined, longitudinal student-level data show us the “real time” details of what is going on in our education system. With these data, policymakers and educators no longer need to remain in the dark about what effects their decisions and practices have on students. LDS data provide transparency and allow us to examine in far greater detail what effects certain policies, programs, schools, teachers, and strategies have on individual students.



“States are spending hundreds of millions of dollars to improve student achievement. But without quality data, they are essentially flying blind. Policymakers need to act now to put in place the policies and resources to ensure that each state has a longitudinal data system and the culture and capacity to translate the information into specific action steps to improve student achievement.”
 –DQC, (2007) “Measuring What....”



“Learning more about students’ academic biographies will help us solve problems before they become chronic.”
 –Margaret Spellings³¹

Do you want to monitor student achievement or do you want a system that helps you glimpse the future and act to influence it? Beyond simple monitoring of student outcomes and reacting to old aggregate data, policymakers and educators can use LDSs to become more proactive. By allowing us to examine the influence of the many variables that may contribute to student

success or failure, longitudinal student-level data let us identify trends, predict outcomes, and make more informed decisions about policy, administration, and instructional strategies. Better equipped, we then can create better policies, use our resources more efficiently, and pursue the most effective teaching strategies tailored to meet individual student needs. By providing timely information about what works, where, and for whom, LDSs allow educators to shift from “autopsy” data use to preventative data use. That is, they can take us from asking, “What went wrong?” to identifying potential problems early on and asking, “What can we do to promote student success and avoid failure before it occurs?” For example, with better data, we can explore whether there are early warning signs for dropping out of high school. [See Chapter 4 for more information on the uses of an LDS].

Detailed student-level longitudinal data allow us to answer the questions we’re used to asking (e.g., How many students do we have? What percentage of 4th grade African-American students met the state’s proficiency standard in math last year? What is our school’s graduation rate?). More importantly though, by showing us the reality of our educational systems in finer detail, these data allow us to answer deeper questions than is possible with the blunt, aggregate-level cross-sectional, or “snapshot,” data to which

Answering deeper questions requires tinier details. And having tinier details requires better systems for organizing and accessing them.



³¹ Former Secretary of Education Margaret Spellings, from speech to the Education Commission of the States’ *National Forum on Education Policy*, Washington, DC, 7/1/08 [link](#).

we've grown accustomed. For example, with LDS data we can abandon the often inaccurate graduation rate estimates of the past in favor of more precise counts based on student-level data. Moreover, we can use our longitudinal data to see how many years it took those graduates to earn their diplomas and find out what they did after graduation day, in postsecondary education and the work force.

Table 2 below presents some other examples of the types of questions LDS data allow us to answer.³²

Table 2. What types of questions can we answer with detailed student-level, longitudinal data about:

Individual students?	<ul style="list-style-type: none"> ▪ Which early education program did a kindergartener attend, if any? At what age did the child enter the program? ▪ How has a student progressed in math over the course of the year? What was her performance in this subject in earlier grades? Was there a point at which her performance took a turn for the worse? ▪ What specific areas of the reading curriculum does a student need extra help with? ▪ Did a student drop out or transfer to another school? If she dropped out, did she ever participate in a dropout intervention program? ▪ Which students in a school are at risk of dropping out in the future? What intervention program will be most effective in preventing this outcome? ▪ Which courses did a student take in high school and how did they prepare him for college? Did he require remediation? Did he earn a degree, and if so, how many years did it take him to do so?
Groups of students?	<ul style="list-style-type: none"> ▪ How are the Hispanic students in a school district doing academically this year compared to the White students? Tracking these students back in time and to other institutions, how did those same kids do the prior year? How do the schools they attend compare in terms of various characteristics such as funding and teacher quality? ▪ How did students who attended a certain middle school fare in the high schools they moved on to? ▪ How many African-American students who were proficient on the 8th grade mathematics exam were also proficient on the 10th grade mathematics exam? Of those students, how many took Algebra I in the 8th grade? ▪ How do students who were previously identified as limited English proficient perform compared to those students whose native language is English?
Teachers?	<ul style="list-style-type: none"> ▪ How do various teacher qualifications or training (e.g., education level, degree, certification, undergraduate institution, professional development, and teacher test performance) correlate with student performance? Do these effects vary among certain types of students? ▪ Which teachers are most successful in improving the skills of struggling students? ▪ Which of a school district's teachers achieve the greatest improvements in student achievement in a subject? What are they doing differently than less effective teachers? ▪ How are teachers of varying qualifications distributed among schools and students? ▪ What are the teacher retention rates among various institutions?
Policies, programs & strategies?	<ul style="list-style-type: none"> ▪ What are the effects of certain teacher policies on teacher recruitment and retention? In turn, what effect do these policies have on student outcomes?³³ ▪ What effects does a policy have on student achievement? Do these effects vary among students with different characteristics? ▪ Was a program successful in boosting achievement? Did certain types of students benefit from it more than others? What was its value-added? ▪ Did a teaching strategy pay off? How did kids being taught with this strategy compare to similar kids who were taught using another approach? ▪ What effect does the use of a certain materials or technologies have on student outcomes? Do certain teachers have greater success with certain tools? ▪ How do varying funding levels or resource allocation strategies relate to student success or program effectiveness?
Indicators	<ul style="list-style-type: none"> ▪ What are the early indicators of high dropout risk?³⁴ ▪ Is a certain local assessment a good predictor of success in a subsequent grade? ▪ Is a particular state assessment a good predictor of success in postsecondary education? ▪ What levels of achievement in middle school are associated with success in high school? ▪ What high school performance indicators are the best predictors of students' success in the workplace?³⁵

³² Note that answering each of these questions requires a very sophisticated LDS that 1) collects certain detailed data (e.g., unique student and teacher identifiers, and in depth data on students, teachers, classroom practices, school resources and facilities, and expenditures); and 2) links these data to one another, from year to year, students to their teachers, and K-12 to PK and postsecondary.

³³ National Center for Analysis of Longitudinal Data in Education Research

³⁴ Data Quality Campaign (January 2008). *Tapping into the Power of Longitudinal Data: A Guide for School Leaders*.

Table 2. What types of questions can we answer with detailed student-level, longitudinal data about (continued):

Schools?	<ul style="list-style-type: none"> ▪ Controlling for the characteristics of student populations and other characteristics, which schools produce the most academic growth in their students? ▪ How does the success of students enrolled in a school for a certain period of time compare with that of students enrolled for the same amount of time in the highest-performing comparable schools? ▪ How does a middle school perform with students who entered the school well-prepared in mathematics? How does the same school perform with students who were poorly prepared?³⁶ ▪ What percentage of a school's graduates requires remediation in college? ▪ How is a school's increase in proficiency rates related to the attrition of its low-performing students?³⁷
Districts?	<ul style="list-style-type: none"> ▪ What are the characteristics shared by the highest performing districts? How does the quality of the teaching staff at those districts compare to other districts in the state? ▪ What is a district's NGA graduation rate? ▪ How do districts compare in the number of students who enroll in postsecondary institutions? In the percentage that requires remediation? That earns a degree? ▪ Which districts have the highest teacher turnover rates? ▪ How many students does a district actually serve?
States?	<ul style="list-style-type: none"> ▪ What is a state's NGA graduation rate? ▪ What percentage of a state's high school graduates required remediation in college?

Streamlining operations and easing data burdens

LDSs can be designed to make every day operations more efficient, thereby freeing your staff to spend more time on students and less on key strokes. Interoperability and data sharing among a school's various data systems, for instance, eliminates the need for redundant data entry and, at the same time, limits the chance for entry errors. Consolidation of data into a unified system can also eliminate redundancy. And alignment of data definitions among schools and districts will result in more consistency and improve data quality. Automation of mandated state and federal reports will also reduce data burden and, thus, free up resources and staff time for more student-centered work and analyses.

Staff should also know that an LDS is not just another system into which they will load data for the state and federal governments. In fact, the primary purpose of an LDS is for school and district level instruction and operations. An LDS can facilitate a quick and easy two-way exchange of data – up AND down the ladder, from the locals to the state to the federal government and back. Many local agencies are used to working hard to provide the state and federal government with required data. If they are fortunate enough to see these data again in the form of, for example a report comparing the district to others in the state, the information may not come back until a year or more later. With an LDS, these data may quickly be made available to the locals through a number of media from sophisticated reporting and analysis tools, to standardized reports, to basic lists. These simplest of tools are often the most appreciated.



Case Study? Small gestures, big implications/appreciation
 One state demonstrates that the simplest of tools can make a big difference. The state's new LDS data warehouse has allowed the state to quickly and easily produce lists for each school showing them which students they are responsible for each year. These simple lists have been a huge hit in the state, saving staff much toil and confusion. ...

³⁵ Data Quality Campaign (November 2007). *Measuring What Matters: Creating a Longitudinal Data System to Improve Student Achievement*.

³⁶ Dougherty, Chrys. (2002). *A Policymaker's Guide to the Value of Longitudinal Student Data*.

³⁷ MPR Associates/National Center for Educational Accountability, *Judging Student Achievement: Why Getting the Right Data Matters*, September 2005.

Culture change

LDSs have the potential to change our relationship with data – revolutionizing the way we think about and use this information – and to leverage culture change throughout the education community. By improving data quality and increasing the speed at which agencies are able to return data to districts and schools, LDSs open the door to many new possibilities. At the local level, these systems, along with ample training [see the Professional Development section of this guide], can transform “statistically-challenged” teachers into empowered data consumers who use data to gain valuable insight about their students. They can turn data-burdened staff who spend their days entering data into data users with time to put the information to use for their schools and students. And because LDSs can make data such a useful and accessible tool to those in the local education community, staff will have more reason to care that those data are of high quality. Education researchers can expand their toolkit from trying to draw conclusions from cross-sectional aggregate data to using individual-level longitudinal data to get more valid and reliable results. In all of these ways, we see that LDSs not only require, but also inspire culture change. [See Chapter 4 for more information on realizing these benefits.]

Additional Resources: LDS Benefits

- [A Policymaker's Guide to the Value of Student Longitudinal Data](#) - Chrys Dougherty, Education Commission of the States, July 2002
This brief gives a quick summary of the uses and value of longitudinal data. It also lists some questions that only longitudinal data can help us answer.
- [Harnessing the Potential for Research of Existing Student Records Databases: An Action Agenda](#)
This document is the result of a 2005 meeting of academic researchers and individuals responsible for several state “student unit record systems” (SURs) – it explores the potential benefits of SURs and some issues associated with their development and use.
- [Measuring What Matters: Creating a Longitudinal Data System to Improve Student Achievement](#) - DQC, Nov 2007
This is a quick introduction brochure that reviews the states’ progress toward building along with the benefits and possibilities of LDSs. It includes future directions of state data systems (e.g., finance data linked to students and programs, linkage to social services and employment data, and inter-state transfer of data through use of common standards), the rationale for building LDSs and the benefits they can provide, and a review of national progress toward each of the 10 essential elements.
- [Judging Student Achievement: Why Getting the Right Data Matters](#) – MPR/NCEA Policy Brief, September 2005
This policy brief reviews some of the benefits of longitudinal data over the cross-sectional data that we have used to date. These include the ability to 1) assess student academic growth and proficiency over time, 2) monitor student mobility, retention, and attrition, 3) examine prior achievement for all student subgroups, and 4) predict future student achievement.
- [Every Student Counted](#) - DQC, Jul 07
To calculate the NGA’s graduation rate, states need to have a longitudinal data system, which provides the ability to track individual students from year to year and across campuses and districts. This article outlines benefits and need for LDSs in this area.
- [Tapping into the Power of Longitudinal Data: A Guide for School Leaders](#) – DQC, Jan 2008
This article explores the advantages that longitudinal data afford teachers and principals in contrast to snapshot data. It presents “six key uses of longitudinal data” including progress monitoring, diagnosis and prescription, internal benchmarking, external benchmarking, predictive analysis, and evaluation.
- [Getting the evidence for evidence-based initiatives: How the Midwest states use data systems to improve education processes and outcomes](#) - Regional Education Laboratories Midwest – June 2007
This report reviews the progress of several Midwest states in developing LDSs and use of data systems in general. Based on interviews with SEA officials and federal agency staff, the authors review the work that has been done, the challenges that have been faced, and the current requirements being pursued by the states
- [Longitudinal Data Systems: Summary of Current & Potential Issues](#) (2006)
This document summarizes information and findings related to longitudinal data systems in education, exploring current issues and potential uses. It will guide the external stakeholder needs assessment process, highlighting themes and posing questions to be addressed in interviews, surveys, and focus groups.
(LDS Share Document Depository)
- [National Center for Analysis of Longitudinal Data in Education Research \(CALDER\)](#)
Visit CALDER, a program of research by the Urban Institute and several universities, for some examples of research made possible by the availability of longitudinal student data. The main focus of CALDER is to examine “how state and local policies, especially teacher policies, governance policies, and accountability policies affect teachers (e.g., who teaches what students) and students (e.g., academic achievement and attainment).” In addition to housing a large collection of publications, the site also provides links to several longitudinal state databases

- [Data Use Drives School and District Improvement](#) – DQC, Sep 06
Although data can be used by school systems in myriad ways to promote system-wide success, this DQC brief focuses specifically on how stakeholders at all levels can support access to and use of a student's academic history to adjust instruction to meet the student's needs.
- [Questionnaire for Teacher Specialists](#) (2007)
This questionnaire lists a host of questions that an LDS can be used to answer. It was given to teacher specialists who were asked to rate the questions in terms of the value that their answers would offer.
LDS Share - Filename: SC Questions for SC Teachers

In the News...

- [New Number-Crunching Links Teachers to Test Scores](#) – Emily Alpert, VoiceofSanDiego.org, 10/6/08
This news article reports on recent breakthroughs made possible with longitudinal student-level data. Interviews highlight the benefits of these data, saving staff significant amounts of work and making data available promptly to inform decisionmaking. The piece also discusses some of the controversies that surround the use of these data including fear about merit pay and job security. Concerns are also voiced about the value of standardized tests and their accuracy in assessing student and teacher performance.

Additional Resources: General LDS Information

- [Building and Using Statewide Longitudinal Data Systems: Implications for Policy](#) - DQC, May 07
This is a brief summary of potential benefits of LDSs as well as the requirements of building a good one. It summarizes the progress of states and reasons for the recent explosion of progress toward LDSs. The article also includes a discussion of the "barriers for the development and use of LDSs.
- [IES Statewide Longitudinal Data Systems Grant Programs](#)
A downloadable abstract of the three-year work each state is planning to complete with the help of their IES SLDS grant along with the state's original application to the grant program.
- [Longitudinal Student Data in the No Child Left Behind Act of 2001](#) - Chrys Dougherty, NCEA
This article outlines the ways in which LDSs can help education agencies achieve the goals of NCLB. While not required by the law, LDSs are encouraged in some passages. It also outlines scenarios under which LDS might be funded by the federal government.
- [Results of 2008 NCEA Survey of State P-12 Data Collection Issues Related to Longitudinal Analysis](#) - Nov 08
This website presents the findings of a survey conducted by the DQC and the National Center for Educational Accountability (NCEA) in September 2008. It looks at states' longitudinal data system infrastructure and abilities. The survey findings are summarized along with a state-by-state analysis of the policy implications of each state's LDS.
- [Council of Chief State School Officers \(CCSSO\) Longitudinal Student Data Systems Task Force](#)
This page contains notes from this task force's meetings since May 2006. The group is made up of about a dozen representatives from state education agencies. Each meeting includes updates on the states' LDSs and on the activities of relevant organizations, as well as discussions on topics such as privacy, portability, interoperability, e-transcripts, and P-20.
- [Creating a Longitudinal Data System: Using Data to Improve Student Achievement](#) - DQC, 2006
See the Appendix for state education agency action steps towards implementing the ten essential elements.
- [The Case for a Longitudinal Student Data System in California](#)
Spinetta, Amy & Iyer Sankaran. California State University, Sacramento. *eJournal of Education Policy*. (2002).
This brief 2002 policy paper argues the case for developing a longitudinal data system, citing a host of benefits from student tracking to policy analysis. It considers some other states' systems, security, and student identifiers.

In the News...

- [Finding Your Way in a Data-Driven World](#)
EdWeek Magazine, January 2008
This article provides a glimpse of what some districts are doing to help students with their LDSs and sophisticated analysis tools. It also offers some important lessons learned from leaders in LDS development.
- [Student Data System Idea Gains Traction](#) - Jan 08
This news article highlights a case for LDS development based on enrollment tracking and funding.
- [High School Studies Eye Role of Charter Status, Teachers](#) - Education Week
This article discusses some findings of the National Center for the Analysis of Longitudinal Data in Education Research (CALDER), which used longitudinal data to assess the effects of charter schools and programs such as Teach for America.
- [Editorial: Despite tight budget, aim high for education- How can California expect excellence without sufficient data about students?](#) - Jan 08
This op-ed piece comments on California's efforts to develop a more sophisticated and useful LDS. The author calls for the development of a P-20 system modeled after Florida's.

Chapter 2: Initiating, Planning, Executing, and Evaluating an LDS

Developing a successful LDS is 80% planning and 20% building.

In this Chapter

This chapter discusses the early stages of LDS development and is intended to help you through the process of figuring out what you want to accomplish with your LDS and what you will need in order to achieve your goals. Coming up with a vision for and planning an LDS is usually the job of policymakers at the top, but this process should be heavily informed by the needs of a broad range of stakeholders. Along the systems development life cycle, policymakers and system developers need to engage in self assessment, identifying the system they have before figuring out what type of system they want. This decision of what they want should be driven by the needs of the educational community, the costs involved given the legacy system and staff, and the institutional support for the project. Planners should ensure project sustainability by creating interest and sustained buy-in as well as securing long-term funding for the project. Procurement planning, that is lining up a vendor and putting them to work or building the staffing capacity in-house to construct the system must be done. But, just having the right people may not be enough – a culture change in management and throughout the organization is necessary for long-term success. And throughout the life of the system, thorough evaluation must be done to ensure the quality of its data and the confidence of its users.

Sections in this chapter include:

Planning Prerequisites: What to Think About Before Developing an LDS

- Information Life Cycle
- Systems Development Life Cycle

Seeing Here, Seeing There: Knowing What You Have and Planning What You Want

- Engaging Stakeholders: Bringing Everyone Along
- Self Assessment: You are ‘Here’... but, Where Exactly is ‘That’?
- Enterprise Architecture
- Needs Assessment: Defining ‘There’
- Data: Knowing What You Have, Identifying What You Need
- ‘L’ is for Local: District-level LDS Considerations
- Some Critical “abilities”: Interoperability and Portability
- Ensuring System Sustainability: Staying ‘There’
- Marketing and Communicating about Your LDS
- Building State-District Relationships

Getting from Here to There: Developing What You Want

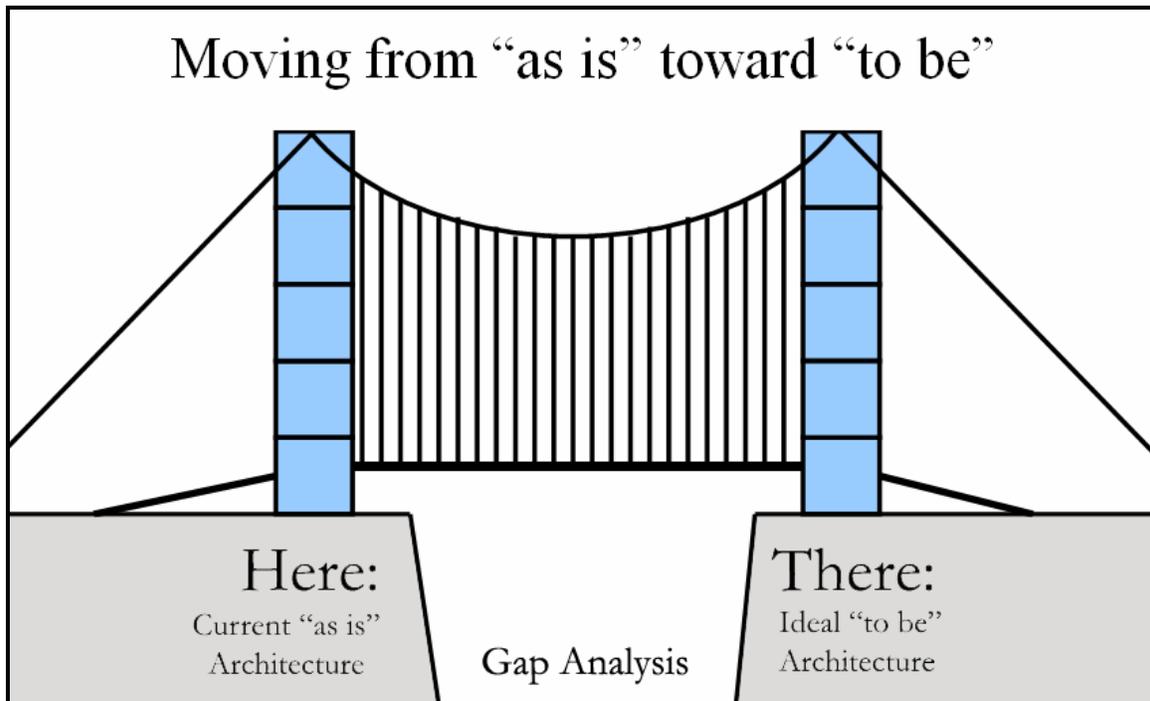
- Procurement Planning: Build or Buy?
- LDS RFP ABCs: Writing a Strong Request for Proposals

Are We There, Yet? Evaluating your LDS

Planning Prerequisites: What to Think About Before Developing an LDS

Building an information system today can be a daunting task. It's not uncommon for those who analyze a newly proposed information system design and compare it with the current information system environment to say, "You cannot get there from here." Certainly the technological, organizational, and professional gaps between the information system that currently "is," (a.k.a. "here") and the ideal information system that we hope will "be" in the future (a.k.a. "there") are often very discouraging.

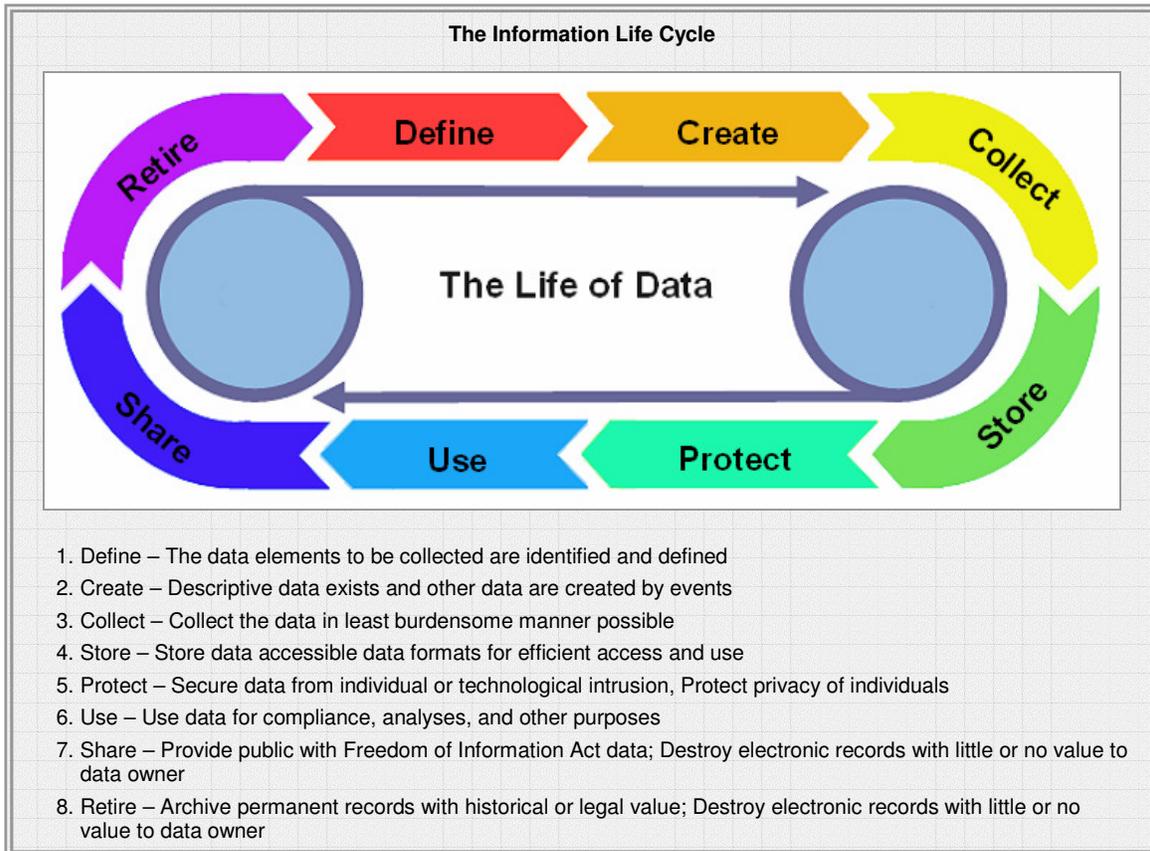
For centuries, when people stood at the edge of a ravine, faced with the challenge "you cannot get there from here," they have often met that challenge by building a suspension bridge to traverse the gap. The primary characteristic of a suspension bridge is that it is securely anchored in the "here" and the "there" on both sides of the void. In systems development work, these anchors are the explicit descriptions of the architecture of the current "as is" system and the architecture of the planned, future "to be" system [see Enterprise Architecture section of this guide].



Once the current reality is solidly understood and the future reality is clearly defined, we can do what is commonly referred to as a "gap analysis" and then begin to take a series of small steps or tasks necessary to move us from the present into the future. When these small steps are implemented in the proper sequence, the incomprehensible becomes easily understood and the impossible is accomplished. Later in this chapter, we will discuss the processes of self assessment and needs assessment to help you identify "here" and "there" [See Self Assessment and Needs Assessment].

Information Life Cycle

One of the first concepts information systems designers and developers need to absorb is that information has a “life cycle” that begins with information’s creation and continues through its destruction. Although there are many ways to describe the life cycle process, we will use the following verbs to enumerate the life cycle stages: Define, Create, Collect, Store, Protect, Use, Share, and Retire.



DEFINE: Before collecting data, organizations identify and define the data elements they need or want to comply with requirements or to use to inform decisionmaking and business processes. Definition of data is not a precursor to the cycle, nor is it a one time process, however. This stage should occur iteratively with every cycle to refine the data and data relationships so that they better meet the agency’s evolving needs. [See Data: Knowing What You Have, Identifying What You Need].

CREATE AND COLLECT: While some information already exists, such as demographic data, other data are the product of events or activities such as math, reading, or science tests. In order to put these data into an electronic information system, they will need to be collected. Thoroughly understanding the nature of the various types of data that will be entered into the system and the collection processes that will be used is essential for understanding the quality – completeness, timeliness, and accuracy – of the data, and thereby understanding whether or not the data will be usable. It is also important to understand the burden costs of acquiring and entering the data and the skills of those tasked to do this critical work [See Data: Knowing What You Have, Identifying What You Need].

STORE AND PROTECT: It is essential to think through the storage requirements for the data and the levels of protection these data will require. The risk of exposure will vary based on the contents of the records. Risk has two components: the amount of harm that will be done if the data are obtained by an unauthorized person and the likelihood that such an event might happen. If the content of the records is such that little or no harm will be done, then the risk can be considered low even if the likelihood of getting the data is high. But as the potential for harm increases, systems must provide higher levels of protection protocols to prevent access and reduce the likelihood of an unauthorized access to the data. [See Privacy, Security and Confidentiality, Risk Assessment...]

USE: The purpose for building systems is that the data in them will be used to improve the work of the organization. The users of the data in the information system are the primary customers of the system builder. How the data are to be used, how they are to be presented, and how they are to be refreshed are just a few of the considerations that will require an extensive series of requirements discussions. [For more information, see Chapter 4.]

SHARE: How, when, under what circumstances, and with whom (both individuals and other information systems) the data will be shared is another set of questions and deliberations. Sharing data often involves legal and policy considerations such as “freedom of information” and “privacy” requirements. Clearly articulating all of these requirements and the business rules is necessary to meet the legal and ethical requirements for data. [See role-based access, data sharing agreements, P-20...]

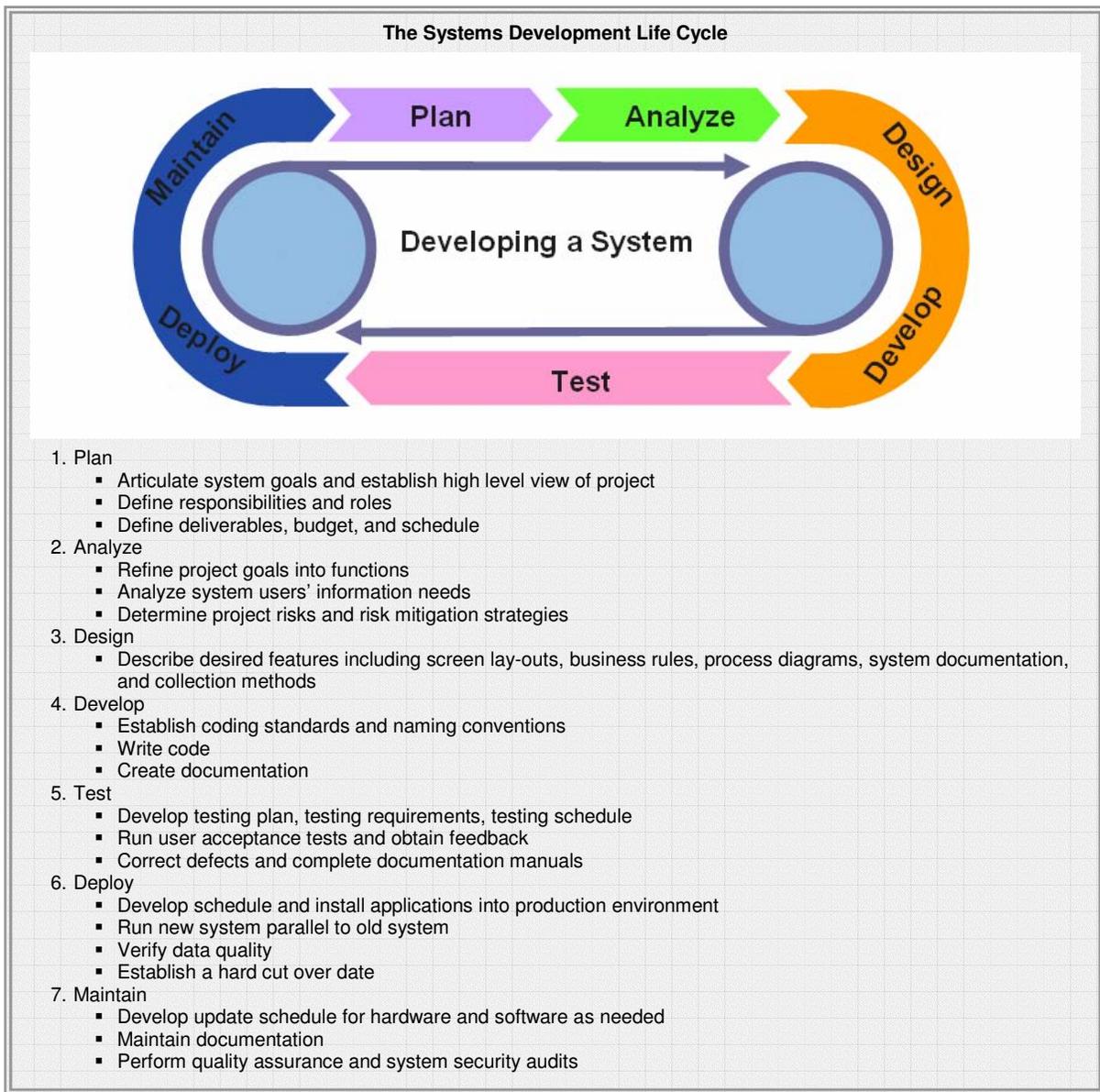
RETIRE: One of the last decisions about specific data in the life cycle of information comes when the data cease to be accessed and used for the purposes they were originally collected and stored. When the data are dormant and only occupying valuable storage space, it is time to make the decision to archive the data or to destroy them. Some data by their nature are “eternal” and need to be properly and securely archived in case they are ever needed again (e.g. transcript data, financial data). Other data have lost all of their value and need to be destroyed in a manner consistent with their sensitivity.

Policymakers must understand the lifecycle of information to know where they are and where they want to go. They should also understand their ongoing role in the development and maintenance of the LDS. If they think an LDS is just a project, they will not be good policymakers. And, before the design and development experts for any information system begin their work, the system owners and planners need to thoughtfully review all aspects of the life cycle of the information they propose to collect, store, and use. A thorough understanding of the current information handling processes will provoke insights and suggestions for system and process improvements and avoid difficulties that would, otherwise, not have been discovered in a timely manner.

Systems Development Life Cycle

Developing anything more than a simple data retrieval system can be expected to be a multi-year project. The numbers of system users, their requirements, the network relationships, the complexities of ever changing technology, and the personal politics of any human-run system multiply the importance of sound project management and an in-depth understanding of the life cycle of a systems development project. While an LDS is not just a project – it's ongoing, and requires maintenance, use, continuing training, etc. – it can be useful to think of LDS development as a project in its early phases.

There are many words that can be used to name the various stages and sub-stages in an information systems development effort, but we will use the following verbs to describe the whole life cycle: Plan, Analyze, Design, Develop, Test, Deploy, and Maintain.



PLAN: The importance of thorough planning cannot be overemphasized. And neither can the requirement to take all the time that is needed to implement the plan successfully. For our purposes, planning includes articulating the goals of the new system and assigning roles and responsibilities for the management of the project [see Chapter 3]. General goals need to be defined by project “deliverables” with a set schedule and budget for all of the separate parts as well as the whole. In the planning stage, the current environment should be analyzed [see the Self Assessment and Enterprise Architecture sections of this guide] and a clear picture of the future information system should be created [see the Needs Assessment and Enterprise Architecture sections of this guide]. Anything missed in the planning stage will either go unnoticed until it is too late to make the necessary adjustments or it will require a return loop to the planning stage to do what wasn’t done initially.

ANALYZE: Analyzing the information requirements of all of the information system users is a long and tedious process. It requires great patience and repetition to generate the reflection necessary to turn vague ideas of what would be useful information into definable and actionable system requirements. This is where the project goals and deliverables become defined in functional process terms. This is also where the project is critically examined to articulate and define all of the risks associated with the work to be done and the resources to do that work. Each of these risks must be classified as high, medium or low and each must be given a strategy for mitigation in case it materializes. [See the Engaging Stakeholders and Needs assessment sections of this guide.]

DESIGN: In the design stage, all of the mental pictures created in the earlier stages are put into clear and completely documented forms. Business rules are articulated and refined, screen layouts are developed and improved, process diagrams are drawn and redrawn, and system documentation is carefully and completely kept.

DEVELOP: When the design documents are complete, they are given to the developers to write the code that will automate the processes and produce the desired result. Coding standards and naming conventions are but two of the many considerations that must be made by the system developers.

TEST: During the development stage, the testing stage begins and testing plans, user acceptance tests, and a testing schedule are developed. These tests are run, defects are discovered, and the system is changed to eliminate the defects. Any time or effort that is avoided at this stage may come back multiplied many times if the system defects survive to plague the system users.

DEPLOY: In the deploy stage, the new system with its hardware, software, and applications is installed and often run parallel to the old system until it meets the acceptance criterion established earlier. System security is deployed and tested in real time situations and data quality is checked and verified.

MAINTAIN: When the system has met all of the acceptance testing, it enters the maintenance stage. Here the system operations team will perform quality assurance and system security audits, update hardware and software as needed, and maintain documentation. The maintenance stage continues as long as the system is operating. When it is determined that the existing system is not as effective or efficient as it should be, the system owners will begin the systems development life cycle again by beginning to plan for a new system.

The Forum has more...

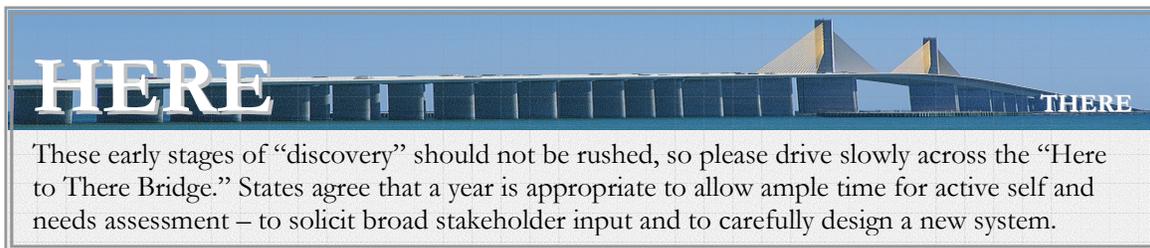
For more detailed information about these issues, see:



- [Forum Unified Education Technology Suite \(2005\)](#)
- [Forum Guide to Decision Support Systems: A Resource for Educators \(2006\)](#)
- [Technology @ Your Fingertips \(2001\)](#)

Seeing Here, Seeing There: Knowing What You Have and Planning What You Want

Before you jump into developing your new system – writing code or drafting an RFP to find a vendor to build the system for you – it is important to take some time for reflection or “discovery.” That is, before you begin your LDS journey, you should first figure out where “here” is and then carefully plan where “there” is. Start this often overlooked phase at the beginning of the LDS development process by doing some thorough self assessment and identifying what your current system and environment look like – the answer, of course, will vary widely among organizations in terms of technology, applications, data, politics, resources, and so on. Once you’ve clearly established where you are, you should then pinpoint where you want to go by thoroughly assessing your needs and carefully planning your desired system. A broad range of stakeholders should be involved in these processes to get a range of input. At the end of your self and needs assessments, compare your ‘here’ and ‘there’ to figure out how your current data system and organizational culture will need to change in order to realize your desired system.



The following sections address these crucial early stages of the LDS development process. While the activities of engaging stakeholders, doing self assessment and identifying needs are commonly referred to collectively as “needs assessment,” they are disaggregated here and discussed as distinct interrelated parts of the early planning process.

Engaging Stakeholders: Bringing Everyone Along

Early on, an education agency should pull together a broad range of stakeholders in a collaborative effort to define the organization's LDS vision. Because a wide array of people hold a stake in the effective design and utilization of the system, this early stage is critical for two primary reasons: 1) it increases the usefulness and relevance of the system to users, and 2) it increases the visibility of and demand for the system.

Without diverse input from a range of perspectives, the resulting system may not be useful to all those who stand to benefit from it. And, if the system is not relevant to potential users, it will not be used. Engaging users early in the design process will increase the likelihood that they will value and use the resulting system, and since they were given the opportunity in the design stages to ask for certain information, the data collected may be more relevant to their efforts to improve student outcomes. Involving stakeholders in the LDS design process also serves as the first step in marketing the system [see the Marketing Your LDS section of this guide for more information]. This process will educate people and get them thinking about the system's potential, while spreading excitement, increasing buy-in, and helping to gain lasting executive and grassroots support for the project in the process.

A model for engagement

An effective model for bringing stakeholders together creates a number of individual standing committees and stakeholder groups to hold periodic information gathering meetings. The number of groups necessary to accommodate all interested parties and the means of bringing participants together (*e.g.*, in one central location, at regional sites, or via telephone or online conferences) will depend largely on the size of your organization, the geographic size of your state or district, and resource availability. At these meetings, participants should identify the current system and data issues that cause them concern, define needs, and pinpoint aspects of the "as is" system that need improvement. In addition to talking about data needs, care should be taken by leaders to emphasize the LDS vision, which should first be to provide educational practitioners with the information they most need and want; secondly, to inform policy and resource allocation; and thirdly, for accountability and reporting. The culture of data collection for compliance must be overcome and stakeholders should focus on how to make the data help them to improve education.



JOINT APPLICATION DEVELOPMENT

Joint Application Development (JAD) is a popular information gathering technique that may be employed to engage stakeholders in the planning phases of an LDS. The method, which seeks to identify user needs and then create a system that directly meets those needs, is guided by four basic principles:

1. People who actually do a job have the best understanding of that job.
2. People who are trained in information technology have the best understanding of the possibilities of that technology.
3. Information systems and business processes rarely exist in isolation -- they transcend the confines of any single system or office and affect work in related departments. People working in these related areas have valuable insight on the role of a system within a larger community.
4. The best information systems are designed when all of these groups work together on a project as equal partners.

For more information on JAD, visit the University of Texas at Austin Technology Resources website at <http://www.utexas.edu/ecs/trecs/hris/pub/jad.php>.

Assign roles and responsibilities as appropriate and keep things moving between meetings. In addition to these meetings, consider using a variety of information gathering strategies such as focus

groups (in-person and online), interviews, roundtable discussions, or surveys (paper or web-based).³⁸ Also, take advantage of already established groups that may take up the issue of defining LDS requirements and facilitating communication. If there are relevant task forces, working groups, or data user groups already in existence, for example, ask these groups to carve out some time for LDS discussions.

A representative from each of the stakeholder groups should also serve on a core committee, which should meet frequently to share findings from stakeholder group meetings. This central committee should play a continuing role in overseeing and facilitating ongoing communication about the LDS planning process, and fostering a “living system” by ensuring continuous feedback on how to design and improve the system so it meets stakeholder needs. [See the Additional Resources following this section, Marketing an LDS section, and Chapter 3 for more information].

It is important to create a collaborative environment where all stakeholders feel comfortable to contribute as equals. Participants should be encouraged to be bold and creative in their suggestions. Innovation requires practitioners to step out of the box and consider how the system can work for them and to think about the types of information that would help them be more successful in their jobs.

Who to engage

The stakeholders invited to join in the early design process should vary in terms of their interest in the project, expertise, responsibilities, geography, and the ways in which the system can benefit them. Include insiders who are familiar with education data and the workings of the agency as well as outsiders who can provide a

fresh perspective. Bring in both those who are tech savvy as well as those who know the business end of the enterprise. And, involve those who collect and provide the data as well as those who use the data. Your approach to stakeholder engagement should also acknowledge the need for culture change in the education community in terms of data.

<p>MIX IT UP AND KEEP IT MOVING</p> <p>Enlist stakeholders who vary in terms of:</p> <ul style="list-style-type: none">• interest in the project• expertise (e.g., business and technology specialists)• responsibilities (e.g., data collectors and data providers)• level of government (e.g., state, regional, or district)• geography• benefits they stand to gain• perspective (e.g., insiders and outsiders)	
---	--

While data systems have historically been built primarily for compliance, the recent shift of emphasis to using the data to inform decisionmaking, improve educational strategies, and enhance student learning requires that the design of these systems takes local educators’ needs into consideration. For these reasons, you should also be sure to include ample representation from schools and districts in the planning process in addition to state-level personnel.

Send letters out to other agencies, organizations, or other potential stakeholders that may be interested in the system to invite them to participate in stakeholder meetings. You should try to include as many stakeholders as possible at first and let them decide whether to continue attending meetings. This will give everyone an introduction to the project and allow those with special interest in the endeavor to become more involved. A word of caution though, while it is beneficial to include a broad collection of stakeholders through these planning processes, there can be such a thing as too much input and such inclusiveness introduces the risk of hampering the project. Setting goals,

³⁸ Wilson, L & Nunn, J. “Stakeholder Involvement in Maryland.” Presentation given at MIS Conference in Atlanta, GA, February 28, 2007.

ground rules, and strategies early on for handling everyone’s ideas efficiently will help keep the process moving and on track.

Table 3 below lists many of the types of stakeholders that might be enlisted to take part in the planning stages of the project.

Table 3. Stakeholders who might be involved in LDS planning

Internal stakeholder groups (state, district and school):	
Elected officials	Teachers
Legislative and Governor’s Staff	Registrars
Governing Boards	Secretaries
State Education Agency Program Coordinators	Librarians/Media specialists
District Superintendents & Assistant Superintendents	Program Area Experts
Chief Information Officers (CIOs)	Special Education Directors
Public Information Officers	English Language Learner Program Directors
Local Accountability Officers	Title I Coordinators
District-level data stewards	Title III Coordinators
Content Supervisors	Gifted and Talented Education Coordinators
Human Resources Staff	Information Technology Staff
Early Learning Coordinators	Project Managers
Guidance Services Directors	Hardware Engineers
Curriculum/Instruction Staff	Software Developers
Career Tech/Adult Learning Staff	Network Engineers
Teacher Certification Staff	Database Designers
School Administrators (Principals and Directors)	Graphic Display Experts
External stakeholder groups:	
Advocacy groups	PTA representatives
Child Services	Parents
School Board members	Media/Press
Teacher Retirement Board	School Counselors
Institutions of higher education	Researchers
Business and industry	Community members/“The Public”
Support organizations	Vendors
Union representatives	Other state agency representatives (e.g. Dept. of Labor)

Additional Resources: Engaging Stakeholders

- AK’s Initial solicitation letter Commissioner signature (Invitation to Participate in Stakeholder Groups) (2007)
“This item is a draft letter inviting stakeholder participation to Alaska’s Unity Project.”
LDS Share - Filename: AK’s initial stakeholder solicitation letter with Commissioner signature.
- Alaska Unity Project: Functional Stakeholder Organization Chart (2007)
This item illustrates the Unity Project’s Functional Stakeholder Organization.
LDS Share - Filename: AK Visio_functional_stake_holder_chart
- External Communications Plan EXAMPLE (2007)
This document represents an example and/or template External Communications Plan developed by the state of MI.
LDS Share - Filename: MI Communication Plan Example
- [Don’t Get Lost in Translation—LDS and the Data Divas, Geeks, and Duffers \(i.e., the Stakeholders\), Strategies for Success.](#) 2007 SDC LDS Strand: **Session II**, Debra Holdren, South Carolina Department of Education
This presentation review’s SC’s approach to engaging stakeholders, getting the right people involved in the LDS project and facilitating effective communication between these key players from various backgrounds to optimize results.
- [Stakeholder Involvement - MD](#)
This presentation given at the 2006 IES SLDS Grantee Meeting provides an overview of Maryland’s efforts to engage a wide variety of stakeholders. It includes the various types of stakeholders, their roles, and the process through which needs assessment is conducted. Lessons learned and best practices are offered. Slide notes are also included.
- [Stakeholder Involvement - WI](#)
This is a short presentation given at 2006 IES SLDS Grantee Meeting. It lists the challenges of engaging stakeholders.

Self assessment: You are Here... but Where Exactly is That?

What is your current, or “as is,” data system? The answer might seem obvious since, after all, we’re talking about the current operations of the organization – the everyday reality. But, to get your LDS project off to a good start, you and a broad range of stakeholders will need to step back and create a careful depiction of your system environment and capabilities. What you find may surprise you.

Engage people from a range of stakeholder groups in this process – decisionmakers, education experts, and system developers – and look at the organization’s current data system and data use practices. Though technical staff should be involved, an understanding of the nuts and bolts is not required to participate. On the contrary, the most important input in self assessment will come from those who understand the day-to-day business operations and goals of the organization.

Self assessment can be carried out in a number of ways such as through an LDS steering committee, advisory board, or working group, personal or group interviews with stakeholders, written questionnaires, and focus groups. Look at what system components and functionalities exist currently and what developments are under way. Ask yourselves the questions in table 4 below:

Table 4. Self assessment example questions

<p>What does your data system look like?</p> <ul style="list-style-type: none"> ✓ Do you have a data collection system? Is it web-based? ✓ How do you collect these data (e.g. via paper or electronic transfer, etc.)? How often are they collected and updated? What is the path of data collection (e.g. from schools to districts to the state)? ✓ How granular are your data (e.g. individual or aggregate level)? ✓ Do you have a unique student identifier system? Can you use it to match records across databases? If not, do you use Social Security numbers instead? In which databases are these identifiers used as the primary ID? ✓ Do you have a unique teacher identifier system? ✓ Are your data linked across years? ✓ Are your data linked to postsecondary, workforce, social services, or other data outside of P-12? If so, how often is a match rate analysis conducted? ✓ Are the data linked across state borders? ✓ Do you use electronic transcripts to share student information? ✓ Are your systems interoperable? ✓ Do you have a central data warehouse or do programs use individual silos? ✓ What infrastructure and technology support the system (e.g. servers, software, etc.)? ✓ What parts of the system are run in-house? By a vendor? ✓ How are data secured? <p>What data do you collect?</p> <ul style="list-style-type: none"> ✓ What data do you collect on students (e.g. enrollment, demographics, test scores and information on untested students, program participation, course completion, graduation, free and reduced price lunch status, etc.)? Are these data matched for students from year to year? How often are students tested in each subject and can testing data show annual growth for students in any subjects? ✓ What data do you collect on teachers (e.g., certification, Highly Qualified, salary, etc.)? ✓ What other data do you collect on the educational system (e.g., financial, facilities, etc.)? At what levels do you collect these data (e.g., school, district)? ✓ When are these data collected and who provides them? (Catalog all current and planned data collections.) <p>How is data quality ensured?</p> <ul style="list-style-type: none"> ✓ What kinds of quality assurance processes and audits are utilized to ensure data quality? ✓ Are there business rules in place? ✓ Are there automated data edit processes to ensure compliance with rules? ✓ What is the governance structure in place that ensures data quality? ✓ Are common course codes used? Is there a central authoritative data dictionary? ✓ Is there a data model depicting the data environment?

Table 4. Self assessment example questions (continued)

<p>How are your data used?</p> <ul style="list-style-type: none">✓ How are data transmitted to the state or federal government?✓ What reports are produced with the data?✓ How are those reports made available to users?✓ What ad hoc querying is available?✓ Is access to data role-based? Who is allowed access to what data?✓ How are the data presented to users (e.g., spreadsheets, web-based analysis tools, digital dashboard, etc.)?✓ What does your staff do with the data (e.g., federal and state reporting, program performance monitoring, student tracking, data driven decisionmaking, etc.)?✓ What types of professional development is provided to help staff access, use, and analyze your data? <p>What other factors affect your data?</p> <ul style="list-style-type: none">✓ Do any federal or state laws and regulations control the collection and use of individual student data and protect the privacy of student records?✓ Do any federal or state laws prohibit or mandate linkages between P-12 data systems and postsecondary or other outside databases?✓ Do any federal or state laws or regulations require the data system to have certain components?✓ What is the culture of your organization in terms of data use, data sharing, and collaboration?
--

The section that follows introduces enterprise architecture, which is a process used to systematically conduct both self and needs assessments, as well as to guide efficient and effective system development thereafter. Whether your organization follows this rigorous process or conducts less formal information gathering, it is important to carefully document the findings from your self assessment process before moving on to the next stage of information gathering and planning – needs assessment.

<p>Additional resources: Self Assessment</p> <ul style="list-style-type: none">• DQC 2007 Sample Survey <i>This is a sample survey from the DQC's 2007 survey of state education agencies. It is organized around the DQC's 10 essential elements, asking key questions about agency progress towards and activities related to these elements.</i>• Map of Core Elements for Establishing a Statewide Longitudinal Data System (IES) <i>This checklist can be used to help your organization gauge where it is and where it needs to focus efforts in establishing an LDS. Agencies can reflect on which LDS components they have, which they want or do not care to have, and the status of support and funding for those components.</i>• Forum Unified Education Technology Suite <i>See Chapter 2 of this Forum product for a discussion of needs assessment, which also touches on ideas important in self assessment.</i>

Enterprise Architecture

Enterprise architecture (EA) is a planning and analysis tool to help you through the self and needs assessment [see Self Assessment and Needs Assessment sections] stages of the LDS project. Various complex definitions of EA are available, but put simply, **enterprise architecture** is “a conceptual tool that assists organizations with the understanding of their own structure and the way they work. It provides a map of the enterprise and is a route planner for business and technology change.”³⁹



Enterprise architecture is “a conceptual tool that assists organizations with the understanding of their own structure and the way they work. It provides a map of the enterprise and is a route planner for business and technology change.”

Your education agency and all of its parts make up your enterprise. The architecture is both the process of describing and a description of “the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution.”⁴⁰ Viewed as a *process*, EA identifies the mission and goals of your organization and the applications, technology, data, relationships, and other resources that your enterprise uses to accomplish its work. As a *description*, EA documents your findings in the form of a top-level, low detail blueprint that can be used to efficiently guide LDS development and maintenance. Though an EA focuses largely on technology and the organization of data, its main function is to make sense of the technological nuts and bolts so that technology can be better aligned with business needs.

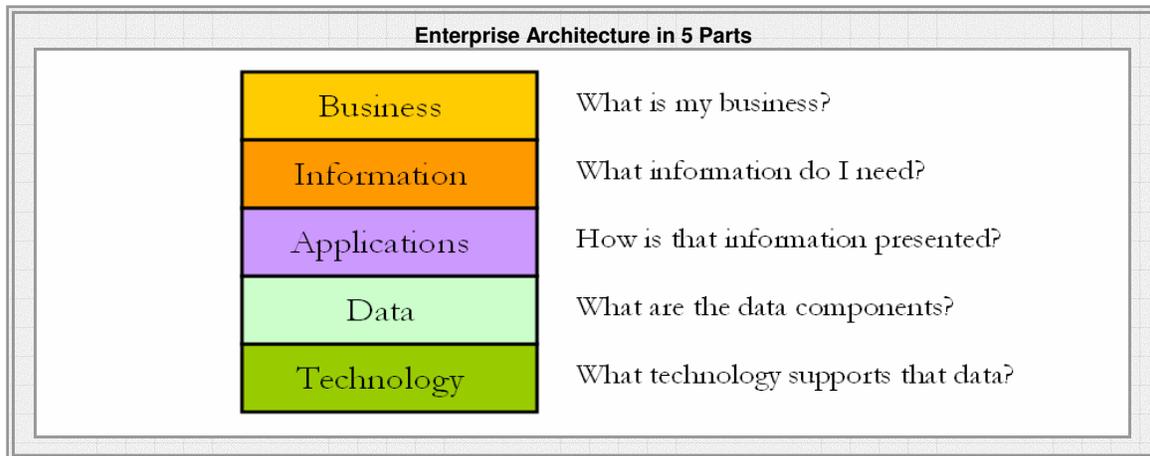
The EA should first describe the current system. The architecture exists whether you describe it or not. So, depicting and documenting that reality gives you a better grasp on how your education agency and its information system work. This depiction, at least at first, should focus on high-level business operations, rather than get mired in the details. Then, an EA of the future ideal system can be created. With these blueprints, you will be in a better position to make decisions about how your enterprise needs to be modified to meet its evolving goals.⁴¹ The EA process also identifies who has authority over what system components and who has been assigned responsibility for certain activities. In these ways, EA will be beneficial in terms of both planning and governing your LDS [see Chapter 3].

The figure below breaks EA down into five areas or perspectives, allowing us to focus on increasingly detailed individual aspects of the enterprise.

³⁹ Microsoft Architecture Overview, available online at <http://msdn.microsoft.com/en-us/architecture/ms978007.aspx>.

⁴⁰ IEEE, *IEEE Std 1471-2000 IEEE Recommended Practice for Architectural Description of Software-Intensive Systems*, available at http://standards.ieee.org/reading/ieee/std_public/description/se/1471-2000_desc.html

⁴¹ Aden, David. *Enterprise Architecture Demystified*. Sep. 24, 2008. Retrieved from <http://www.govtech.com/gt/articles/418008> on Oct. 16, 2008.



While there are many, many details that need to be determined as you drill down into the EA process, some of the high level questions that will help you in early LDS planning are presented below. A variety of stakeholders need to be involved in the process of answering these questions about what the system looks like and the purposes it serves.

BUSINESS ARCHITECTURE: What is our business?

- Why does our business exist? What is its mission? What does it accomplish?
- How do we do what we do? What are our core processes? Who do we serve?
- How are we organized? How do people and processes interact to do what we do?
- What are the strengths of our enterprise? What do we do well, and very well?
- What are our weaknesses or failures? What have we learned from those failures?
- How will our business change in the future? What are our growth challenges?

INFORMATION ARCHITECTURE: What information do we need?

- What decisions do we make? What information do we need in order to make each decision?
- What are the component parts of that information? How do we obtain each part?
- Where does that information originate? Who creates it? What is its quality?
- What information is needed to produce the products the business produces?
- Is any of the information highly sensitive? How is that information protected?
- Is there other information we do not have that could be valuable to our business?

APPLICATIONS ARCHITECTURE: How is that information presented? Applications help us transform data into information.

- What automated services support our business processes?
- How do our applications interact and depend on one another?
- How are our data presented to users?
- How do our applications link various staff within our organization? With the outside world?
- How do our applications serve different groups to achieve common business objectives?
- What are our plans for developing new applications and revising old ones to meet our goals?⁴²

DATA ARCHITECTURE: What are our data components?

- What are the sources of our data?
- How are our data managed? What business rules and quality assurance procedures are in place?
- Do we have a data model?

⁴² Microsoft Architecture Overview, available online at <http://msdn.microsoft.com/en-us/architecture/ms978007.aspx>.

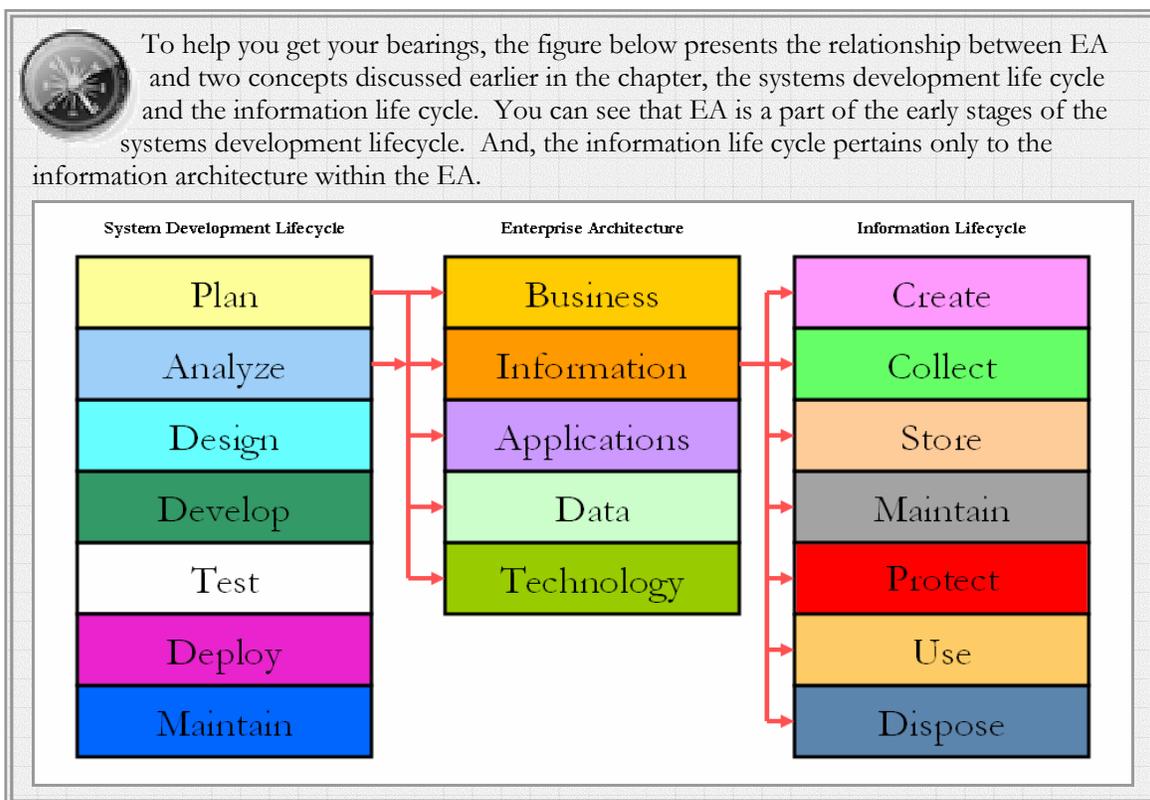
- Do we have an authoritative, agency-wide data dictionary?
- What metadata do we maintain?

TECHNOLOGY ARCHITECTURE: What technology supports that data?

- What technology standards and services are used to accomplish our mission?⁴³
- What technologies are used to store our data? How are the data protected?
- What technologies provide access to our data?
- What technology expertise is needed to support this effort?

...Hardware, software, network standards, policies, governance, requirements

It is most beneficial to develop an EA before or during the planning and analysis stages of your LDS development process. But it's never too late for EA, and great insight can be gained from the process at any point throughout the LDS's life cycle.



Additional resources: Enterprise Architecture

- [Enterprise Architecture](#), Microsoft Developer Network
This site includes links to a host of articles on EA including an introduction to Microsoft's approach to EA, a discussion of the most popular EA frameworks,
- [Enterprise Architecture As Strategy](#) (2006). Ross, et al. D.C. Harvard Business School Publishing, Boston, MA.

Enterprise Architecture Frameworks:

Below is a list of some of the most popular EA frameworks. Microsoft says that "none of these approaches is really complete. Each has strengths in some areas and weaknesses in others," and recommends using the most useful bits of each one to meet your organization's needs.

- [Federal Enterprise Architecture \(FEA\)](#) website. Also see the [FEA Practice Guidance](#).
The federal government has been a leader in developing and using EA, and the private sector is following suit.

⁴³ Ibid.

- [The Open Group Architecture Framework \(TOGAF\) & Architecture Development Method \(ADM\)](#)

"The Open Group Architecture Framework (TOGAF) is a framework - a detailed method and a set of supporting tools - for developing an enterprise architecture. It may be used freely by any organization wishing to develop an enterprise architecture for use within that organization" ADM is a "reliable, practical method... for defining business needs and developing an architecture that meets those needs, utilizing the elements of TOGAF and other architectural assets available to the organization." Simply stated, TOGAF is the framework and ADM is the process for creating TOGAF.

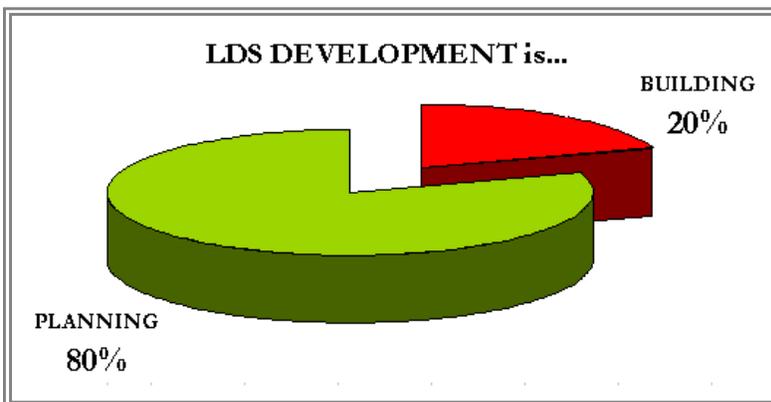
- [Zachman Framework](#)

One of the earliest EA frameworks, this framework is "a logical structure for classifying and organizing the descriptive representations of an Enterprise that are significant to the management of the Enterprise, as well as to the development of the Enterprise's systems" (Zachman, J. (1996)). ["The Framework for Enterprise Architecture: Background, Description and Utility."](#)

For more in depth discussion of these and other frameworks, see Microsoft's [Comparison of the Top Four Enterprise-Architecture Methodologies](#).

Needs Assessment: Defining ‘There’

Many states jump head first into developing or purchasing their LDS (or certain components of it) without spending much time on the front end thinking about exactly why they’re doing what they’re doing, what their stakeholders need, and what it will take to get the job done. According to many knowledgeable people, the reality is, successful LDS development is 80% planning and only 20% building. Careful planning can make the difference between a clumsy belly flop and a graceful dive into system development – between disappointment and a perfect 10.



During the needs assessment phase of the project, policymakers need to establish the business justification for what kind of LDS they want and why they want it. And, stakeholders should define the requirements for their new system so that the resulting system reflects their needs. Needs assessment is also another early step in creating buy in for the project, getting everyone – both internal and external stakeholders who use or would like to be able to use education data – involved in creating a vision for a system that they will one day put to good use.

Why do you want an LDS?

Before ground is broken and the developers start their work defining requirements and building the system, some fundamental questions should be answered about why the system is being built and what it will do for the educational community. Early on, decisionmakers should ask themselves:



Why do we want an LDS?
What are our ultimate goals for the system?

Preferably, the answers should not be:



“To check off the Data Quality Campaign’s 10 essential elements.”



“To keep up with the progress of other agencies (a.k.a. the Jones’s).”

Some better answers include:



“To improve instruction by helping teachers to identify student needs, discover and practice the most effective teaching strategies, and tailor instruction; by helping administrators to target teachers for professional development; and by helping researchers conduct more informative studies to identify effective strategies.”



“To inform policy decisions at the state and local levels with better information to help state program staff target district and school improvement needs.”



“To calculate academic growth, and track students and maintain their academic histories as they graduate to higher grade levels, transfer across districts within the state, dropout or transfer to private/another state and come back into the system, and move into higher education.”

- ✓ “To track staff and maintain their professional histories as they enter and progress through teacher preparation programs, receive professional development, and transfer among schools.”
- ✓ “To streamline operations and improve data quality by automating processes such as data entry and loading, making data collection more efficient; by helping state staff produce federally- and state-mandated reports; and by conforming to broadly shared data standards.”

What do you need from an LDS?

Once decisionmakers and other stakeholders are familiar with what an LDS is [see Defining LDS], the benefits one can provide [see LDS Benefits], what their current system looks like [see Self Assessment; Enterprise Architecture; and Data: Knowing What You Have, Identifying What You Need], and why they want to build such a system, they can begin to create a vision of what they want their own LDS to be and what functionalities they want it to have.

Determine system requirements early in the project so that expectations can be adjusted accordingly for everyone involved in the development process. It’s also good practice to establish central goals and expectations for the system. This will help focus system design and keep IT staff, vendors, legislators, and other stakeholders on the same page in terms of what needs to be done and what will actually become available to them in the future.

KEY QUESTIONS FOR KEY AUDIENCES



Ask *decisionmakers*:
“What do you want and why do you want it?”

Ask *education experts*:
“What will the system do for you?”

Ask *system developers*:
“What’s needed to make the system work?”

Ask *everyone*:
“How do we know if we’ve achieved the goal?”
“How do we identify success and anticipate failure (when education processes are and aren’t succeeding)?”

Everyone wants to improve student achievement, but the important question is, “How do you want to do it?” Policymakers and other stakeholders need to figure out what functionalities they want and establish requirements for the developers. If system developers have clear requirements to fulfill, policymakers and all other stakeholders are much more likely to get what they need.

You may want a suped up, cutting edge system that will cost you a mint. Or you may just want a basic, no frills bargain system. Either way, you must be clear about what you need and what you can afford. Without a careful period of reflection and planning, your organization may find itself dealing with the consequences of a poorly designed money pit that doesn’t really do what it needs it to do.

KNOWING WHAT YOU DON’T KNOW:

Often, it is difficult to figure out what you need because you may not be familiar with that which you don’t have. You may not realize what you don’t know or the ways in which certain functionalities might make your life easier. To get started, you might compare your current system, as you depicted it in your self assessment, to the ideal LDS outlined in Chapter 1 of this guide. Researching the data systems of other agencies or visiting another education

OTHERS’ LDSs



The National Center for Analysis of Longitudinal Data in Educational Research (CALDER) offers links to several LDS datasets along with descriptions of their source systems. The [State Data page](#) is a good place to start your research on other agencies’ LDSs.

agency with a more sophisticated system can also provide context and insight into what your options are.

When working with stakeholders, try to operate in concrete rather than in abstract terms. Instead of asking stakeholders vague, open ended questions about what they need, it may be helpful to start by using questionnaires to gauge interest in certain aspects and capabilities of an LDS. For instance, an education agency might survey staff and other stakeholders with a list of questions that the new system, specifically analysis tools and reports, could be designed to answer with the new data. The staff then can rate the questions in terms of the value they think their answers will provide, thus, allowing you to gauge stakeholder interest in a systematic fashion.

The specific questions included on such a survey might be drawn from the stakeholders themselves, and the rating process can provide a basis for prioritizing stakeholder needs. Surveys like this might be written for different stakeholder groups. For instance, while teachers might be asked to evaluate the answers to certain questions about curricula or student achievement, other staff might be asked to rate the value of particular operational functionalities such as data entry automation and data sharing between databases. Based on the answers provided and the resources available, a state might decide which data to collect, which tools and reports to offer, or which capabilities to prioritize. And, since some stakeholders will inevitably be louder and more aggressive in stating their needs in meetings and other venues, such surveys are a good way of canceling out the noise and leveling the playing field so prioritization of needs can be done fairly.

ASSESSING WHAT YOU NEED:

To help guide discussions, develop some open ended questions that should be asked of the various audiences – this will help you design your system and, if you are going to buy, will help lay the foundation for a strong request for proposals (RFP) [See LDS RFP ABCs: Writing a Strong Request for Proposals]. Some examples are listed in table 5 below:

Table 5. Needs assessment questions for stakeholders

- ✓ What questions do you want the LDS to help you answer [see chapter 1 and the appendix for examples]?
- ✓ What information will help you improve instruction and programs?
- ✓ What are the common data requests you receive that cannot be answered with the currently available data?
- ✓ What additional data will you need to collect in order to answer your questions? How can you get those data?
- ✓ What database linkages will be necessary to answer your questions?
- ✓ What access to data will be provided to various types of users to facilitate easier, more effective use of the data?
- ✓ What tools will facilitate access to and analysis of the data?
- ✓ What kinds of additional reports will be useful to staff and outside researchers?
- ✓ What types of professional development will be necessary?
- ✓ What user support will be helpful?
- ✓ What business operations do you want the LDS to improve (i.e. what functions will make your job easier and treat your “pain points”)?
- ✓ How can data collection be improved (e.g., move to web-based system)?
- ✓ How can the new system help you to better comply with federal and state collections? (Are there data elements required by federal or state collections that are currently not collected or able to be submitted on time?)
- ✓ What technology do you need to make the system work? What new technical capabilities will be necessary?
- ✓ What additional security measures will need to be implemented to protect the new data?

It is very important to document your requirements in some form such as in a needs statement. This is “a description of the functional needs, technical requirements and security and ethical standards that need to be met by a technology solution.”⁴⁴ Take your findings, categorize them, and try to boil them down to discrete needs. The resulting set of requirements can help guide the work of in-house system developers or to help you find a product on the market that will meet your needs. If you are planning on hiring a vendor (or multiple vendors), you can use your findings to help in the creation of an RFP. [See Build vs. Buy, and LDS RFP ABCs: Writing a Strong Request for Proposals].

⁴⁴ National Forum on Education Statistics, *Technology at Your Fingertips*.

After figuring out what you have and what you want, a gap analysis should be done to identify the discrepancies between “here” to “there,” and help you see what work will be necessary to get

“there.” Compare your self assessment and needs assessment results and see where the disparities are. For instance, if you do not currently have a student identifier system, but your needs assessment calls for one, you’ve found a hole that needs to be filled.



REALISTIC LDS EXPECTATIONS

When negotiating with a vendor or working with in-house staff to design your LDS, consider asking for these important LDS features:

- Unique identifier system that protects student privacy
- Interoperability with other K-12 systems
- Interoperability with Pre-K and postsecondary systems
- Teacher value-added data
- Data warehouse
- Reporting and analysis tools with easy to use interface

Keep in mind that building an LDS with stakeholders’ input

is an iterative process. Give it time and be persistent. Expect to carry on ongoing needs assessment, rather than just once at the beginning of the project. As the parts of the system are developed and go live, continue to get feedback to find out what your stakeholders think and what new needs they have. New ideas are often stirred up by new developments.

Additional resources: Needs Assessment

- [Technology @ your Fingertips](#) – National Forum on Education Statistics
Chapter 2 of this product contains a helpful discussion of needs assessment. While not specific to an LDS project, it offers some relevant guidelines for finding out what functional and technological needs your stakeholders have. It also offers tips on creating a needs assessment.
- Longitudinal Data Systems: Summary of Current & Potential Issues (2006)
“This document summarizes information and findings related to longitudinal data systems in education, exploring current issues and potential uses.” It reviews the basic requirements of an LDS as well as the possibilities that can be built into the system. It may be used as a reference to inform the design of a needs assessment process by “highlighting themes and posing questions to be addressed in interviews, surveys, and focus groups.”
LDS Share - Filename: MD_ LDS Literature Review
- Maryland Longitudinal Data System Needs Assessment Guidelines for Internal Stakeholders (2006)
This document represents materials that Maryland’s project staff will use to conduct a needs assessment for internal stakeholders. The document also contains proposed topics for needs assessment for external stakeholders.
LDS Share - Filename: MD Needs Assessment Materials for Internal Stakeholders
- Questionnaire for Teacher Specialists (2007)
This questionnaire lists a host of questions that the state’s LDS can be used to answer. It was given to teacher specialists who were asked to rate the questions in terms of the value that their answers would offer
LDS Share - Filename: SC Questions For SC Teachers
- SLED Focus Group Requirements Traceability Matrix (2007)
This file summarizes the findings of numerous focus groups that the District of Columbia held with a variety of stakeholder groups: the mayor’s office; community/principal groups; and functional groups (e.g., special education, charter schools, funders, researchers). Potential data requirements for a State Longitudinal Data Warehouse (SLED) have been identified and rated on a scale of 1-3 by all stakeholder groups. The file also includes the focus group schedule.
LDS Share - Filename: DC Focus Group Tracking (11.1.07)b
- Felner, Robert D., and Natalie Bolton. Anne Seitsinger, Stephen Brand, and Amy Burns. “Creating a statewide educational data system for accountability and improvement: a comprehensive information and assessment system for making evidence based change at school, district, and policy levels.” *Psychology in the Schools*; Mar 2008, Vol. 45, Issue 3, p235-256.
This article provides a good example of how designers can dream big from the outset, defining their needs and developing a system guided by loftier goals than usual. The system described, “unlike those used by other educational institutions, is unusual in that from the outset of the development and then the implementation, the assessment moved well beyond the simple assessment of the performance and achievement of students to include a comprehensive assessment of all aspects of the developmental, educational, fiscal, and policy conditions that comprise the ecology of the public education system, at all levels, as well as of the developmental and educational needs and attainment of students.”

Data: Knowing What You Have, Identifying What You Need

Once the decisionmakers and stakeholders have considered the types of questions an LDS can help them answer and decided which they care most about, your organization must assess what data it has and those it will need to answer those questions. Most agencies are up to their organizational ears in data, especially if they are collecting and maintaining data on individual students – an LDS requisite. However, while more is not necessarily better, the data you currently maintain may not be sufficient to answer your pressing questions. This section offers a summary of some of the data that you may need to achieve your goals.

Your data may be stored in a central data warehouse, or many separate data stores. Likely source systems include:



Curriculum Management System	Student Information System
Instructional Management System	Student Transportation/Food Services Systems
Assessment/Accountability System	HR and Teacher Certification System
Financial/Budget System	Program Systems (e.g., Spec. Ed., Title I)
Student Health System	Library/Media System ^{45, 46}

After you've taken inventory of what data you have, cataloging all of your current and planned data collections and identifying where your many data items are housed (and which data system is the authoritative source of each data element), figure out if there are any additional data your organization should consider collecting.

While we often focus on student traits and outcomes, truly informative research on our educational system requires that we also capture information on the student's contexts. Who are the student's teachers? What classroom strategies are used? What are the local financial and hiring practices? Our focus should be on inputs and processes that contribute directly and indirectly to student learning in addition to outcomes.

When identifying new data for collection, try to use overarching goals as a framework for selecting new elements. To make the most

EDUCATION INDICATORS

 Many resources are available to help you figure out what data you need to answer your questions about the education system. For more information on developing and using education indicators to measure status and outcomes, see:

- [Forum Guide to Education Indicators](#) (2005)
This document from the Forum is designed to help readers to properly create, use, and interpret education indicators. It also identifies standard definitions and calculations and warns readers of common misuses of education indicators.
- [From Information to Insight: The Point of Indicators](#)
ESP Solutions (2007). Available at ESP's [Resources page](#).
This document from ESP Solutions discusses various types of education indicators as well as education "indexes," which are combinations of related indicators that offer, perhaps more sophisticated views of educational values and trends than single indicators can provide. The product also discusses the selection of data elements are required and the establishment of thresholds to indicate the need for action.
- [Comparative Indicators of Education in the United States and Other G-8 Countries: 2006](#)
This report from IES presents twenty indicators used to compare the United States' education system to those of other G-8 countries. Indicators focus on population and school enrollment; academic performance; context for learning; expenditure for education; and education returns: educational attainment and income.
- [Buried Treasure - Developing a Management Guide From Mountains of School Data](#) (2005)
This report, geared towards district-level management, presents seven key types of school-level education indicators. The authors suggest that less may be more when it comes to education indicators. Rather than seeking to develop an indicator to suit every need, the report encourages parsimony.

⁴⁵ Jim Hirsch, [Performance Management - Data Informed Decisions: Having Information Provides New Understandings and Insight](#).

⁴⁶ ESP Solutions (2008). *D3M Framework: Building a Longitudinal Data System*.

of scarce resources, collect and store only those data that will be used to benefit the enterprise. Avoid random, arbitrary selection of elements that stakeholders think would be nice to have, but do not lend themselves to achieving your goals. And make sure that the data you collect captures the appropriate level of detail. For instance, when collecting data on attendance, should you collect data by day, by period, or by some other unit of time? If attendance by day is a sufficient level of detail, you may not want to burden your agency further.⁴⁷ Also, make sure to adhere to widely accepted standards and definitions so that the data you maintain will be consistent and comparable to other agencies' data.

Table 6 below presents many of the key types of data that should be contained in a P-12 LDS. The list presents data elements of key importance in conducting longitudinal analyses, but it is not exhaustive. Agencies should collect all other data required for state and federal reports as well as other key data necessary to answer its questions.

Table 6. Key data to collect for a P-12 LDS^{48, 49, 50, 51, 52, 53, 54,55}

Student data:

Personal and Demographic information

Unique Student Identifier
 Gender
 Date of birth
 Race
 Ethnicity
 Economically disadvantaged status
 Limited English Proficient status
 Title I status (or school-wide status)
 Migrant status
 Disability status

Program participation information

Bilingual/ESL program
 Gifted & Talented program
 Early childhood learning program
 Individualized education program
 Special assistance program

Performance information

Assessments (summative and formative)
 Untested student records
 College readiness data (AP, SAT, and ACT scores)
 Grades
 Credits earned
 Awards (e.g., Diplomas)

Enrollment information

Campus of enrollment
 Grade level
 Attendance data

Attainment information

HS graduate
 Type of diploma
 School dropout
 Dropout follow-up
 High school equivalency (e.g., GED)

Transcript /curriculum information

Course codes and descriptions
 Completion grades
 Summer and M.S. courses for H.S. credit
 Dual enrollment courses

Other information

Student health and nutrition
 Safety and Discipline
 Transportation data (e.g., length of bus ride)
 Family history
 Library records (e.g., books checked out)
 Meal data
 Perceptions data

⁴⁷ National Forum on Education Statistics (2008). *Every School Day Counts: A Taxonomy for Standard Attendance Data*.

⁴⁸ Education Information Management Advisory Consortium, Longitudinal Data Systems Task Force, March 2007 Meeting, Phoenix Arizona. [Meeting Summary](#) available online.

⁴⁹ Data Quality Campaign, [Sample Survey](#) 2007.

⁵⁰ Education Information Management Advisory Consortium, Student Longitudinal Data Systems Task Force, Council of Chief States School Officers, (2008). *Longitudinal Data System Roadmap*.

⁵¹ REL Midwest. (June 2007). *Getting the Evidence for Evidence-based initiatives: how the Midwest states use data systems to improve education processes and outcomes*.

⁵² Davis, Michelle R. (2008) Finding Your Way in a Data-Driven World.

⁵³ Center for Strengthening the Teaching Profession. [Creating a Comprehensive Teacher Data System](#)

⁵⁴ Berry, Fuller and Reeves, DQC. (March 2007). *Linking Teacher and Student Data To Improve Teacher and Teaching Quality*.

⁵⁵ Nunn, JA & KL Harper Mainzer. (2006). *Longitudinal Data Systems: Summary of Current Issues and Potential Uses*.

Table 6. Key data to collect for a P-12 LDS (continued)

Teacher and Staff data:	
<i>Personal and Demographic information</i>	<i>Professional development information</i>
Unique Teacher Identifier	Professional development training (e.g., record of in-service credits)
Date of Birth	Hours of professional development
Gender	<i>Personnel information</i>
Ethnicity	School ID
Race	Job/Subject assignment(s) (e.g., teacher, librarian, etc.)
<i>Qualifications information</i>	Program Assignment (e.g., Special Education, etc.)
Years of experience (by location)	Position title
College attended/Certifying Institution	Position codes
Highest degree earned	Schedules: grade/course/period taught
Academic major and minor	Compensation (e.g., Salary, Benefits, Supplemental Contracts)
Highly qualified	Employment status (e.g., Full-time equivalency; start./retirement/leave dates)
Graduation (with dates)	Time spent on administrative duties
Certificates (with dates)	Tenure
Licenses	Mobility and Attrition data
Endorsements	
Staff assessment results (e.g., subject knowledge test scores)	
School system data:	
<i>Finance information</i>	<i>District demographic information</i>
Revenues and expenditures	School size
Salaries and benefits	Class size
<i>Facilities and Technology information</i>	School safety
Building identifiers	AYP
Building area and space utilization	<i>Community demographic information</i>
Building condition	Locale
Classroom type (e.g., conventional, distance learning)	Adult education levels
<i>Organizational information</i>	Income single parent households
School	Property values
Accreditation	Labor force data
Relationship between schools	
District and school level directory data	

Additional resources: Data: Knowing What You Have, Identifying What You Want

- [NCES Handbooks Online](#)
The NCES Data Handbooks Online “provide guidance on consistency in data definitions and maintenance for education data, so that such data can be accurately aggregated and analyzed.” Use this searchable web tool to find standard data elements for students, staff, and education institutions along with standard definitions and recommended values or responses for each element.
- [Education Data Model](#) (Forum & SIFA)
The Education Data Model is a catalogue of the data used in PK-12 education and a description of the relationships among those data. It is designed to be used as a reference tool that can be used to: 1) facilitate the identification, merging, and matching of data across different systems; 2) provide similar descriptions across LEA systems, across LEAs, and from LEAs to the state and federal government; and 3) specify the content and structure of logical and physical data models.
- [SEDTA – Common Data Elements for Education Technology Assessment](#)
This toolkit presents the common data elements **SETDA identified for tracking states' progress with the technology section of NCLB.**
- [Every School Day Counts: A Taxonomy for Standard Attendance Data](#) (forthcoming from Forum)
This Forum Guide defines “attending/present” and “not attending/absent,” categorizes attendance codes in an exhaustive and mutually exclusive way, and supports improved attendance data quality and comparability between states and districts.
- [Accounting for Every Student: A Taxonomy for Standard Student Exit Codes](#) (Forum 2006)
This guidebook presents “best practice” advice, from members of the National Forum on Education Statistics, for tracking and maintaining information on enrollment status. It presents an exhaustive and mutually exclusive taxonomy of exit codes.
- [Coordinated Data Ask](#)
This product “will provide states and data collectors with a unified data collection template that, for the first time, identifies the most commonly requested education data elements and their agreed upon definitions.” It includes about 100 data elements along with their standard definition, and a crosswalk to EDEN and SIF.

- [Longitudinal Data Systems: Summary of Current & Potential Issues \(2006\)](#)
This document summarizes information and findings related to longitudinal data systems in education, exploring current issues and potential uses. It will guide the external stakeholder needs assessment process, highlighting themes and posing questions to be addressed in interviews, surveys, and focus groups.
LDS Share - Filename: MD_LDS Literature Review
- Data Quality Campaign, [Sample Survey](#) 2008.
This sample survey asks about data systems and collection practices along the DQC's 10 essential elements. Questions and answers explore these elements in detail.
- [Getting the evidence for evidence-based initiatives: How the Midwest states use data systems to improve education processes and outcomes](#)
Regional Education Laboratories Midwest – June 2007
This report reviews the progress of several Midwest states in developing LDSs and use of data systems in general. Based on interviews with SEA officials and federal agency staff, the authors review the work that has been done, the challenges that have been faced, and the current requirements being pursued by the states.
- [Creating a Comprehensive Teacher Data System](#)
Page 6 of this report includes a list of data elements suggested for a comprehensive staff data system.
- [Linking Teacher and Student Data to Improve Teacher and Teaching Quality](#). Berry, Fuller, Reeves & Laird. DQC. (2007).
This article discusses some of the information about teachers that may be tracked in an LDS and the benefits those data can offer when linked to student data.

'L' is also for Local: District-level LDS Considerations

You may have noticed that most of the discussions about LDSs focus on state-level systems. But state agencies aren't the only ones building these systems – plenty of school districts and regional agencies are doing it, too. While fewer people may be working on LDSs at these local levels, the same need exists and the same mistakes are being made. Below is a collection of questions and considerations for school district staff to ponder while thinking about building their own LDS. Many of these are also applicable to a state-level effort.

WHEN ASSESSING THE NEED TO HAVE A DISTRICT-LEVEL LDS, ASK YOURSELVES:

- What are the existing options?
 - Is there a possibility of state-offered LDS services?
 - Is there a possibility of regionally-offered LDS services?
 - Is it possible to form a partnership or education cooperative with other similar school districts to share the LDS effort?
- If all else fails, does your district have the resources to implement and maintain an LDS:
 - Can you cover the initial costs?
 - Will you need additional staff to maintain and manage data loads and reporting?
 - Can you afford the additional costs of training staff to use the system?
 - Can you afford the additional costs of training staff in how to make informed decisions at the classroom, school and district level based upon the new LDS data?

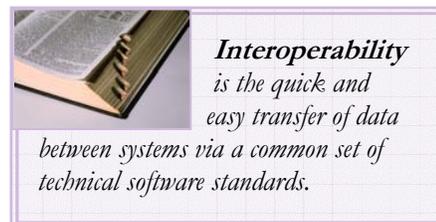
ONCE A DECISION HAS BEEN MADE THAT A LOCAL LDS IS THE RIGHT WAY TO GO:

- Thoroughly investigate and evaluate your existing data systems before simply adding another system to the mix.
 - There may be enhancements to existing systems or partners of existing systems in place that will meet the LDS needs of the district without implementing a full-fledged LDS system.
- Investigate what other districts in your state are doing as well as the state agency.
 - Ensure that whatever you choose to do will fit into the big picture in the future and your investments will not be lost as the state agency requires use or interoperability with another unique system.
- Consider using standards (such as SIF) to connect systems.
- Address data quality issues at the source(s) of the data before any extract, transform, and load into the data store(s).
- Ensure that the LDS will be able to handle your district's unique local assessment data needs.

Some Critical “abilities”: Interoperability and Portability

In economic times of yore, people traded bits of precious metals in exchange for goods or services. When a transaction was made, the metal pieces needed to be weighed to determine their value before a fair deal could take place. Eventually, the advent of monetary standards removed this step from the process. According to authoritative regional standards, metal pieces were minted into consistently weighted currency – commonly in the form of stamped coins – giving each unit of metal a standard value. With the invention of this concept, buyers could offer their regionally recognized units of metal without the need for a scale, improving the convenience and efficiency of commerce. Standards, therefore, allowed for easier exchange of resources.

Where data standards are lacking, we face a somewhat similar problem in our contemporary efforts to exchange data between systems and applications. Without **interoperability**—that is, the quick and easy transfer of data between systems via a common set of technical software standards—exchange of our resources is laborious and taxing. Whether resources are being exchanged in the marketplace or data are being transferred among systems, shared standards allow easy and reliable transactions to take place.



An interoperable system is “an environment in which diverse data systems seamlessly exchange information with little or no additional effort.”⁵⁶ Use of widely accepted technical specifications facilitates this kind of environment and allows information to be easily and safely shared among numerous systems and applications regardless of the platform or vendor.⁵⁷ The standards offered by the Schools Interoperability Framework Association (SIFA) are perhaps the most commonly used, though some states have achieved or are exploring ways to attain interoperability by other means. While many states have implemented or are pursuing interoperability, and the federal government strongly encourages the establishment of integrated and interoperable data systems, the majority of educational systems are still working with numerous isolated applications.⁵⁸ This reality is costing countless staff hours and resources and is limiting our ability to effectively use the data.

An LDS should allow for the timely and simple exchange of data between applications within and among schools, districts, states, other educational institutions, as well as agencies and organizations outside the educational system. Interoperability, by ensuring data compatibility, opens the door to vast quantities of longitudinal data from sources that may have otherwise been prohibitively laborious to acquire. These diverse data allow us to explore questions previously difficult to answer due to our inability to link data from various sources—sources that hold data illuminating many dimensions of students’ lives. In this sense, interoperability allows us to easily view a more complete and accurate picture than is possible using only fragmented sets of data.

The effective use of data requires the ability of information from various source systems and applications to work together to enable easy analysis and reporting. Data should enter the system at a single point, the various applications should share data, and the information should be able to be

⁵⁶ Collins, L. et al. (2007). DQC Issue Brief, *The Right Data to the Right People at the Right Time: How Interoperable Data Help America's Students Succeed*.

⁵⁷ SIF is recommended by IES for its SLDS grant program as a voluntary standard to use in LDS development.

⁵⁸ Action Step #7 of the National Education Technology Plan (USED, 2004) states that “integrated, interoperable data systems are the key to better allocation of resources, greater management efficiency, and online and technology-based assessments of student performance that empower educators to transform teaching and personalize instruction.” Available online at:

http://www.ed.gov/about/offices/list/os/technology/plan/2004/plan_pg14.html#steps

easily re-purposed many times. This will free staff from the need to enter information into each of the systems (*e.g.*, enrollment, library, school lunch, etc.). By eliminating the need for redundant effort, interoperability also eliminates much of the risk for data entry errors, thus improving data quality, and saves time for activities other than tedious data entry and management. Staff will, therefore, have more time to offer better services to students, focus on teaching, and improve student achievement through more effective and timely analysis and data-driven decisionmaking.⁵⁹

ACHIEVING INTEROPERABILITY: How does a state or local education agency go about achieving interoperability using and based upon education technology standards? The shift to interoperability requires the support of multiple members of the agency. These include decisionmakers, data system managers, technical staff, programmatic areas and the end consumers who will use the system. This is an overall culture change in the organization in terms of the way data are collected, viewed, used, and shared. By bringing together the multiple members in the agency to discuss and answer some key guiding questions, you will begin to form a team and garner the support needed to make the project a success. Without support across the education agency, the chances of the project succeeding will diminish. Keep in mind that, while interoperability is a great enabler, it is also viewed with skepticism because it is change, after all, that is being enabled.

When deciding to implement an interoperable solution, your organization will need to determine and address several key questions such as:

- What is the ultimate goal of the interoperability effort?
- Will this project connect systems from multiple local levels to gain a comprehensive view?
- What are the data you are trying to share and why?
- Will you develop and implement the project on your own or have a vendor walk you through the process?
- Will you repurpose existing software applications and data structures or purchase new?
- What is your timeline to implement a solution?

Your answers to such questions will largely determine the scope and breadth of the project. As we drill into these key guiding questions, it becomes apparent why discussing and addressing them with the team forms the foundation for interoperability. Let's start with the first question, "What is the ultimate goal of the interoperability effort?" When thinking of an interoperable solution, you should be able to clearly state, in a one to two sentence goal statement, what the project is about. For instance, a goal might be:

"Our goal is to have one point of data entry, to improve data quality, reduce data latency, and advance data entry efficiency, thus improving our ability to service our stakeholders and effectively make sound educational data-driven decisions based on the most accurate information available."

Keep in mind that if you go beyond a simple, realistic goal, you run the risk of creating a project with a very broad scope that can be cumbersome to implement.

"Is this a project that will connect systems from multiple local levels to gain a comprehensive view?" This is the second key guiding question for the group to consider, and it is perhaps the most important question as its answer can greatly expand the reach and timeline of the project. If you are considering this project at just a district or state level, that is one reflection. But when you start to span entities, it brings in many additional considerations, such as which systems need to be interoperable, which systems contain the data needed, and are there multiple data collections involving multiple programmatic areas? This also starts to touch on the third key guiding question,

⁵⁹ Schools Interoperability Framework Association, *Analysis of Costs and Benefits Associated with Implementing SIF*, June 2006.

“What are the data we are trying to share and why?” These two questions of ‘what’ and ‘why’ go hand-in-hand and will take time to analyze and discuss as a group to determine what is or is not comprehensive enough to be included in a meaningful interoperable system.

“Will you develop and implement the project on your own or have a vendor walk you through the process?” This question is significant to the project for a number of reasons. If you have the technical staff and capacity to take on a project of this scope in house, it can greatly reduce the cost but may also increase implementation time. While working with a vendor whose core competence is implementing solutions will greatly reduce the implementation time, it can increase the cost and may also be based on a proprietary interoperable solution rather than a true interoperable solution. This, to some degree, can be solved with the vendor community if you state your project must be built on education technology standards such as those developed by SIFA and the Postsecondary Electronic Standards Council (PESC). This also starts to look at the other key guiding question, “Will you repurpose existing software applications and data structures or purchase new?” When repurposing existing software applications and data structures, you will either use existing software that has already used or could use the standards (for example, many existing applications can be repurposed and only need to have a SIF agent developed for them to make this happen), or you can buy new applications based on standards. An example would be software applications that have been SIF certified (much software is nowadays).

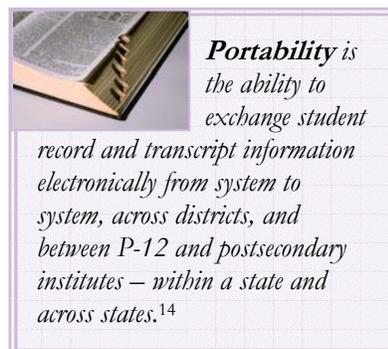
INTEROPERABILITY TIMELINE: So, just how long does it take to ‘go interoperable’? Well, one state, with the help of a vendor that specializes in educational data systems, is working on a 12-month rollout timeline that includes processes such as hardware and infrastructure development, training, and knowledge transfer. While this may be considered an aggressive timeline to some, it may fit others. Generally, most districts and states plan a phased implementation of the project that will last from 2 to 5 years to completion. While some may see this as a long time to implement an interoperable system, experience has shown that this is reality. This should be considered especially when developing a project that incorporates multiple entities. Phases of the project based on the systems development lifecycle include, but are not limited to:

- Planning: Data needs discovery and analysis
- Design: Write and release RFI, RFP and/or RFQ
- Development:
 - Implement a back bone of connectivity including hardware
 - Structure and build an LDS
 - Develop validations and custom reporting tools
- Testing: Evaluate and/or pilot the system?
- Deployment: Project roll out, training and knowledge transfer
- Maintenance: Ongoing maintenance of the system

EXPERIENCES ON THE GROUND: Some states have experienced pushback from their districts because of the extra workload and costs associated with implementing an interoperable solution. This resistance may be more likely in states where districts are especially autonomous or resistant to change. The aim of some states is to include at least several of the largest districts in the interoperability framework project with the hopes that this success will interest the smaller districts who may have the most to gain from such a project. Additionally, states have decided to temporarily leave some districts out of the interoperability framework either because they are too small to bring in or the districts’ current software applications are not ready. In such cases, the state may allow the districts to submit and receive data as they have in the past, sometimes even on paper as they move to a fully interoperable system. The ultimate, real-world benefits to all involved should be stressed to gain buy-in for the transition to interoperability.

Portability

Hurricane Katrina and the associated student displacement highlighted the need to be able to transfer student information between systems around the country. Data **portability** is “the ability to exchange student record and transcript information electronically from system to system, across districts, and between P–12 and postsecondary institutes – within a state and across states.” This option of maintaining, moving, and sharing a set of personal student information allows districts and states to quickly, easily, securely, and quite cheaply attain information on students who transfer in and out of their school system, and helps them to distinguish transfers from dropouts.⁶¹



When you develop and implement an interoperable solution, portability and interoperability can, and should, work hand-in-hand. With the thought of allowing information to flow seamlessly or to be ported between systems, you are enabling portability of data at the level of the project’s scope – be that locally or between entities. Many refer to this in terms of the portability of content rather than of data, but if viewed holistically, portability can actually refer to any large amount of data or content that needs to be shared. Interoperability also has to do with the meaning of the data once the data have been ported between systems. Some states are working on content delivery systems that are both interoperable and portable. Others are seeking the ability to move a student’s e-transcript, whole student record, or portfolio of work between trusted entities using portability as well as interoperability. Portability also can imply the ability to port large amounts of data, such as a state report, packaged in a way that allows for much easier movement within an interoperable framework. Many believe that the future approaches are focused on allowing for greater levels of data portability/ interoperability across sites to be implemented.⁶²

Additional resources: Interoperability and Portability

- [The Right Data to the Right People at the Right Time: How Interoperable Data Help America's Students Succeed](#)
Collins L, L Fruth (SIFA), M Sessa (PESC), E Laird (NCEA), and the DQC. DQC Issue Brief, June 2007.
Reviews the needs for, benefits of, and concurrent efforts to establish interoperable education systems. It offers several key definitions, a case study section, and a list of interoperability examples from other industries.
- [SIFA Implementation Toolkit](#)
This collection of documents, intended to help educational institutions along in the SIF implementation process, includes planning questions (scope, desired automation, data needs expected changes), RFP language, an implementation planning toolkit (walks “ districts through the planning process from conception-of-need to the deployment of the technology based on the premise of that systemic approach, and a recognition that the integration will evolve over time. Within the Toolkit you will find the steps you should take to identify your data integration needs, consider your options, acquire the technology, and implement the SIF solution that will serve you today and provide a foundation for the future.”), and SIF Tools Framing.
- [Analysis of Costs and Benefits Associated with Implementing SIF](#)
Developed independently by Educational Systemics, Inc. under contract to SIFA
This third party study looks at three school districts’ experiences with SIF implementation and concludes that SIF standards contributed to “dramatic improvements in data interoperability, student achievement, funding increases, and student services.” This study may be used to bolster the case for SIF implementation.
- [Interoperability in pK12 Applications SIFA](#) (December 2006)
This brief discusses interoperability and SIF, its benefits to pK-12 education, current progress, and suggestions for moving forward.
- [SIFA University](#)
This site offers online SIF overview modules and information on training courses offered by SIFA.

⁶⁰ Collins, L. et al. (2007). DQC Issue Brief, *The Right Data to the Right People at the Right Time: How Interoperable Data Help America's Students Succeed*.

⁶¹ *Ibid.*

⁶² Oberkirch, B. *A Journey of a Thousand Steps*, March 28, 2008.

- ADL/SIFA Executive Brief SIFA (2007) (http://www.sifinfo.org/upload/press/289BZA_SCORM_and_SIF_final.pdf)
This brief discusses two organizations' standards for interoperability. SIFA's standards are called SIF. ADL's are called SCORM. This piece introduces each and suggests that organizations consider both of them when pursuing interoperability.
- [SIF Specifications](#)
This page includes the latest SIF implementation specifications. Access is free.
- [DataPortability Project](#)
"The DataPortability Project is a group created to promote the idea that individuals have control over their data by determining how they can use it and who can use it. This includes access to data that is under the control of another entity."

Ensuring System Sustainability: Staying ‘There’

As emphasized earlier, the ‘L’ in LDS is for ‘longitudinal’ and longitudinal data, by definition, take years to amass. So, it should go without saying that these systems need to be around for a long time if they are going to fulfill their intended purposes and potential. But, what does it take to sustain an LDS over the long haul? This section offers some basic answers to this question. And, the sections that follow will take a closer look at some specific topics of importance in winning broad and lasting commitment for your system, including LDS marketing as well as building relationships between the state and local education agencies.

Winning early and lasting support

A sustainable system has broad and deep stakeholder support as well as long term commitments of funds and staff. If the system is going to be a success, it is necessary to build strong interest in the project early on by gaining support from legislators and stakeholders throughout the educational community through effective marketing and outreach [see the Marketing and Communicating about Your LDS section of this guide for more information]. Legislators can provide funding and pass helpful laws. Education agency executives will authorize system development and implementation. Education agency staff will share responsibility for the system and have a stake in its success. And, local administrators and teachers will use the system and come to rely on it as a source of valuable information. This wide-ranging support will provide the foundation of a sustainable system.

LEGISLATIVE SUPPORT

Early on, the project should be pitched to legislators to explain the value of the planned system, establish expectations, and garner support, both political and financial. Lawmakers can provide funding for the system in addition to passing legislation that supports the system, for instance, by writing the system’s major tenets into law or mandating system compliance. Education agency leaders need to figure out what vision should be painted to legislators and how to deliver it effectively. Whoever makes the proposal to the lawmakers must have a broad understanding of the LDS and be ready to impart the right information. That is, they must understand what the legislators need to know – the purpose, potential benefits, and estimated costs of the system. In addition, they must understand what education specialists need as well as the basic technical details of the system. They should make a compelling, yet realistic proposal, taking care not to make promises that can’t be kept or set goals that can’t be reached. They should convey the big picture in plain language, keeping in mind that their audience may not have expertise in education, let alone education data, and shouldn’t inundate them with too many details. Their goal should be to educate and persuade them, not to bore them.



GENERATING THE CHARTER: ACTION STEPS

1. Get executives to sign off on LDS
2. Establish goal(s) – articulate the business case for why the system is being built
3. Identify the seed team
4. Develop high level timeline
5. Develop high level budget
6. Do self assessment, revisit charter, and re-examine the scope, budget, and timeline

ADDITIONAL SOURCES OF FUNDS

In addition to relying on legislators for resource commitments, consider other sources of funding. Other potential sources of financial support for building and maintaining an LDS include:

- federal grants (*e.g.*, IES SLDS grants) [see appendix],
- foundations (*e.g.*, the Bill & Melinda Gates Foundation),
- separate program areas (*e.g.*, assessment, IDEA, LEP, Title I, etc.),
- state-level technology bonds,
- universities and Higher Education research institutions, or

- business/private sources.⁶³

ESTIMATING COSTS

According to some estimates, the development of a state-level LDS will cost around \$1 million per year for three to five years. However, there are many variables that affect how much an LDS will cost an education agency. Research other agency's systems to see how much they've spent on their systems or various components, keeping in mind the differences between your agencies, environment and system requirements [see the LDS RFP ABCs: Writing a Strong RFP section of this guide for more information]. Some important factors that can affect system costs include:

- *Starting point.* What does your education agency already have in place? Can parts of the existing system be modified or will you need to start from scratch? What infrastructure will you continue to use with the new system?
- *Size.* How populated is your state or district? How many students and staff will the system track?
- *State laws.* Are their mandates that will require the system to have certain characteristics (*e.g.*, SIF implementation)?
- *Environment.* What is the existing level of communication and collaboration among districts and between districts and the state? Establishing these lines of communication will take time and money. How uniform is your current system across districts and what standardization efforts will be required?
- *Data demands.* How many users will need access to the data and what security demands will granting this access entail?
- *Local costs.* If you are building a statewide system, what participation costs will be shouldered by your districts that are not included in the state-level price tag?
- *Scope.* Do you want a top-of-the line system, or just a basic one? How and to whom will the data be made available (*e.g.*, agency staff, teachers, students, parents, researchers, etc.)? What data linkages (*e.g.*, to postsecondary, etc.) will be created? Beware of costly scope creep.
- *Procurement.* If you're building, what staff will be working on the project and what new staff or contractors will be required? If you buy, consider both vendor and in-house staff costs.
- *Overlapping efforts.* In building infrastructure or developing system components, it is possible to kill two (or more) birds with one stone, working towards multiple goals in a single effort. Savings may result.
- *Change.* Evolving data requirements: programmatic changes, new definitions and updated standards, and the addition of new elements that require programming changes can involve significant costs for state and local agencies.
- *Training and user support.* How many staff members will need to be trained on how to use the system and new tools, and on how to do data analyses? What user support will be necessary?
- *Savings.* How much will the new system save you? How will new efficiencies save staff time? What collections can be eliminated and replaced by the new system? Weigh the benefits with the costs. Over the long run, the benefits of the system should amount to big savings.
- *Maintenance.* Your LDS will have not only startup costs, but ongoing maintenance costs as well. Who will do this? A vendor or in-house staff? How often will hardware be updated? ^{64,65}

MAINTAINING LONG-TERM SUPPORT

Though LDS development is often referred to as a project (both in the real world and in this guide), it is much more than that. Implementation is just the beginning. Whereas a project has an end, an

⁶³ EIMAC LDS Task Force, Meeting Summary, March 23, 2007.

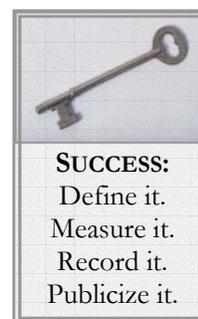
⁶⁴ EIMAC LDS Task Force, Meeting Summary, March 23, 2007.

⁶⁵ EIMAC LDS Subcommittee, Meeting Summary, October 17, 2007.

LDS is ongoing and requires continuing maintenance and enhancement. Everyone involved needs to understand that the benefits of the system will take hard work and several years to realize. Maintain excitement along the way by structuring the project around incremental stages with frequent milestones. Each of these small achievements should be announced to the educational community so that the results of their efforts and resources are apparent [see the Marketing and Communicating about Your LDS section of this guide for more information]. Patience and determination are important, but people also need to see results once in a while or faith in and commitment to the system may wane.

A successful LDS will outlive political leaders, so there is also a need to bridge administrations. Education data is up to various interpretations in terms of what they can help to achieve. Therefore, the appointment of a new commissioner or election of a new governor can change the support for the project. It is important to be flexible when new leadership with new agendas comes along.⁶⁶ But, having a deep commitment to the system across the education agency and the broader educational community, as well as being able to show some actual benefits of the system, will help sustain the LDS through changes at the helm.

Early on establish how success will be measured. For example, a successful system may be deemed successful if it delivers high quality results within budget constraints and on time. Document system successes such as new efficiencies and improvements in educational outcomes or processes, and use them in future pitches for resources. Building a system with measurable deliverables and outcomes will make this possible. Education agency staff should also make an effort to sell new leaders on the importance and value of the LDS data. Brief them on system capabilities and equip them with data that will help them make good decisions and a good impression. One state, for example, had a new commissioner who was making trips to meet with district representatives. Agency staff provided the commissioner with detailed data on the district he was to meet with. This had two very important, far-reaching effects. It 1) informed the commissioner and showed him the usefulness of the data, and 2) demonstrated to districts that the data they report to the state is actually used, thus giving them greater incentive to submit high quality data.



This example demonstrates the importance of making the data visible and useful to as many stakeholders as possible. If the benefits are only seen at the top, local support will not be strong. So, make sure the locals also benefit from the system. Local support is crucial, especially when it comes to convincing political leaders to provide funding. It has been suggested that increasing the scope of the project so that its benefits are further reaching can actually help gain grassroots and political support for the system, even if it causes increased costs.⁶⁷

Additional resources: Ensuring System Sustainability

- [EIMAC Longitudinal Data Systems Subcommittee Fall 2007 Meeting](#), October 16-17, 2007
Among discussions of other LDS-related topics, this meeting summary includes notes on factors that affect the cost of LDS implementation.
- [Wisconsin Case Study: Toughing It Out](#) - DQC, Aug 2006
Pages 4-5 of this case study include a list of estimated costs to the state to implement a vendor-developed student ID system and student-level enrollment data collection. Costs are broken up by year and source. A discussion of costs and extra burden imposed on districts is also provided.

⁶⁶ Data Quality Campaign, *Creating Longitudinal Data Systems: Lessons Learned from Leading States*.

⁶⁷ ESP Solutions. *Marketing Your Field of Dreams*.

- [South Carolina Case Study: Building in Progress](#) - DQC, Nov 2007
Pages 6-7 of this case study include a list of estimated costs to the state to implement SIF standards, bring in extra staff, upgrade infrastructure, and implement a state data manager and a new data warehouse. A discussion of costs and extra burden imposed on districts is also provided. In general, staff said they were not able to provide accurate cost estimates. Some dollar amounts were taken from estimates in the state's application for an IES SLDS grant.
- [State Data to Improve Achievement](#)
This is a 2006 request to Washington Legislature to fully fund a 2-year, \$2.9 million statewide longitudinal student database project. The document sets the stage with relevant history, discusses the need for and benefits of the proposed system, as well as the associated costs. The system was to facilitate daily data extractions from districts, replace existing single-year achievement data bases with longitudinal achievement and demographic databases, and build and implement value-add tools.

Marketing and Communicating about Your LDS

Gaining stakeholder buy-in for an LDS is critical for the long-term sustainability of the project and the effective design and utilization of the system. Unfortunately, the fact that a system is being developed, even if that system will greatly benefit the entire organization and its stakeholders, may not be enough to get everyone enthusiastically on board. Consequently, agencies may need to do some work selling the idea to gain support for the LDS. Agencies have pursued many tactics in efforts to market their systems and gain institutional support. This section is intended to help your education agency face the marketing challenge.

Who's the audience?

Marketers should cast a wide net, reaching out to stakeholders throughout the education community, focusing on all levels. Present the project to the executives and education agency decisionmakers at the top, focusing on the policymaking advantages of the LDS, and brief them regularly on the progress being made as well as the use of the system to help achieve the organization's goals. The level of buy-in at the top can also increase once the executives see that the LDS team is moving forward with the project - contacting districts or schools for data, for instance. Also, take a grassroots approach to selling the project. Make sure that people on the ground understand the value of the system so that info and support travel up as well as down the organizational ladder. Make sure people realize how the LDS will be critical to day-to-day operations of the organization.

History helps.

Take advantage of relationships that exist throughout the educational community, especially between state, regional, and local education agency staff. Get the word out and keep these lines of communication open.



Put special emphasis on the business side of the organization. While the project will need support from your organization's technology team, buy-in from non-technical staff is critical. As discussed earlier, involving a wide variety of stakeholders in the design process will get people connected to the project and can help gain early buy-in. That's the first step in marketing. Get input from program area staff, district representatives (for a state LDS), school administrators (particularly important for a district LDS), teachers and other interested parties to help design your system and let these people know you're listening to their feedback. What data do they want? What information will save them time and help them be more successful at their jobs? What tools will best suit their needs? The opportunity to provide input will enhance their relationship to the project. The Engaging Stakeholders section of this guide for more information.]

What's the message?

Communicating about an LDS development project can be a major challenge. However, getting people to understand what the new system will be and what benefits it will offer is important if the project is to succeed.



To Holler or to Hush...

Should you keep a low profile or grab a megaphone and yell from the rooftops about your LDS? Agencies have taken both paths in communicating about their LDS projects (or not). Some have worked under the radar, while others aggressively advertised their project. Both approaches have their advantages. While the latter course could slow down the development process by inviting an inundation of interest and involvement, the former limited outreach approach could pose fatal problems later on when the agency tries to build support for the project.

First, be sure that you've created a clear vision for the project. Communicate it consistently and be prepared to repeat your message over and over again. Frame messages about the LDS around

organizational goals and how the new system will better equip you to achieve them.⁶⁸ Get the word out and tell people:

- What will the new system be? How will it be different from the current system?
- Why is the system being developed? How will it benefit the educational community? Stress benefits such as streamlined daily operations, time and money savings through increased efficiency, quicker access to data and better informed decisionmaking, and improved services. Make sure the LDS is not perceived as a burden. [See the LDS Benefits section and Chapter 4 for more information.]
- How will the system better equip the organization to meet its goals?
- How will the culture of the educational community need to change in terms of data?

Also provide frequent updates on:

- Who is backing the project? What support and resources have been won (*e.g.*, governor buy-in, grants, etc.)?
- What progress has been made toward system goals? What benefits and functionalities have already been achieved, and which ones will materialize in the future?
- What is the (realistic) timeline for the system? Be realistic in your estimates so that expectations are appropriate. Highlight planned milestones and get people to look forward to reaching them.

	<p>Case study? Explore the challenges faced in educating management and staff on what the LDS is and what it can achieve, and how they have tried to overcome them.</p>
---	--

CONVERTING THE LDS NON-BELIEVERS: While some people will get on board early on without much convincing, there will probably be some who are not so willing to embrace the project.

For instance, many schools and districts do not see data systems as critical to their day-to-day operations. Show them value of the system. Win these folks over by showing them undeniable proof that the LDS will improve their days and make their jobs better. For example, what information will they be able to get through the portal? What reports are going to be made available to them with the data? What data entry will become automated? How will greater efficiency improve the timeliness and usefulness of the data? How will better information equip staff to make better decisions and spend their time and resources more effectively? These improvements don't need to be high tech. Often, the changes that will make local staff the happiest can be the simplest ones that save them time every day [see the case study above, "Small Gestures, Big Appreciation"].

Show people what is bad about the system they're using and the data it contains. For example, the current system may be deficient because it stores redundant and/or conflicting data in various silos rather than in a centralized, authoritative data storage facility. It may require laborious data entry or make it difficult to get any information back in a timely manner. Then, show them what the new system is and how it will address these problems and improve their data. For example, if your development project involves the construction of a data warehouse, early on, identify all of the silos and show people that this project will replace them (not the staff). Tell the staff that, while the silos have served the state well in the past, the LDS data warehouse will be better for reasons x, y, and z. (This approach may also generate more money for the project because all of the money that previously


<p>Highlight current deficiencies & future efficiencies.</p>

⁶⁸ ESP Solutions. *Marketing Your Field of Dreams*.

was devoted to maintaining the silos can be transferred to the LDS's data warehouse.)

When all else fails, more coercive measures may become necessary. For instance, an executive such as a superintendent might send out letters or emails to non-compliant districts to encourage them to get on board. Some states make compliance with the LDS mandatory. In those cases, communications can be more forceful than merely offering encouragement.



STRATEGIC COMMUNICATION PLAN

Develop a marketing or communication plan early on. This strategic plan can help you identify your marketing needs and carry out an effective marketing campaign. A strategic communication plan may consist of the following sections:

Analysis

1. **Context:** What's happened before? What's the relevant history?
2. **Environmental scan:** What are the key factors that will affect the project's success? What are other jurisdictions doing? What's the legislative context?
3. **Stakeholder analysis:** Who are the LDS stakeholders and what are their characteristics? What are their expected reactions? How can you use the support of those who react positively and mitigate the concerns of those who may resist the project?

Planning

4. **Objectives:** What clear and measurable goals do you want to achieve in your communications effort? To educate your stakeholders? To build support or create demand for the LDS project?
5. **Strategy:** From a top-level perspective, how will you achieve your communication objectives? Should your approach be high or low profile?
6. **Audiences:** What specific, key audiences will you try to reach? What are their needs and interests? How will you tailor your communications to these various audiences to maximize the impact of your messages?
7. **Announcement:** Given the strategy, are you making an announcement? If so, how will you summarize the project in your announcement?
8. **Messages:** What are you trying to tell people? What is the project and why are you doing it? What will change as a result of the project and the new system?
9. **Tactics:** How will you implement your strategy before, during, and after your announcement of the project? What modes of communication will you use (emails, direct mailings, speeches, meetings, training sessions, web conferences, presentations, websites, press releases, etc.)? Who will be responsible for each communication activity? When will communication activities take place?
10. **Issues:** What problems might you have to overcome? Can you anticipate any potential confusion or push back? How will you deal with these issues if they arise?
11. **Budget:** What will your communication plan cost? Where will funding come from? Pay attention to the details.
12. **Evaluation:** How will you know how well you've achieved your goals? Can you see a before and after effect of your efforts? How will you measure your marketing success? Did the project receive media coverage? How have stakeholder perceptions changed?

These 12 sections have been adapted from "Strategic Communications Planning," available at www.davefleet.com. See this resource for more guidance on developing a communication plan.

Who should do the marketing?

When trying to get the word out, it is important to have the right people at the forefront to promote the project. Find motivated people to do much of the marketing groundwork for the LDS and keep

them excited about the project. Identify these passionate communicators in stakeholder groups and deploy them to talk with their peers. Dedicated district leaders, for instance, can talk to other district leaders or give presentations at local meetings to inform stakeholders about the benefits of the LDS and the status of the implementation process. They can also solicit valuable feedback from their contacts. Enthusiastic legislators, governors and state superintendents and other leaders can also make a strong impression. These high profile advocates or “champions” can speak at meetings or communicate through mailings to raise awareness and get the system on people’s radars. Alternatively, these roles might be filled by outside consultants who can focus exclusively on the marketing effort. These champions should be knowledgeable about the system and the progress towards its implementation.

What modes of communication should be used?

Agencies have used a vast arsenal of communication techniques. Of course, a large share of the communication about the project should take place during internal and external stakeholder meetings in which the participants can be updated on progress. Presentations in these meetings or at conferences (both in-person and web-based) can also offer updates. Activities such as training sessions also provide a great venue for marketing the system. Other means of communication include email campaigns; paper mailings such as letters, newsletters, or brochures; and press releases to announce the project and milestone achievements. In this case, staff must be ready to effectively and consistently respond to questions and concerns from the media if support is to be gained from the general public. Assign specific personnel as the go-to people for specific types of information on the system and direct calls and questions to them. Agencies might also consider creating a webpage or site dedicated to the project to which stakeholders can be directed to get up-to-date information on the project.

	Case study: Know your audience
<p>An agency staffer met with a group of superintendents after having sent a half dozen communications about the system. After sitting down, it quickly became apparent that none of them had a clue about the system. The staffer couldn’t blame them. They were probably jaded because numerous similar projects had already been attempted and had failed. After the meeting, instead of spending her time writing detailed summaries of the project, the staffer sent out brief communications saying things like, “The system redesign is really happening this time. Here’s a website that details the progress.” This saves her time and lets the reader take their time learning about the new system on a communications website.</p>	

Agencies must be able to disseminate information quickly in a format that is understandable to lay people. Again, have a clear message and make sure that your audiences understand what you are saying. Avoid miscommunication, for example, by limiting the use of jargon in general presentations and communications. Agencies might also consider creating a common glossary of terms for stakeholders to reference.⁶⁹

Maintaining support

Communications should be used to keep people excited about the project along the way. Planning an LDS development project that includes many short term deliverables will lend itself to a successful marketing effort. Show progress, however small, along the way by announcing achievements and delivering results. With the completion of each deliverable, a separate communication can be disseminated to celebrate each of the organizations little “wins.” These victories towards an LDS can be advertised through the media and throughout the organization. But, be careful not to promise anything you can't deliver quickly! If results are not forthcoming when promised or if your first

⁶⁹ Data Quality Campaign (2006). *Creating Longitudinal Data Systems: Lessons Learned from Leading States*.

success takes a long time to realize and subsequent achievements are infrequent, faith in the project and your ability to create and maintain support may be diminished.⁷⁰ And, aside from just talking to staff about the project, project managers should also acknowledge a job well done. A little recognition or token of appreciation for the work of those on the project goes a long way in keeping people motivated and invested in the success of the project.

Finally, the system and the data themselves represent another important marketing vehicle. Along the way, get the data out and show stakeholders its usefulness to gain support. Further down the line, when parts of the system are ready for testing, pilots also provide an effective means of winning over key stakeholders. Pilots get districts and schools interested in the system, and let them try it out and take an active role in improving it and working out the kinks.⁷¹ If a new data mart is created, for instance, let the appropriate stakeholders explore it and see how it can benefit them. If an analysis tool is created for teachers or administrators, let them see its value or chime in on ways to make it more useful.

	<p>Case study? Agency might be able to provide more details on finding a champion and what their roles should be, etc.</p>
---	---

Additional resources: Marketing the System

- [Creating Longitudinal Data Systems: Lessons Learned by Leading States](#) - DQC, Nov 06
This summary of findings from DQC case studies in FL, UT, VA and WI - states that vary in terms of LDS progress, public and political support for LDS, and the focus of their LDS efforts – presents a number of lessons learned.
- [Building Student-Level Longitudinal Data Systems: Lessons Learned from Four States](#) - DQC, Aug 06
The Data Quality Campaign conducted four site visits (Florida, Utah, Virginia, Wisconsin) to document common challenges and lessons learned as states design and build student-level longitudinal data systems. This report synthesizes the findings from these four visits, including several tips on marketing and communication.
- [Strategic Communications Planning - A Free eBook](#)
Written from a business perspective, but intended to be useful to a broader audience including the public sector, this eBook guides the reader through the process of developing a communications plan. Marketing goals of relevance to an LDS project covered here include educating stakeholders, building support, and creating demand. Consult this resource for help throughout the process from the early stages of stakeholder analysis, through crafting and spreading your message, estimating costs, and evaluating the results of your efforts.
- [ESP Marketing Your Field of Dreams](#)
Find at: <http://www.espsolutionsgroup.com/resources.php>
This document offers strategies on how to gain buy-in for your technology project through various marketing techniques. A marketing plan is outlined to help your organization gain stakeholder support. It is written from the state's perspective.
- [Education Leadership Toolkit: The Communication Plan](#) - National School Boards Foundation
This is a free on-line "collection of tips and pointers, articles, case studies and other resources for education leaders addressing issues around technology and education." Though it is designed for a district level audience, much of the advice included may be used more broadly. This section focuses on developing a successful communication plan. See the [Community Involvement](#) section of the toolkit also.
- External Communications Plan EXAMPLE (2007)
This document from the state of Michigan presents a template for organizing committees and facilitating ongoing communications about an LDS project. It outlines the various roles and activities of these groups and their members, as well as suggesting ground rules for meetings.
LDS Share -Filename: MI Communication Plan Example
- [Marketing and Communicating LDS Project - FL](#)
This short presentation offers some tips on marketing an LDS.
- [Developing Political Support and the Will to Build and Use Longitudinal Education Data Systems](#)
Bob McGrath & Jay Pfeiffer
This presentation reviews lessons learned from PA and FL in marketing their states' LDSs. Emphasis is put on having a clear vision, consistently communicating that vision and being persistent to maintain support over the long term.

⁷⁰ Data Quality Campaign (2006). *Creating Longitudinal Data Systems: Lessons Learned from Leading States*.

⁷¹ ESP Solutions. *Marketing Your Field of Dreams*.

Building State-District Relationships

Why is the state-district relationship so important, especially in the case of LDS development? Why are such relationships mutually beneficial to states and districts? How does a good relationship improve the quality and usefulness of the LDS? How can these relationships be forged and fostered? How can states get districts to buy into the process? This section offers best practices and insight from the states on these issues.

Building bridges and gaining district buy-in

As discussed earlier, LDS development should involve all stakeholders. Districts are an important part of this group and their engagement is vitally important to the creation of a successful statewide LDS. Too often, the relationships between states and districts are very limited – collaboration an unfamiliar, or even unpleasant idea. In such situations, a culture shift may need to occur in many organizations to move to a more inclusive atmosphere. A strong relationship between a state and its districts offers many advantages in the development and use of LDSs, whether the systems are statewide or built locally to serve district or regional needs. Communication barriers between these levels can have serious consequences including an air of mistrust or frustration, poor data quality, misunderstanding, or the establishment of unrealistic or unachievable requirements.

The benefits of this relationship flow both ways. State agencies developing statewide LDSs can gain tremendous insight from the locals, and districts can benefit from sharing their knowledge with states by eventually getting a system that better meets their needs and makes their work both more efficient and effective. Districts interested in building their own local LDS can learn lessons from the state. And in some cases, the opposite may be true. Especially with large districts, local LDSs may be more sophisticated than the state's and so much can be learned from local experiences. In either case, the state and local agencies should work together to build a single system, or systems that will serve common goals and will be aligned so as not to create multiple versions of the "truth."



KEEPING DISTRICTS IN MIND:

LOCAL CONSIDERATIONS FOR STATE AND REGIONAL AGENCIES BUILDING AN LDS

- Consider the varying needs of your districts. Be flexible enough to serve both large and small districts, as well as districts with varying degrees of experience with data systems (DQC, "Creating...")
- Consider the extra burden being put on districts to report data elements
- Involve districts in the entire process. Find out what the locals need from an LDS.
 - What district-level access is needed and what questions need to be answered?
 - What school-level access is needed and what questions need to be answered?
 - What classroom-level access is needed and what questions need to be answered?
- Consider interoperability with existing systems in districts based on standards and common definitions
- Consider the possibility of providing added value back to districts as incentive to use system (e.g., state-hosted student information system (SIS) & LDS)
- How will the LDS address the need to collect and analyze local assessment data over time? Realize that these assessments can be unique to schools and districts.
- How will districts exchange student records (release to a transfer student's new district)?

With a statewide LDS project, it is generally beneficial for states to think of districts as partners, rather than as customers. As follows, the LDS should be conceptualized and developed not as something that districts simply need to comply with – but as a valuable tool that will benefit both the state and the districts. The state should think of districts not only as providers of data, but also as

users of the data who will benefit from data sharing and access. And conversely, districts should not think of the state only as a collector of data, but also as a provider of data that will be useful to them. This sort of state-district partnership can be cultivated in a number of ways.

	Case study: Experience highlighting a mutually beneficial SEA-LEA relationship...
---	--

ENGAGE LEAS IN VOLUNTARY WORKING RELATIONSHIPS EARLY ON: Ideally, LEAs should buy into the LDS development process because they see the value in creating and participating in such a system. Their involvement should not need to be imposed upon them. State communication with districts about the LDS should be framed in terms of its value to the districts, and local engagement should be initiated as early in the process as possible.

From the initial planning stage, district representatives should be included in committees or working groups focused on LDS oversight and development, for example. Small states may seek to include all districts in this process while larger states might settle for a sample group of diverse, representative districts. In this process, states should try to gauge districts in terms of expertise and the time they will have to help with the project. States may also involve districts in the grant writing process or the RFP committee both in order to get them engaged in the process and to gain input. In terms of data collection, for example, when a state proposes the collection of a new data element it might ask its districts for feedback. It is important to allow ample time for response, perhaps up to a year prior to the collection of that element. This way, the LEAs will be aware of what's coming well in advance, and their feedback can be incorporated to make data collection proceed as smoothly as possible.

Moreover, ask the locals what kinds of questions they want to answer [see Table 2 in the LDS Benefits section of this guide for more information]. Additionally, how do they want the data to be returned to them? What information will be most useful in alleviating their pain points? And along the way, find out what they think of certain aspects of the system. For instance, in the portal or business intelligence tool development phase of the project, districts should be allowed to chime in on what types of tools will be most useful. How can certain reports be made to be more useful or user-friendly? Flashy tools are nice, but the simple low-tech improvements that save staff time are often hugely appreciated and can strengthen support for the project.

RESPOND TO LEA FEEDBACK WITH ACTION: Many states cite the importance of not only listening to or soliciting LEA feedback, but also responding with action. For instance, if districts tell the state that some areas of the data collection are problematic, the state might seek ways to resolve the issues, by adjusting the collection, making it optional, or even eliminating it if necessary. Districts should not feel ignored in the process. This can lead to alienation and even cynicism and mistrust. However, while it is important to be responsive to districts, it is also important for the state to strike a balance and make only promises that it can keep. States should offer a realistic view of what can be accomplished in both the short- and long-terms. All will benefit from an open and frank relationship.

GET THE DATA BACK TO THE DISTRICT: Districts submit large quantities of data to states. This responsibility can be burdensome and often seems without reward. State agencies should strive to quickly return data to the districts in a useful form for their review and use. If the districts are able to use the data for analyses or see them in reports that show comparisons among schools and districts within the state, they're importance is made all the more apparent. This reinforces the importance of the data as more than just a troublesome requirement. Showing the districts the good uses to which the data are put, and giving them a chance to use the data serve as excellent incentives for cooperation from the districts and encourage them to devote more energy to the submission of high

quality data. States can enhance this process by seeking to collect data that the districts find most useful.

MAINTAIN DISTRICT ENGAGEMENT THROUGHOUT THE PROJECT LIFE CYCLE: District involvement should continue throughout the development process. Some states have brought districts into the product testing phase of the process by conducting pilot studies with all or some districts. Districts get a chance to try the system out and give feedback to the state. One large state, for instance, involved 10% of its districts in one such study after the state's LDS was operational. Continued engagement should also be sought through regular communications, as well as training and feedback sessions that cover the uses and benefits of the system. In such training, district staff can be shown why they should go the extra mile to provide the necessary data accurately and on time. States have also strengthened their relationships with districts through financial means. Providing funds, perhaps by earmarking a percentage of state funds for districts to support infrastructure development, has been a source of good will.⁷² In some cases, when buy-in is not forthcoming and districts are resistant, states may seek ways to incentivize data quality and timely submission of data. One approach that has been considered is tying funding to data quality and timely submission. Other states have had high-level executives send letters to districts stressing the data's importance.

STRATEGIES TO FACILITATE STATE-DISTRICT COMMUNICATION: Having existing relationships between the state and districts prior to the start of an LDS project is, of course, better than starting from scratch. Some state agencies have program area staff that have close working relationships with the districts. They have been able to leverage these relationships in building the different pieces of the system to meet the needs of the program areas and the districts. Other states have project managers who have worked with the districts in the past, perhaps even in earlier phases of the LDS project, and built strong relationships. These staff members may serve the state as intermediaries with the districts. Such is the case in one state where a history of strong state-district relationships continues to benefit the system today. In the past, the state's districts were grouped into a number of regions, with a regional department servicing districts in each region. After budget cuts, many of the people working in regional departments were moved to the state education agency. Since then, the state has enjoyed a very strong relationship with districts due to the communication regional service centers fostered before personnel were shifted to the state. This communication continues today between the same personnel at the state and the districts they served.

Such history may be ideal, but the reality is that many states and districts do not have these strong ties and even the connections they do have can always stand to be strengthened. States pursue various strategies to bridge this divide, but regular communication is fundamental to this effort. Some states periodically send a newsletter to the districts that discuss specific data issues and review progress and successes in the state's LDS development. Other states hold regular conference calls, online meetings, and face-to-face meetings with district staff. Small states should consider collaborating with districts in face-to-face meetings, while larger states may find it more feasible to work with regions, rather than with many individual districts. Bear in mind that districts vary in their capacity to participate in such efforts both in terms of expertise and time, so states should try to gauge where districts are and be flexible.

Communication with staff from all levels of the system should be sought so that a consistent view of what's happening in the state is shared by all involved. The least informed groups can be the biggest problem because they don't understand the challenges involved. Thus, education of such groups is a necessity. It is also important to educate as many people as possible because there is no guarantee that a single individual representative will disseminate information to any of his or her colleagues.

⁷² Data Quality Campaign, *Creating Longitudinal Data Systems: Lessons Learned by Leading States*

Districts should also be represented on committees, advisory boards, and working groups, which serve to spread knowledge and facilitate communication about data issues, and to build relationships among staff and other stakeholders. States might also facilitate communication by making it easier to locate and contact staff members. One state, for instance, is planning to create a data-area specific directory of district and state staff to make it easier for the different agencies to communicate with one another. The directory would also identify which staff member are in charge of specific data-areas, thus allowing questions to be directed to the right people and increase the efficiency of communication. Another option is to use a third party to bring districts and the state education agency together. One state used a consulting firm to help forge and strengthen their SEA/LEA relationships.



Case stud(ies): This section should be supported by a case study or two. Maybe one could relay a story of how an SEA-LEA partnership benefited LDS design. And/or, some of the experiences summarized in the text (e.g. the history of SEA-LEA relationships among staff) might be pulled out into a more specific description from the state.

Additional resources: Building State-District Relationships

- [What is the role of the SEA in providing LEAs with access to key data for instruction?](#)
EIMAC LDS Taskforce Brief #2, October 2007
What can the SEA do to help LEAs in the LDS effort? This brief covers the establishment of ID system, provision of professional development, benchmarking, data management and BI, and legislative support.
- [Creating Longitudinal Data Systems: Lessons Learned by Leading States](#) - DQC, Nov 06
This summary of findings from DQC case studies in FL, UT, VA and WI - states that vary in terms of LDS progress, public and political support for LDS, and the focus of their LDS efforts – presents a number of lessons learned including some tips on building effective state-district relationships.

Getting from Here to There: Developing What You Want

Now that you have “there” in your sights, you can depart from “here” and begin work towards reaching your desired destination. The sections that follow will discuss many of the decisions your education agency will have to make and the challenges you may face while building or purchasing your system, and will offer some tips on how to make your ride to “there” go more smoothly.

Procurement Planning: Build or Buy?

Whether you are building a data warehouse or adding reporting and analysis tools to an existing depository, someone will have to develop and implement these products. The decision of whether to take on these tasks within your education agency or to hire a vendor to tackle them for or with you is an early and crucial one. A collection of lessons learned and good practices, this section aims to help you make that choice and to steer you in a good direction once you've decided to pursue either a build or buy solution, or perhaps even a combination of the two. Our goal here (and throughout this guide) is to help you become an informed builder or consumer before you begin construction or the vendors are hired so you can end up with a system that suits your needs and is worth your money.

Deciding which path to take

For many states, the choice of building or buying is obvious from the outset. For others, much deliberation is necessary. The decision you make about hiring or not hiring a vendor will depend on many factors. For instance, organizational characteristics such as technical capabilities, workload capacity, and culture will all influence this choice. Does your organization have the staffing and expertise needed to carry out your desired project and will they be available through the project's lifecycle? Or is additional staff or a vendor needed to help develop and maintain the system? Beyond in-house characteristics, the preferences of the organization's decisionmakers play a role, deciding for example, the fundamental question of where responsibility should reside – in-house or with a vendor? Your organization should consider other questions such as:

- What can we build in house that we can not or do not want to get from a vendor?
- Can we get what we want from a vendor?
- Will we need to settle for a product that doesn't completely meet our needs or will we need to spend resources to modify the product to meet those needs?
- Can we do a better job than a vendor?
- Can we complete the task more quickly than a vendor or can we meet deadlines without external assistance?
- Can we save money by building it on our own? (Consider the ongoing maintenance costs for a vendor-built system and the savings you might have if knowledge resides in-house.)
- What will be the ultimate trade-off between relying on a vendor and developing the expertise in-house?

WHY BUILD? Some states prefer to keep the job in the family, so to speak. They may have a great staff with the necessary expertise, extra resources available to direct those staff members' time to the new project or to hire additional staff to do the work. Some states say that if you can afford to do it, build the LDS in-house. This, they say, is ultimately more cost effective than using a vendor because add-ons to vendor-built systems will cost a lot of money. If you have the capability, keeping the knowledge and ownership to yourself all along will free you from the costly prospect of having to rely on a vendor for ongoing services. Some states think that, in general, it takes just as much effort to work with vendors to make sure specifications are met as it does to build applications on your own. And keeping the work in-house may help to ensure long-term sustainability because important knowledge about the data, source systems, reporting needs, how to make modifications, and other key issues are developed and kept in-house. Research findings suggest that if the in-house capabilities are strong, or even just moderate, a build solution is the better option. The organization should use its resources to tackle the project on its own and to further develop its staff expertise rather than bring in an outside consultant. In-house staff's greater knowledge of the organization's culture and goals may, in the end, compensate for a lesser technical skill set.⁷³

⁷³ Nevo, S et al. (2007) "An examination of the trade-off between internal and external IT capabilities." *Journal of Strategic Information Systems*, 16, pgs. 5-23.

WHY BUY? Other states see hiring a vendor as the best way to go. This may be because they like a product on the market and see no need to try to re-create a perfectly good wheel that's been used elsewhere with satisfactory results. It is common for states to purchase such off-the-self solutions and "brand" them – that is, putting your education agency's logo on an out-of-the-box solution. By using a vendor, the state is freed from having to be mired in the details and is allowed to have higher level engagement – that is, to focus on the big picture and on how to sell the system to stakeholders. Also, for an agency with limited resources and capabilities, doing the work in-house may just be unrealistic, even if it wanted to. If the state lacks the in-house expertise (*e.g.*, a staff member with the same level of knowledge as a vendor's project manager) or capacity to build its desired product on its own, it may need outside assistance. In fact, research suggests that when internal IT capabilities are weak, the support of a knowledgeable external consultant can boost productivity and reduce overall costs.⁷⁴ State hiring regulations that limit the size of SEA staff or impose other constraints (*e.g.*, barring the hiring of contractors) may also make buying a more attractive idea. These rules can make it difficult to hire programmers. In this case, or if your organization is having trouble finding and keeping the necessary in-house staff, hiring vendors may be the more hassle-free option. A short timeline might also necessitate the use of a vendor as the number of programmers, architects, business analysts, project managers, senior developers and other staff available may allow the project to move much more quickly than it could if shouldered only by in-house personnel. Whatever the reason for buying, if done the right way, bringing in a vendor can be a very rewarding and successful course of action. But of course, every state's experiences will be different and careful self assessment and deliberation is vital whether you build or buy.



“Hybrid” case study? Using a vendor like a contractor?
 Build vs. buy? “We’ve hired a contractor who happens to be vendor.”
 State has done a hybrid arrangement where the vendor acts like a long term contractor – not the usual vendor relationship in several key ways: State owns the system and processes and would have access to the data even without the vendor – the vendor is there for support and maintenance when needed. Some states use consulting services, but not a product.

On Building

Your organization has decided it can handle the project by itself without the assistance of a vendor. Either the necessary staff is on board and has time to devote to the project or new staff members will be hired. Other states have made this decision not only because they have ample staff and all the necessary expertise, but also because they see the system as mission critical. As such, they wanted to keep the expertise and responsibility in-house. A central challenge your organization may face is that of finding and holding on to skilled technical staff. These experts are often drawn away from educational institutions to the private sector for reasons such as the draw of higher pay. Many states have lost key team members this way and such losses can be major setbacks to a project. So, before you embark on a build solution, ask your organization how it will safeguard against this loss of staff and the knowledge they hold. If staffing is an issue, going with a vendor may be a more secure option. ...

On Buying (and dealing with vendors)

Deciding not to go it alone, your organization has chosen to buy a product and/or services from a vendor. You'll need to figure out what you need, what is available, what kind of relationship you want with your vendor, and how much you are willing to spend. Then you'll need to write a good

⁷⁴ *Ibid.*

Request for Proposals (RFP) [see the LDS RFP ABCs: Writing a Strong Request for Proposals section of this guide for more information], interview some bidders, select a vendor (or consortium of vendors), and then forge an effective relationship with that vendor to get the product you asked for.

Many agencies are using outside contractors and consultants to help build their LDSs or various components of the systems. These agencies may have one in-house state employee who is the project manager and a number of consultants that serve as programmers and system builders. Other states hire project managers as part of the vendor team. State agencies without the necessary expertise may rely more heavily on their vendors and seek a consulting firm that they won't need to micromanage. To be safe, states should be somewhat wary of depending too much on vendors though, since they could unexpectedly close their doors or scale back their services. Other states with more in-house knowledge may seek a relationship in which they have significant control over the vendor's work. States might want to work more like a CEO when they lack the skills or personnel to complete the work on their own. In this case, vendors may be brought in to do the technical and programmatic areas of the work and may participate in certain committees to bridge the divide between their nuts and bolts staff and the in-house executive levels.

CHOOSING A VENDOR: Once you've written and sent out your RFP [see the LDS RFP ABCs: Writing a Strong Request for Proposals section of this guide for more information], bids and proposals will pour in from competing vendors. At this point, of course, you will have to decide who you want to hire. Some states know who they want to work with from the start because they like a product on the market. However, if you're not sure who you want to hire, you should try to narrow the field to a small set of top contenders based on their proposals. You should keep in mind that vendors vary widely in many ways, including their bidding practices. Differences in quality and experience often afford vendors varying levels of selectivity and leverage. That is, some less established vendors will bid on almost anything and might make promises they cannot keep, while other more experienced and successful vendors who are already on the ground in many states may be very selective about which RFPs they respond to.

In making your decision, it's important to look beyond the marketing of the vendor and at the details of what they can actually provide. Two core principles to follow are 1) know the product, and 2) know the team you'll be working with. Rather than taking the lowest bidder, be sure that the vendor can actually supply what it claims at the price it agrees to. Look at the vendor's references, prior work, and their available staff to try to evaluate them. Consider vendors' experiences working with states similar to yours in terms of size and student population. Will their solution accommodate your specific needs? Do they have ample staff to deal with possible turnover? Do they have the staff to adequately service all of their contracts (i.e. oversee the work and complete quality deliverables on time) or are they stretched too thin? In the end, careful selection may save you the costs of bringing in a second vendor later on to clean up the mess made by your original consultant. Also, as you'll be spending a lot of time with this team, social considerations are also important. Will you like working with the project manager and staff? How will they fit into the culture of your organization?



**STATES & VENDORS:
WHO'S USING WHO FOR WHAT?**

The Data Quality Campaign offers a [table of vendors](#) organized by the state they work for and by which of the DQC's 10 Essential Elements they were hired to work on. The table is based on 2008 survey results. Note: The table also includes a line labeled 'In-house' showing the number of states building each of the components.

Many agencies hold face-to-face interviews with a set of favorite prospective vendors. In fact, some states swear by such interviews and highly recommend them. These meetings offer the advantage of allowing you to meet the team of people with whom you will actually be working. Consulting firms should give presentations, demonstrate their products, field questions, and be allowed a chance to ask some questions of their own. A review board might be created by the education agency to evaluate the various vendors and should include education agency as well as local leaders and prospective users of the system to get a variety of perspectives and insight. Other agencies do not hold face-to-face vendor interviews. They make due with reference checks, answers to standardized questionnaires, and phone and online meetings. At the very least, they say you can learn a good deal about a vendor by the types of questions they ask. What is their level of technological knowledge and capability? How familiar are they with education data and its nuances? For instance, a vendor might have an extensive background in finance data and might give you a product that would work well for a financial institution, but not so well for an education agency. Make sure the vendor is ready for the task at hand.

WORKING WITH A VENDOR: Don't expect your vendor to hold your hand and guide you through the project design process. As they often are not experts in education data or in a client's needs, many decisions will be left for the client organization to make. A state or district must have a full understanding of what they're planning to do in order to ensure that their needs are being met. Detailed planning must be done upfront and cannot be avoided. At the same time, the vendor team should have some knowledge of the education agency's data or should be willing to learn about the nuances of education data and get things right (*e.g.*, striking the right balance between confidentiality and not eliminating too many dropouts from the dataset). Ensure that you have the time commitment from not only the in-house project manager, but also from the subject area experts and IT staff to educate the vendor on source systems, reporting needs, validation of work and other important issues.

Make sure the vendor staff you are working with is up par. Some vendors will give you a top-of-the-line project manager, for instance, while the technical and subject area staff actually doing the nuts and bolts work may not be highly qualified. In such a case, it is to your advantage to have an in-house staff member who is just as qualified as the vendor's project manager and is able to evaluate the work being done. Without knowledgeable people in-house who can monitor the vendor's progress, you will be to some extent, at your vendor's mercy. Without such a balance, you may end up with only what the vendor's project manager wants to give you or only what their deficient staff is capable of providing. You need an evaluator who understands the technology at 1,000 feet – someone who can keep things on track. The in-house project manager should hold frequent meetings with the vendor to obtain updates, assess progress, and address problems as they arise. It is also good practice to have someone on your staff to keep minutes of these meetings to allow you to make sure you're on track and are able to compare your minutes to the vendor's to ensure that you're all on the same page.



CREATE A WIKI

One state is in the planning phase of developing a wiki, which is “a piece of server software that allows users to freely create and edit Web page content using any Web browser” (wiki.org), to help create a more collaborative environment in which the state and its vendors can work. The wiki would allow the state to post documents and receive feedback on them from vendors. After a substantial amount of information is accumulated, the wiki may eventually evolve into a user guide or FAQ on LDSs.

What type of relationship and working arrangement do you want to have with your vendor? Everyone wants to get along and many states attest to having excellent relationships with their vendors. But, if a project seems to be getting off track or falling behind it is important to be firm

with your vendor and hold them accountable for failing to deliver. It's also important to balance trust and deference to vendor management with the need to get things done on time and to your specifications. Some vendors tend to lean towards giving their clients a bare bones version of their specified product – just meeting the requirements of your RFP, but not going the extra mile to create the ideal result – in an effort to maximize profits. If the vendor is going to give you a no frills product, you need to make sure that you are at least getting a quality version of what you asked for and were promised. When push comes to shove, don't be afraid to fire your vendor and bring someone else in if things aren't working out and the relationship can't be salvaged.

Plan for knowledge transfer

Knowledge transfer is the transmittal of knowledge (*e.g.* information, expertise) from one organization (or part of an organization) to another organization (or part of the organization). From the early stages of your vendor search, it is crucial that your organization is thoughtful about knowledge transfer and training. The vendor will usually develop the system components or tools and will probably use them for some time before the responsibility of actually running the system is passed off to in-house staff. Therefore, it is vitally important that a plan for knowledge transfer is drawn out ahead of time (*e.g.*, specified in your RFP) and implemented along the way or once the project is nearing completion. First, make sure that you have adequate staff in place to maintain what is built. Diligent documentation of everything done by the vendor as well as in-house staff for entire project is also crucial to facilitating knowledge transfer. Additionally, your internal staff should work alongside the vendor for some time or receive sufficient training from the vendor to gain an understanding of how the system works. At least once before the vendor leaves you on your own, it is good practice to have in-house staff involved in various processes such as building tables to learn their structures and contents so that they have a comfortable grasp of what's in the LDS, how it is structured and formatted, how to load data, how to make modifications to reflect changing requirements, and other key issues. Additionally, the in-house responsibility must be clearly defined so the transition from vendor to in-house staff runs smoothly. Once the vendor's main tasks are completed, ongoing support from a vendor is not cost effective. Develop in-house expertise so you don't have to rely on expensive outside support.

Additional resources: Build vs. Buy

- [An examination of the trade-off between internal and external IT capabilities](#), by S. Nevo, MR Wade, and WD Cook, *Journal of Strategic Information Systems* 16 (2007) pp. 5-23.
This study explores the tension between internal and external IT capabilities on the realization of enhanced IT productivity. It focuses on short-term small scale consulting rather than the large scale, multi-year outsourcing that often occurs in LDS development. In that respect, it is limited in applicability here. However, it does offer some possible insights into the relationship between in-house staff and vendors and may help to enlighten your decision on build vs. buy and how you proceed down the path you choose.
- [2008 Information about Vendors Used by States to Build Essential Elements for P-12 Data Systems](#), DQC
See this page for survey results about which states are using which vendors to help them develop which LDS components. These results are from the 2008 DQC survey. Look for more up to date results.
- [Technology @ your Fingertips](#) – National Forum on Education Statistics, Ch 4.1, pgs. 50-57
See this section for general discussions of conducting a build vs. buy analyses, finding a product to fit your needs, and other issues. While somewhat dated and not specific to an LDS project, it offers some relevant tips. Page 57 includes a list of sample questions that might be used to interview vendor references.
- [Data Tools for School Improvement](#) by Victoria Bernhardt (2005)
This article talks about the data tools available (three types: data warehouses, student information systems, and instructional management systems), their uses, and how to make good purchasing decisions, get what your organization wants and needs, how to deal with vendors, etc.

LDS RFP ABCs: Writing a Strong Request for Proposals

If your organization chooses to buy your LDS, or at least some portion of it, you'll need to write an effective Request for Proposals (RFP) to solicit bids from potential vendors. This section will provide a brief introduction to RFP writing and is followed by an extensive collection of additional resources and example RFPs from state education agencies. The information in this section draws heavily on the report *Lessons Learned: Writing Requests for Proposals for Statewide Student Data Systems in Education* by Nancy Smith.

BASIC CHECKLIST OF RFP DEVELOPMENT

1. Know your needs before you write an RFP or begin development work
2. Follow your state's procurement procedures
3. Define clear, specific and measurable requirements
4. Delineate critical requirements from optional enhancements
5. Focus on both process and outcomes
6. Build in safeguards to protect your agency

DEFINE YOUR NEEDS FIRST:

Preferably, you've already done thorough self and needs assessments and are ready to translate your identified requirements into an RFP that tells vendors what you want them to provide you. If you're not sure what your requirements are when you sit down to write your RFP, your bidding and development processes may turn out to be frustrating ordeals (for education agency staff and vendors alike) and the system you end up with might not serve you well. If you don't separate needs assessment as a discrete activity done prior to the development stage, analysts must define needs as they go along and solutions building can be slowed down.

It is good practice to allow about a year or more for active requirements gathering for a large scale project. Take the time to discover your program area needs. How will you need to restructure the data for the LDS? What data will the users need? How will you need to deliver your data to users? How will you need to secure your data and protect student privacy? Try to foresee as many requirements as possible to limit the amount of additional needs unearthed during development. A quality RFP contains a nearly exhaustive collection of clear and specific requirements. Encourage vendors to be creative, but don't leave any room for misinterpretation. For instance, don't write "etc." in your RFP – say what "etc." is. Don't say you want a 'quality' X – tell vendors what criteria you will use to measure 'quality.'



START WITH AN "RFI"

Before you write an RFP, consider issuing a Request for Information (RFI). In this document, an agency presents vendors with the problems they want to solve and asks respondents to pitch solutions, pose questions, and make suggestions about the agency's intended project. The advantage here is that agencies 1) get the opportunity to receive early feedback from the experts on the feasibility and cogency of their planned system, and 2) to learn about the range of possible solutions available to them before they write their RFP.

You may conduct your needs assessment on your own or work with a vendor to define your requirements. Both approaches are commonly taken. Some agencies have the vendor do the requirements gathering for them, hiring them to figure out what the education agency and its stakeholders need. If your agency is allowed to enter into personal service contracts, you may be able to employ the vendor under a time and materials contract to do needs assessment for or with you before the development project begins. While this approach is not uncommon and many agencies find it to be very helpful, other agencies feel that it is preferable to do the needs assessment, or at least a large share of this phase, on your own before the vendor is brought on board. In other words,

your agency should know what it wants, rather than let a vendor tell you what you want. However, if you do elect to have your vendor do requirements gathering for or with you, make sure they know what they are doing. Be certain that they are knowledgeable about your education agency and about education data. And make sure they are asking stakeholders the right questions to elicit helpful responses. Stakeholders usually know what they want, but they often don't know how to articulate their needs unless asked the right questions. [See the Needs Assessment section of this guide for more information]

WRITING THE RFP:

Once you've done the difficult work of defining your needs and those of your stakeholders, you'll set to writing a strong RFP. This will help you find the right vendor with the right product and services for the right price. Some states have a standardized method of writing RFPs, others are less formal and prescriptive, while some others don't write RFPs at all but may still need to document their requirements in some form.

The team assigned to write the RFP should include staff from various education agency departments. The group should also ideally be made up of both subject area experts who understand the content and business operations, policies and regulations, and the potential budget, as well as technology staff who understand the codes and bytes.⁷⁵ District and/or school representatives should also be brought into the process of defining requirements.

The Forum has more...

For more detailed information about RFP writing, visit:



- [Forum Unified Education Technology Suite \(2005\)](#)

There are many approaches to writing RFPs. For instance, you may write one RFP for your entire system, create a separate RFP for each system component, or you might compose one RFP with multiple components and let vendors choose which parts they will bid on. Additionally, your RFP may be based on either process or on solutions (a.k.a. deliverables or outcomes). In a process-based RFP, an education agency defines the process the vendor must follow. For instance, your agency might require a standardized development process based on the systems development life cycle. A solutions-based RFP describes the desired results, but leaves the vendor to determine the process through which they are completed. A combination of these approaches may be best as each may lead to potential problems. Focusing solely on process may raise deadline problems or result in final products that don't meet agency needs. And, concentrating on outcomes alone may ignore important details such as the frequency of collections and integration with other applications.

Another recommended approach is to find a role-model system (i.e. a system that you like) at another education agency, get a copy of that agency's RFP, and make necessary modifications based on your specific needs or your agency's RFP-writing guidelines. This will save you the trouble of starting the RFP from scratch.

Anatomy of an RFP

An RFP may be composed of the following sections:

1. **“Project overview and administrative section:** Includes an overview or summary of the problem, along with administrative information about the expected management of the RFP.
2. **Technical requirements:** Provides technical requirements and enough information to help the vendor understand the request and write a firm proposal.

⁷⁵ Smith, N. (2004). *Lessons Learned: Writing Requests for Proposals for Statewide Student Data Systems in Education*.

3. **Management requirements:** Specifies the expectations for managing and implementing the project.
4. **Supplier/Vendor qualifications and references:** Asks for vendor qualifications and references; ideally specifies the format in which these should be supplied.
5. **Supplier’s section:** Allows vendors to include information about themselves or about the project that is not specifically requested.
6. **Pricing section:** Specifies how the pricing information should be specified.
7. **Contract and license agreement:** Contains the purchase contract, nondisclosure agreements and other legal documents.
8. **Appendices:** Includes relevant information that is too bulky to include in the RFP such as network diagrams, outlines and requirement studies.”⁷⁶

Tips for RFP Writing

Below is a collection of tips to keep in mind during the RFP writing process.

- Provide background. Tell the vendor about the state’s data environment, database development standards, business requirements and other relevant information about how the education agency does business. Without this information, the vendor may make erroneous assumptions in their proposal and through the development process.
- Don’t specify the solution. Focus on the problems you want to solve and the existing environment in which the solution must work, not on a particular perceived solution to your woes. Give vendors room to pitch their own solutions to those problems.
- Define “clear, concise, and measurable requirements.”⁷⁷ Distinguish critical requirements from nice-to-have add-ons. The vendor needs to know which requirements to include in their bid and which ones are optional enhancements for which they should offer separate additional bids. This will make it easier for vendors to bid and make it easier to interpret vendor’s offers.
- Specify costs, or don’t. You may elect to specify the amount you will pay for a solution and have vendors say, “Yes, we can deliver for that price.” Or you may withhold cost estimates and allow vendors to make their own offers. One state adopted the latter approach, but took it a step further, asking vendors to submit their costs in sealed envelopes. This allowed the education agency staff to assess each evaluation prior to opening these envelopes, judging each bid on its merits rather than by its price tag. Once the judging period was over, if favorite vendors’ prices turned out to be too high, the agency tried to negotiate a more agreeable fee.⁷⁸
- See how much others paid. When trying to figure out how much a solution should reasonably cost, ask colleagues in other agencies for information on their costs. Consider differences between your state or district and theirs’ (*e.g.*, student populations, varying requirements, etc.) and make necessary adjustments.
- Inquire about management practices. Ask how the vendor manages projects in terms of communication, risk management, methodology, quality reviews, etc.
- Don’t be too aggressive in your timeline. Be realistic and try to strike the right balance between quality and quickness. In addition to deadlines for the vendor, you should also consider your education agency’s end of the bargain. What will you need to do or provide and how much time will you need? In the end, it is possible that your own agency causes the

⁷⁶ Smith, N. (2004). *Lessons Learned: Writing Requests for Proposals for Statewide Student Data Systems in Education*.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

- project to fall behind schedule. One state representative suggested that instead of emphasizing deadlines, agencies should put emphasis on quality results.
- Ask for references from the vendor and perhaps even for the staff you'll be working with. Take the time to check these references and see what others thought of the services they were provided by the vendor. Are they technically capable? Do they have adequate staffing to support the endeavor?⁷⁹
 - You can buy standards off the shelves, but most agencies build them based on their own existing standards and or federal standards.
 - Get third party opinions. Have a variety of people from outside the RFP writing team review the document to make sure it conveys what you intended it to and is free of any ambiguities.
 - Realize that your RFP may not be perfect. The requirements, as you have written them, may be flawed and could end up causing problems during implementation. Allow vendors to offer corrections or alternatives.⁸⁰

On the safe side: What might you include to protect your organization?

In your RFP, you should also consider including some safeguards and stipulations to ensure that you get what you need from your vendor. For instance:

Staffing:

- Maintain the right to change the vendor's project manager if you're not happy with their service.
- Specify a limit to vendor staff turnover, perhaps to 25% or less. In reality though, even if you say in the RFP that staff can only change by so much or in certain ways, turnover happens and you can't always avoid it. If change must occur, ensure that the required knowledge transfer will be paid for by the vendor, not your taxpayers.
- Specify that the vendor project manager and staff who you interview are the people who will actually work with you throughout the project. A trick of the trade, one education agency staffer suggested, is for the vendor to send in their best for the interview and then give you someone of lesser skill to work with once the deal is sealed.
- Require the vendor to work onsite rather than remotely, if possible. It may be difficult to work at a distance as scheduling on-line meetings can be a hassle and can impede regular and effective communication. If the vendor must work offsite, specify the number of onsite meetings and require that they cover travel expenses. Onsite vendor staffing offers many advantages. For instance, people are more apt to ask questions if onsite, more meetings can be held and they can be more easily convened with specific individuals or groups of people.

Deliverables:

- Define deliverables in clear and unambiguous terms. Make sure that these requirements have measurable results that hold the vendor accountable. Alternatively, ask the vendor to propose measures that can be used to assess the deliverables.
- Require that deliverables meet certain quality criteria before they can be delivered (*e.g.*, grammatically correct, spell-checked, formatted according to standards, etc.). Avoid wasting your time correcting simple vendor mistakes.
- Distinguish critical requirements from optional enhancements. In addition to the benefits discussed above, this can also protect you later on by preventing the vendor from claiming that a requirement was an add-on that will cost the education agency extra money. Clear specification up front saves time, frustration, and money later.

⁷⁹ Smith, N. (2004). *Lessons Learned: Writing Requests for Proposals for Statewide Student Data Systems in Education*.

⁸⁰ *Ibid.*

Sustainability:

- Ask vendors to include a section in their proposals on ongoing maintenance and support. Agencies report that many vendors just want to build the system, get paid, and then cut and run, leaving the in-house staff on their own.
- Request or define a plan for knowledge transfer so that your staff is able to pick up the slack when the vendor leaves.

Communication:

- If you intend to rely on your vendor to communicate with the educational community about the project, make sure that they have an organized approach to communication or, alternatively, define a good communication plan in the proposal that they must follow.
 - Figure out who's going to write the communications (the vendor may know the product best and should have a communications staff – avoid having the project manager or a technology staffer write communications (unless the piece needs to be technical in nature),
 - Define who the audience(s) will be,
 - Define a communications schedule or define at what milestones or intervals communications will be sent out,
 - Define the communication media that will be used, and
 - Figure out, in general, what the communications will say. [See the Marketing and Communicating about Your LDS section of this guide for more information].
- Ask the vendor to provide example communications.

Additional resources: Writing a Strong Request for Proposals

- [Lessons Learned: Writing RFPs for State Data Systems](#), Nancy Smith, ECS/InfoSynthesis, October 2004
This report summarizes findings from a survey of three state education agencies and offers a host of RFP writing principles and tips. Two RFP examples are provided at the end of the document for reference
- [Writing RFPs for State Data Systems: Lessons Learned](#)
This PowerPoint includes three back-to-back presentations. It reviews lessons learned while writing RFPs.
- [SIFA Recommended RFP Language](#), Version 2.0. (2006) SIFA University
This document offers language to include in your RFP if your agency wants to purchase an application based on SIF standards. It requests documentation of SIF certification, SIF implementation experience, agent costs, Zone Integration Server(s) offered, SIF Association participation, and SIF support offered to clients.
- [Virginia Case Study: Enjoying Support](#) - DQC, Aug 2006
This case study includes two sections (on pages 6-7) that offer helpful tips on RFP writing and evaluating bids.
- [Technology @ your Fingertips](#) – Forum, Ch 4.2, pgs. 57-59
This resource offers a brief introduction of RFPs and an example of an RFP table of contents to help guide the writing process. It also discusses RFIs and interviewing references (including a list of questions to ask interviewees).

Examples of State-level RFPs and one RFI (from LDS Share, February 2008):

- [Virginia RFP: Student Information System](#) (2007)
“Virginia RFP to provide a Student Information System for use by Public School Divisions located within the Commonwealth of Virginia. The goal of this RFP is to award contracts to multiple qualifying vendors for the purpose of providing Virginia school divisions the option of purchasing off this contract.”
Filename: VA LDS -RFP SIS (WinZip file—contains 5 files)
URL: <https://vendor.epro.cqipdc.com/webapp/VSSAPPX/Advantage> (Click on Public Access, then search for Department of Education in the list, then DOE 2007-2008 RFP for Student Information System)
- [Request for Proposals: California Longitudinal Pupil Achievement Data System \(CALPADS\)](#) (2006)
“The purpose of this RFP is to solicit proposals from qualified firms to develop and/or implement a California Longitudinal Pupil Achievement Data System (CALPADS), as required by Senate Bill 1453 (Chapter 1002). The CALPADS project effort will result in the implementation of a comprehensive operational data store and reporting environment to track statewide longitudinal assessment data and other demographic elements required to meet the federal No Child Left Behind (NCLB) Act of 2001 reporting requirements. Note: The attached version of the RFP has been approved by state control agencies and is currently posted at the California Department of General Services (DGS) to solicit bids from vendors interested in building CALPADS. However, the DGS has already posted six addenda (as of 2/23/07) at their website and there is still a possibility of more changes.” LDS Share - Filename: CALPADS RFP

- [DRAFT] Request For Proposals For Data Collection Tools
 “This RFP illustrates Tennessee’s intent to secure a contract for a next-generation data collection toolset that will streamline the collection and cleansing of detailed data from districts and improve the quality of the resulting information. Tennessee’s desire is to select a set of tools to pilot and subsequently deploy on a statewide basis. In addition to the collection of data, the State is looking to provide an application interoperability function to be able to share data elements with other State as well as local (school district) applications. While some detailed specifications for the current systems are provided in this RFP, the State does not intend to re-create existing systems and transmittal functions. Rather, responders to this RFP are encouraged to use the existing specifications to understand the current functionality enough to propose improved methods and tools. NOTE: Tennessee does not intend to release the RFP, but instead will be pursuing a different approach for the next generation data collection tools involving a pilot.”
Submitted By: Rick Rozzelle, Tennessee
Filename: TN Data Collection RFP - DRAFT Version 6
- CSDE Statewide Longitudinal Education Data System Request for Proposals (2006)
 “This RFP was issued by the Connecticut Department of Information Technology and IT Contracts & Purchasing Division on behalf of the Connecticut State Department of Education (CSDE), which is seeking to build a statewide longitudinal data system (SLDS). The objective of the project is to develop an SLDS that will enable CSDE to meet the needs of both state and federal reporting requirements. An SLDS will utilize decision support dissemination tools to meet the increasing demands for education data from its constituency, thus enabling stakeholders to make informed education decisions based on timely and accurate information.”
Submitted By: Mark Vocca, Connecticut
Filename: CT RFP rfp06itz00921
- Data Management and Budget Purchasing Operations: Invitation to Bid No.0711 (2006)
 “The Michigan Department of Management & Budget and the Center for Educational Performance and Information, in coordination with the Department of Information Technology, issued this RFP for the purpose of gathering requirements and obtaining two new state-of-the art systems to replace the current Single Record Student Database/Unique Identification Code system and the School Code Master system, including all associated hardware and software as options.”
Submitted by: Derek Crombie, Michigan
Filename: MI_Invite to Bid
- Florida Department of Education Data Warehouse Scope of Work (2000)
 “This document describes the requirements and expectations for Florida’s K-20 Education Data Warehouse (EDW). The intent was to find a vendor who was experienced in large scale data warehousing, and couple its experience with staff from the FLDOE who were subject matter experts relating to the data collected and reported by the Department. This combination was (and still is) seen as a critical predicate to effectively developing and implementing the EDW. Because we were not asking for a canned/shrink-wrapped solution as with many projects, the effort evolved once the vendor was selected. Because of its expertise in data warehousing, the vendor was able to offer suggestions and counsel as to design and methodology. Further, staff insight and expertise provided a “real world” balance to the work of the vendor.”
Submitted By: Jeff Sellers, Florida
Filename: FL Scope of Work DW V5 Final
- Intent to Negotiate: Integration of Facilities and Finance Data Into a Longitudinal Student Database (2006)
 “This Intent to Negotiate (ITN) was designed to carry out major work for Florida’s LDS grant. It was designed to invite vendors to propose approaches that would ultimately incorporate school facilities and finance information into the existing K-20 Education Data Warehouse. The ITN heavily emphasizes year 1 activities that focused on the requirements phase of development. A major product of the year 1 activities was the production of a deployment plan that was intended to serve as a statement of work for later years. The ITN leaves decisions about year 2 and 3 open but states that “good performance” will provide the opportunity for extending the contract into subsequent years. We were not interested in an off-the-shelf solution, but wanted a careful, deliberate discovery and requirements process as a prelude to any development and deployment.”
Submitted By: Jeff Sellers, Florida
Filename: FL Final ITN posting
- Request for Proposal: Kentucky Instructional Data System (KIDS) Data Warehouse (2006)
 “In this RFP, the Commonwealth of Kentucky is seeking a vendor to undertake the design, development, and implementation of a data warehouse/decision support system with an online interface making it possible to display a variety of assessment reports about individual students, groups of students aggregated by demographic elements, or groups of students aggregated by school and district. This system will eventually be accessible by a variety of different stakeholders including parents, teachers, school administrators, state officials, legislators, and members of the public. Sections 20 and 30 are the most specific to the vision and requirements of the system. Other sections contain more generic contractual language. The final document ended up being more prescriptive than originally intended, due mainly to the large amount of very specific feedback from multiple stakeholder groups.”
Submitted By: Robert Hackworth, Kentucky
Filename: KIDS RFP.FINAL

- Request For Proposals For: Pennsylvania Information Management System (PIMS) (2006)
 “This RFP provides those interested in submitting a proposal for the subject procurement (“Offerors”) sufficient information to enable them to prepare and submit a proposal for the Pennsylvania Department of Education (PDE) to satisfy a need for a Pennsylvania Information Management System (PIMS). At its core, the scope of the PIMS project involves two major components: Student Record Collection, and Data Warehouse and Business Intelligence Tools. PDE’s goal is to create a single, standards-based system that takes in data from all of the department’s internal and external sources and delivers reports and query responses on any and all of those data to authorized and authenticated users both in and out of the department, ranging from teachers, parents, and district administrators to the legislature, Board of Education, and the Secretary of Education.”
Submitted By: David Ream, Pennsylvania
Filename: PA PIMS RFP CN00020094new
- Request for Proposals: Data Consolidation and Warehousing for Alaska Unity Project (2006)
 “This request for proposals outlines the work necessary to complete the construction of an authoritative data repository, or data warehouse. This is the second phase of the Unity Project, and the first phase to be funded under the SLDS grant. The successful contractor will be provided with the department-owned Oracle 10g Release 2 technology and tools and wizards for the development of this data warehouse.”
Submitted By: Chris Letterman, Alaska
Filename: AK Data Warehousing_Unity Project_RFP
- Request For Proposals: Education Management Information System Redesign for Longitudinal Data (2006)
 “The Ohio Department of Education (ODE) asked the Office of Information Technology to solicit competitive proposals for designing and implementing the Education Management Information System Redesign for Longitudinal Data System, and this RFP is the result of that request. Due to limitations of the current Education Management Information System, ODE is currently unable to process and manage statewide student-level data efficiently and its ability to support statewide longitudinal data analysis on student academic growth remains limited. Changes and improvements must be made to the Education Management Information System, as accessing, analyzing and using timely and quality data are critical for informing instruction and services and ultimately driving higher achievement for all students.”
Submitted By: Beth Juillerat, Ohio
Filename: OH RFP Redesign for Longitudinal Data 0A1015
- Task Order Request For Proposals (TORFP): Unique Student and Teacher Identifier System (2006)
 “The Maryland State Department of Education (MSDE) issued this TORFP to obtain technical services to design and implement a Unique Student and Teacher Identifier System for Maryland. Through the assignment and maintenance of a unique state assigned student/teacher identifier (SASID) Maryland will have the ability to identify individual students, relate them to test scores, attendance, enrollment, suspensions, teachers and produce accountability reports as required by the federal government. Maryland wants to implement a longitudinal student/teacher data system, the basis of which is assigning a unique identifier to every student and teacher in Maryland. In addition, the assignment of unique identifiers in our Infant and Toddler Program, beginning at birth, along with children receiving Special Education services through age 21, will allow tracking of these students. Maryland will then have the capability to perform longitudinal analyses for educational programs and student achievement that will give educators the tools they need to improve services and achievement.”
Submitted By: Leslie Wilson, Maryland
Filename: MD RFP MLDS_Unique_Student_ID_-_081106
- Request for Proposal: South Carolina Department of Education State Data Manager (2006)
 “The South Carolina Department of Education (SDE) is in need of a centrally managed, automated enterprise level system to manage the extraction, movement, validation, and storage of data reported by LEAs to the SDE. The automated solution the state is seeking would also provide a user interface for presentation, management, and notification of event results to the LEAs and the SDE. The purpose of this solicitation is to acquire services and supplies or equipment complying with the enclosed description and/or specifications and conditions.”
Submitted By: Deb Holdren, South Carolina
Filename: Final RFP-State Data Manager-S7366_001
- Request For Bid: Facilitation of the design of the Longitudinal Data System (LDS) for the Wisconsin Department of Public Instruction (2007)
 “This document represents Wisconsin’s request for bids to secure a source to facilitate the design of the Wisconsin Department of Public Instruction’s Longitudinal Data System (LDS) by providing expert educational statistical analysis, report design, educator curriculum development, and longitudinal, multidimensional analytics development and guidance to the LDS project team. This RFB was signed with Next Level Inc.”
Submitted By: John Calderone, Wisconsin
Filename: WI RFB document Final (2).doc
- District of Columbia Request for Information (RFI): State Longitudinal Data Warehouse (2007)
 “This Request for Information (RFI) was used by the District of Columbia to finalize the Government’s technical requirements prior to issuing a solicitation to procure, customize and implement a statewide longitudinal education data warehouse and associated systems.”
Submitted By: Bryan Richardson, District of Columbia
Filename: DC_SLED RFI

Are We There, Yet? Evaluating Your LDS

During LDS implementation, you should evaluate your progress towards achieving the system's goals. How well does your LDS deliver in terms of its intended criteria for success? How does it enhance operations, improve data quality, and facilitate better data-driven decisionmaking? Your ability to evaluate the system depends largely on how you planned the project in the very beginning of your endeavor. How clear was your vision of your desired system? Did you identify unambiguous and measurable goals?



This clarity at the beginning will help you and other stakeholders see how their efforts are actually paying off.

The subjectivity of 'success'

Without clearly stated goals and criteria for measuring how close you've come to reaching them, success may be determined, to some extent, in the eye of the beholder. For instance, technologically savvy users may expect cutting edge applications, while average users, unfamiliar with the state of the art, may be more interested in usability and user-friendly interfaces.⁸¹ The expectations set at the beginning of the project can also affect perceptions later on. Those who lead the marketing and outreach efforts for the LDS project, for instance, will affect people's expectations for the systems. Care should be taken not to create expectations that are too high to satisfy. If you paint too ambitious a picture when trying to win support, don't be surprised if people are less than satisfied with the results.⁸²

Measuring LDS success

Before an evaluation begins, education agency leaders or groups of stakeholders serving on an evaluation committee should also reflect on some basic questions:

1. Who will evaluate the system? Agencies commonly bring in an outside consultant.
2. From whose perspective will system's success be judged (*e.g.*, agency leaders, IT staff, teachers, etc.)?
3. What types of information should be used to gauge success (*e.g.*, objective or subjective)? What methods will be used to gather and analyze that information?
4. What criteria will be used to judge success?⁸³ Identify well-defined assessment criteria aligned with the established LDS goals. Will greater emphasis be put on timeliness or on progress towards achieving system goals?

And later, when interpreting evaluation results, consider changes in the environment that may have affected the project and the ability to achieve the original goals. Did political leadership change? Was there significant staff turnover in-house or in vendor staff? Were new laws passed? Did technology changes have any effects?

EVALUATION METHODS:

Evaluators may use a number of methods to gauge system success. Commonly used methods include:

- Surveys (online and paper)
- Case studies
- Direct observation

EVALUATION CRITERIA AND QUESTIONS:

Table 7 below presents a collection of some evaluation criteria and questions. These should be answered using the methodologies above. While these questions are qualitative in nature, you should try to include solid, measurable criteria in the evaluation whenever possible.

⁸¹ Miller, H. (2000). "Managing customer expectations." *Information Systems Management* 17.

⁸² Staples, D. S., Wong, I., & Seddon, P. B. (in press). "Having expectations of information systems benefits that match received benefits: Does it really matter?" *Information & Management*, 1976, 1-17.

⁸³ Seddon, P. B., Staples, S., Patnayakuni, R. "Dimensions of information systems success." *Communications of the Association for Information Systems*. Vol 2, Article 20, November 1999.

Table 7. Sample evaluation questions:^{84,85,86}

Development and implementation	<ul style="list-style-type: none"> ▪ How long did the project take? ▪ What resources were used? ▪ What savings in time and money were realized?
Measurable benefits	<ul style="list-style-type: none"> ▪ How have operations been made more efficient? ▪ To what extent has the system helped to improve academic performance? ▪ To what extent has the system helped to close achievement gaps?
Awareness and engagement	<ul style="list-style-type: none"> ▪ How aware are stakeholders of the system? ▪ How well do stakeholders understand the system? ▪ What level of stakeholder engagement has been achieved?
Use	<ul style="list-style-type: none"> ▪ How widespread is the use of the system? ▪ Which system components are used and how are they applied? ▪ How widespread has participation in training been?
Perceptions	<ul style="list-style-type: none"> ▪ How well has the system met reporting and decision-making needs? ▪ How helpful are the reporting and analysis tools? ▪ Has the system made data adequately available and accessible? ▪ Are users getting the data they need? ▪ How effective has professional development been?
Lessons learned	<ul style="list-style-type: none"> ▪ What are the barriers to effective use of the system? ▪ What improvements can be made to the system? ▪ How can professional development efforts be improved?

Additional resources: LDS Evaluation

- [Evaluation of the Effectiveness of Ohio's D3A2 Initiative](#)
Beth Juillerat & Eric James, ODE – November 2006 IES SLDS Grantee Meeting
This presentation introduces Ohio's LDS evaluation plans. It gives a summary of their system as well as the criteria for and methods used in a planned evaluation of that system.
- [ADE LDS Evaluation](#)
Alan J Simon, Metis Associates – November 2006 IES SLDS Grantee Meeting
This presentation by AR's evaluation vendor, first gives an overview of AR's LDS and then discusses its approach to evaluating that system. A basic overview of evaluation criteria, methods, and timeline are provided.

LDS Share: EVALUATION – REQUESTS FOR PROPOSALS:

- Longitudinal Data System Implementation and Impact Evaluation RFP (2006)
"The Ohio Department of Education solicited competitive proposals for the Longitudinal Data System Implementation and Impact Evaluation 2006-2009, and this RFP is the result of that request. The purpose of the evaluation is to measure the implementation and impact of the Longitudinal Data System including its related professional development, quality, and effectiveness in meeting the reporting and decision support needs of all its key stakeholders, and eventually its effectiveness in catalyzing improvement in academic achievement of all students and in closing achievement gaps."
LDS Share - Filename: OH DRAFT RFP 7-11-06 REVISION
- Supporting Ohio's Longitudinal Data System through Evaluation: A Proposal to the Ohio Department of Education. (2006)
"This document represents the winning proposal, submitted by Hezel Associates LLC, to Ohio's Longitudinal Data System Implementation and Impact Evaluation RFP."
LDS Share - Filename: OH_Hezel_Associates_Ohio LDS_Evaluation_Proposal_DATA CHAT VERSION

LDS Share: EVALUATION OF LONGITUDINAL DATA SYSTEMS

- Supporting D3A2 Professional Development through Evaluation: A Report to the Ohio Department of Education (January 16, 2007)
This LDS evaluation report offers key findings from an evaluation of Ohio's LDS, focusing on data usage practices and professional development efforts. Key findings and recommendations are followed by discussions of methodology and more detailed discussions of evaluation findings. Data collected in this study will be used to "establish a baseline profile of administrators' and teachers' data usage practices, which will serve as the point of comparison for two subsequent years' of longitudinal inquiry."
LDS Share - Filename: OH Hezel Associates Report_1_PD Needs and Data Usage Practices_pdf

⁸⁴ IES, Statewide Longitudinal Data Systems Grant Program: Summary of RFA Requirements FY 2007.

⁸⁵ Beth Juillerat and Eric James, *Evaluation of the Effectiveness of Ohio's D3A2 Initiative*. Presentation given at November 2006 IES SLDS Grantee Meeting.

⁸⁶ Alan J Simon, *ADE LDS Evaluation* Presentation given at November 2006 IES SLDS Grantee Meeting.

- Supporting D3A2 Professional Development through Evaluation: A Preliminary Annual Report to the Ohio Department of Education (June 29, 2007)
This LDS evaluation report follows up on the previous report. It offers key recommendations for the future LDS efforts, focusing on implementation and expanding on its earlier recommendations to improve professional development efforts. Key findings and recommendations are followed by discussions of methodology and more detailed discussions of evaluation findings.
LDS Share - Filename: OH Hezel Associates Report_2_Year 1 Evaluation Report

DRAFT

References

- Aden, David. *Enterprise Architecture Demystified*. Sep. 24, 2008. Retrieved from <http://www.govtech.com/gt/articles/418008> on Oct. 16, 2008.
- Alpert, E. “New Number-Crunching Links Teachers to Test Scores.” *VoiceofSanDiego.org*, 10/6/08
- Bernhardt, V. L., (2004). Continuous improvement: It takes more than test scores. *ACSA Leadership*. November/December 2004, pgs. 16-19.
- Berry, Fuller and Reeves, Data Quality Campaign. (March 2007). Linking Teacher and Student Data To Improve Teacher and Teaching Quality.
- Center for Strengthening the Teaching Profession. [*Creating a Comprehensive Teacher Data System*](#)
- Collegial Centre for Educational Materials Development Geographic Information Systems website: <http://www.ccdmd.qc.ca/ressources/?id=1275>, accessed on September 18, 2008.
- Collins, L. et al. Data Quality Campaign Issue Brief, *The Right Data to the Right People at the Right Time: How Interoperable Data Help America's Students Succeed*, June 2007.
- Dougherty, Chrys. (2002). A Policymaker’s Guide to the Value of Longitudinal Student Data.
- Data Quality Campaign, *The 10 Essential Elements in Detail for 2008-09*. Available online at http://dataqualitycampaign.org/survey_results/elements.cfm
- Data Quality Campaign, *Fundamentals in Designing State P-12 Longitudinal Data Systems*. Available online at http://dataqualitycampaign.org/survey_results/fundamentals.cfm.
- Data Quality Campaign. (2006). *Creating a Longitudinal Data System: Using Data to Improve Student Achievement*.
- Data Quality Campaign (September 2007). *How Can My State Benefit from an Educational Data Warehouse?* September 2007
- Data Quality Campaign (October 2006). *Creating Longitudinal Data Systems: Lessons Learned from Leading States*.
- Data Quality Campaign, *Linking Education and Social Services Data to Improve Child Welfare*, October 2007.
- Data Quality Campaign. (October 2007). *Linking Education and Social Services Data to Improve Child Welfare*.
- Data Quality Campaign (January 2008). *Tapping into the Power of Longitudinal Data: A Guide for School Leaders*.
- Data Quality Campaign (Nov 2007). *Measuring What Matters: Creating a Longitudinal Data System to Improve Student Achievement*
- Data Quality Campaign, [Sample Survey](#) 2007.
- Davis, Michelle R. (2008) *Finding Your Way in a Data-Driven World*.

- Education Information Management Advisory Consortium, Longitudinal Data Systems Task Force, March 2007 Meeting, Phoenix Arizona. [Meeting Summary](#) available online.
- Education Information Management Advisory Consortium, Student Longitudinal Data Systems Task Force, Council of Chief States School Officers, (2008). *Longitudinal Data System Roadmap*.
- Education Information Management Advisory Consortium LDS Task Force, Meeting Summary, March 23, 2007.
- Education Information Management Advisory Consortium LDS Task Force, Meeting Summary, October 6, 2006.
- Education Information Management Advisory Consortium LDS Subcommittee, Meeting Summary, October 17, 2007.
- ESP Solutions, *D3M Framework: Building a Longitudinal Data System*, 2008.
- ESP Solutions. *Marketing Your Field of Dreams*.
- Gazzerro, P and E. Laird. (May 2008). *Linking Spending and Student Achievement: Managing Inputs, Processes and Outcomes*.
- Hirsch, J. [Performance Management - Data Informed Decisions: Having Information Provides New Understandings and Insight](#).
- IEEE, IEEE Std 1471-2000 IEEE Recommended Practice for Architectural Description of Software-Intensive Systems, available at http://standards.ieee.org/reading/ieee/std_public/description/se/1471-2000_desc.html
- IES, Statewide Longitudinal Data Systems Grant Program: Summary of RFA Requirements FY 2007
- Inmon, Bill. [“The Operational Data Store.”](#) Info DB, February 1995.
- Juillerat, B. and E. James, *Evaluation of the Effectiveness of Ohio’s D3A2 Initiative*. Presentation given at November 2006 IES SLDS Grantee Meeting.
- Microsoft Architecture Overview, available online at <http://msdn.microsoft.com/en-us/architecture/ms978007.aspx>.
- Miller, H. (2000). Managing customer expectations. *Information Systems Management* 17.
- MPR Associates/National Center for Educational Accountability, *Judging Student Achievement: Why Getting the Right Data Matters*, September 2005.
- National Center for Analysis of Longitudinal Data in Education Research
- National Forum on Education Statistics (2008). *Every School Day Counts: A Taxonomy for Standard Attendance Data*.
- National Forum on Education Statistics, *Technology at Your Fingertips*
- National Forum on Education Statistics (2003). *Facilities Information Management: A Guide for State and Local Education Agencies*.

- Newby, D. (July 2007). [CCSSO's National Education Data Partnership: Phase Two](#)
- Nevo, S et al. (2007) *An examination of the trade-off between internal and external IT capabilities*. Journal of Strategic Information Systems, 16, pgs. 5-23.
- Nunn, JA & KL Harper Mainzer. (2006). *Longitudinal Data Systems: Summary of Current Issues and Potential Uses*.
- Oberkirch, B. *A Journey of a Thousand Steps*, March 28, 2008.
- REL Midwest. (June 2007). *Getting the Evidence for Evidence-based initiatives: how the Midwest states use data systems to improve education processes and outcomes*.
- Schools Interoperability Framework Association, *Analysis of Costs and Benefits Associated with Implementing SIF*, June 2006.
- Seddon, P. B., Staples, S., Patnayakuni, R. Dimensions of information systems success. Communications of the Association for Information Systems. Vol 2, Article 20, November 1999.
- Simon, AJ. *ADE LDS Evaluation* Presentation given at November 2006 IES SLDS Grantee Meeting.
- Smith, N. (2004). *Lessons Learned: Writing Requests for Proposals for Statewide Student Data Systems in Education*.
- Staples, D. S., Wong, I., & Seddon, P. B. (in press). Having expectations of information systems benefits that match received benefits: Does it really matter? *Information & Management*, 1976, pgs. 1-17.
- Steiny & Smith. (September 2007). *Reporting and Analysis Tools: Helping Mine Education Data for Information Riches*.
- Wilson, L & Nunn, J. "Stakeholder Involvement in Maryland." Presentation given at MIS Conference in Atlanta, GA, February 28, 2007.