

The Optimal Reference Guide:

D3M Checklist for a Longitudinal Data System

Extraordinary insight™ into today's education information topics



ESP Solutions Group

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Foreword

By Alex Jackl

Chief Architect, ESP Solutions Group

Chair of Technical Board, Schools Interoperability Framework Association (SIFA)

Why do we have longitudinal data systems? Why use data to drive decisions? Who cares? Why not use experience, or professional intuition, or gut feeling?

First off, I think the answer is that we have to use all of those. We cannot succeed if we do not. However, experience in various fields both outside of and inside education has shown us what is "common sense" or "understood" often isn't at all. All of our experience and feeling must be tempered by real data taken from exemplar systems.

Many people can talk about the theory of building "enterprise systems" but have they built one? Have they learned the hard lessons of trying to build the web of interconnected systems and stakeholders required by that?

ESP and our partners have been building enterprise systems designed to drive decision making since 1993. In that time we have discovered, experimented with, and implemented several different variations on those systems. In the last three years ESP has focused on building an architecture designed to deliver views of data and reports that allow decision making in a way that has been impossible in the past. A convergence of maturing technology and a deeper commitment to accountability has allowed for true enterprise systems to arise in the PK-20 environment.

ESP has responded to this convergence in two manners:

One is the National Transcript Center: a national brokerage allowing educational entities to exchange student records in a variety of mediums and a variety of standard formats. NTC will allow all educational entities to seamlessly exchange student record data – regardless of their form and function.

Second is the focus of this Optimal Reference Guide: the data driven decision making (D3M) enterprise architecture. The D3M architecture is designed to be a functional decomposition of the enterprise needs of the PK-12 system. Each major set of requirements is bundled into what we call a "component." Each component can stand by itself and even be built or bought by itself, but must include the interfaces and standard automatic program interfaces in the industry.



Longitudinal Data System Insights

Every state is upgrading its longitudinal data system. ESP Solutions Group's mission as a company is to be the provider of *extraordinary insight*[™] into data driven decision making (D3M) for education agencies. Together, we are in the process of building a substantial wealth of best practices and standards for designing and implementing successful longitudinal data systems.

This month's Optimal Reference Guide provides a checklist of the components an education agency needs to deliver an information system that truly supports D3M. Wherever appropriate, we have linked these components to our Optimal Reference Guide white papers, which provide insights into how to design, implement, and manage these components.

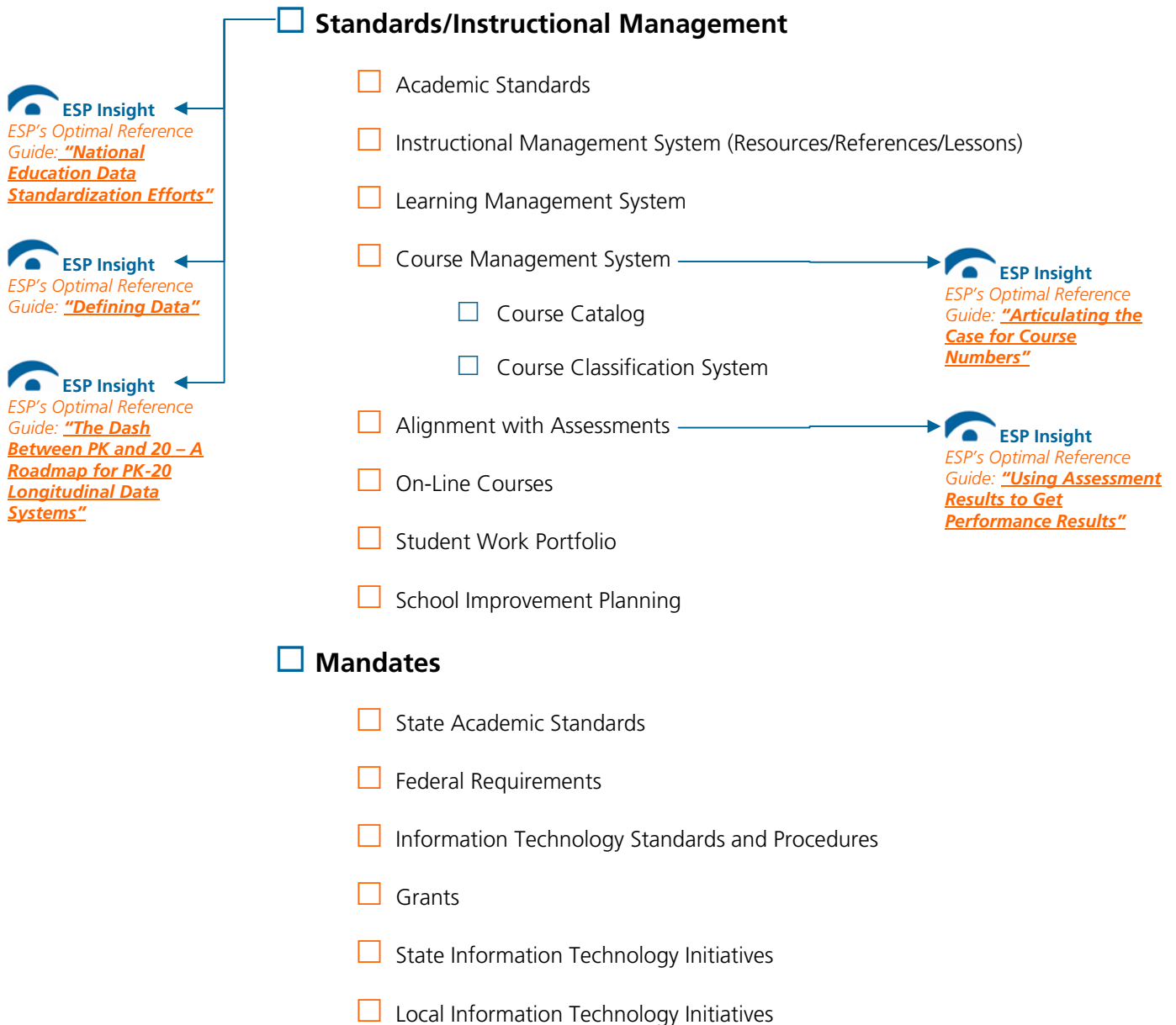
Every education agency knows that producing the agency's "official data" is not enough. In fact, it's those unofficial, not formally reported data that provide some of the most significant insights.

In an information society where information inflation overwhelms people, the D3M Checklist provided here offers a rare conflation—fusing disparate resources into one entity. Not claiming to be comprehensive yet, this checklist is the best compilation available of the components that form an education agency's information ecosystem.

ESP Solutions Group is pleased to provide this checklist and their cited applicable resources. All of the resources referred to in the "**ESP Insight**" boxes are available at www.espsolutionsgroup.com/resources.php. Please call upon us for discussions, presentations, or consultation on any of these topics.

D3M Component Checklist for Longitudinal Data Systems

Get the Right Data



Get the Data the Right Way

Portal

- Directory
- Permissions
- Document Management
- Communications and Collaboration
- Public Web Site
- Digital Library
- Stakeholder Meeting Management
- Agency Policy and Regulations Management



ESP's Optimal Reference Guide: ["Why MySpace Matters to the K-12 Space"](#)



ESP's Optimal Reference Guide: ["Confidentiality and Reliability Rules for Reporting Education Data"](#)



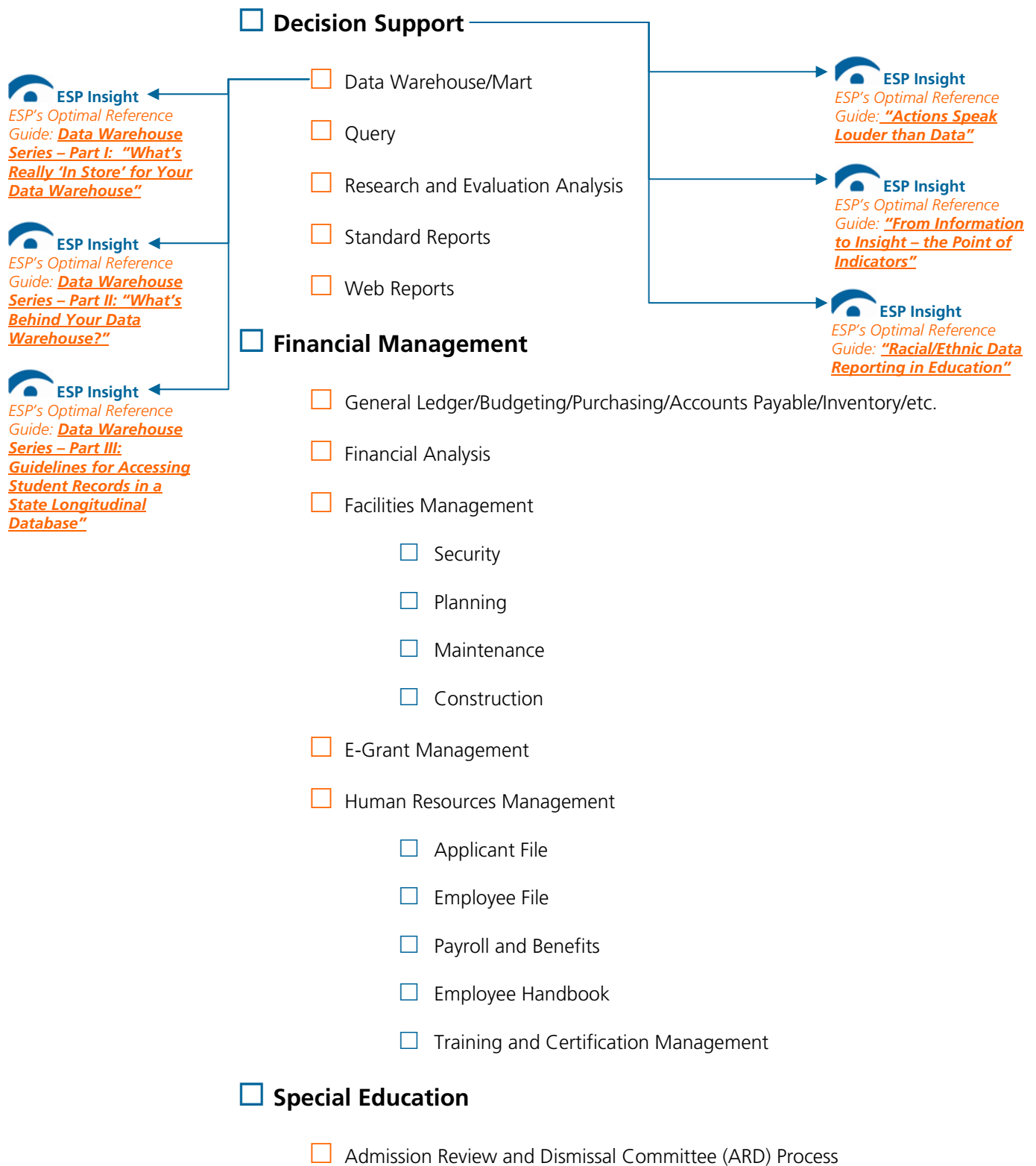
ESP's Optimal Reference Guide: ["Why 70% of Government IT Projects Fail"](#)

Assessment

- Precoding
- On-Line Testing
- Paper Testing
- Assessment Authoring
- Scoring Services
 - Multiple Choice
 - Constructed Response
- Diagnostic Testing
- School/Class Rostering and Reports



ESP's Optimal Reference Guide: ["Using Assessment Results to Get Performance Results"](#)



- Individual Education Plan (IEP)
- State Reporting
- Federal Reporting


State Reporting

- Extraction from Student Information System and Other Applications
- Business Rule Validation and Error Correction
- Submission to State Education Agency (SEA)
- State Education Agency Verification and Import to Data Store
- EDEN (Education Data Exchange Network) Reporting, SEA to EDEN

 **ESP Insight**
 ESP's Process Illustration:
*"State Report Manager:
 The Fast Track to Efficient
 State Reporting"*







Transactional Applications

- Student Information Systems
 - Grade Book
 - Attendance Accounting
 - Discipline Records
 - Program Participation
 - Demographics and Contacts
- Library and Media Services
 - Collection Inventory
 - Usage Management
- Health Services
 - Immunizations
 - Case Management

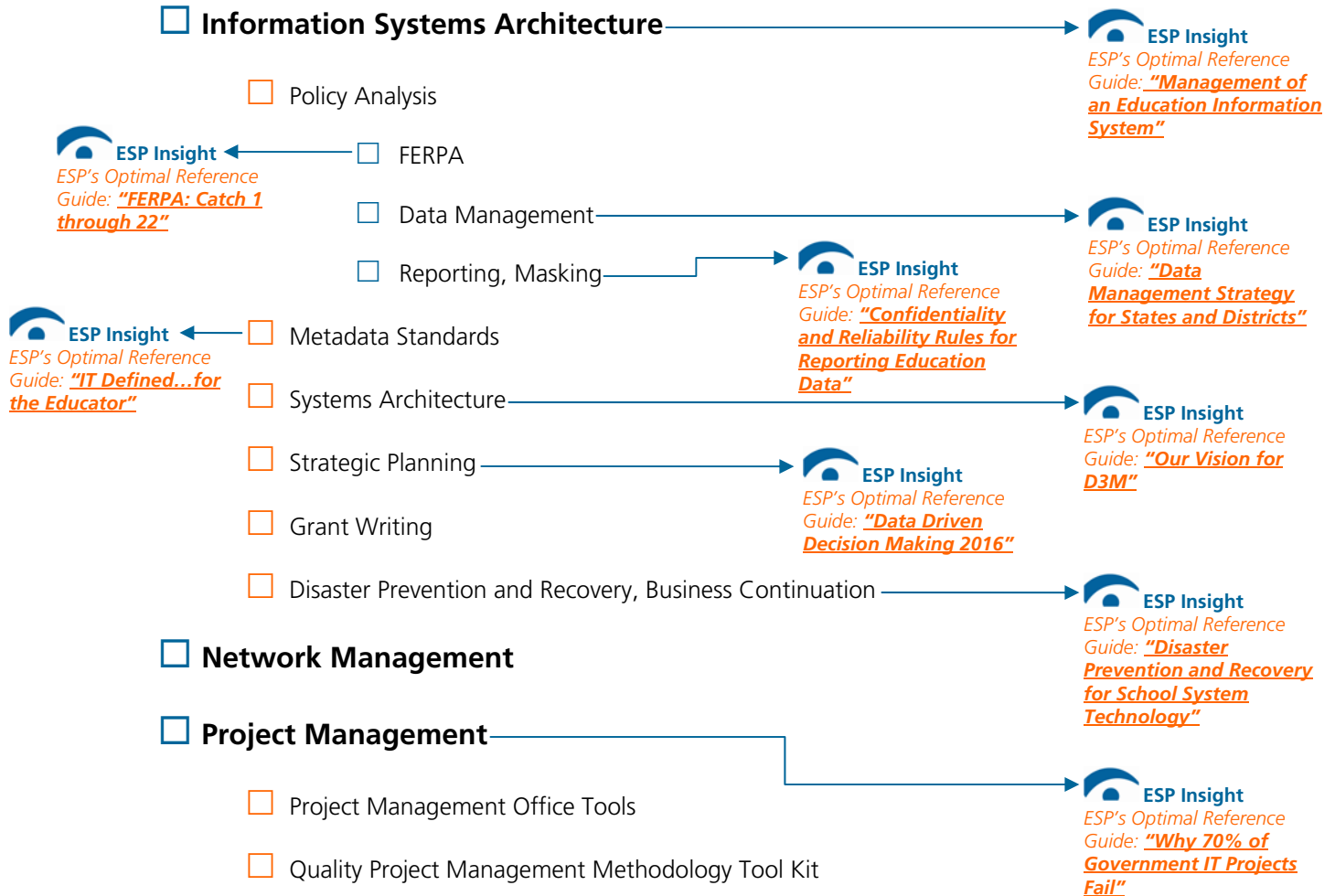
 **ESP Insight**
 ESP's Optimal Reference
 Guide: *"Recommended
 Data Elements for EDEN
 Reporting"*

- Counseling Services
 - Case Management
 - College Admissions Processes
 - Career/Technology Management
 - Diagnosis
- Food Services
 - Meals Planning and Management
 - Eligibility and Meals Accounting
- Transportation
- Others

Get the Data Right Away

- Student Record Exchange**   **ESP Insight**
ESP's Optimal Reference Guide: **"Electronic Student Records and Transcripts: The SEA Imperative"**
- Student Locator Framework**
 - Identifier Assignment   **ESP Insight**
ESP's Optimal Reference Guide: **"Statewide Student Identifier Systems"**
 - Enrollment Documentation
-   **ESP Insight**
ESP's Process Illustration: **"Secretary to Secretary: The Path from Data to Decisions"**
 - Schools Interoperability Framework**
 - Zone Integration Server
 - Vertical Reporting Framework
 - Student Locator Framework
 - Agent Development

Get the Data Right & Get the Right Data Management



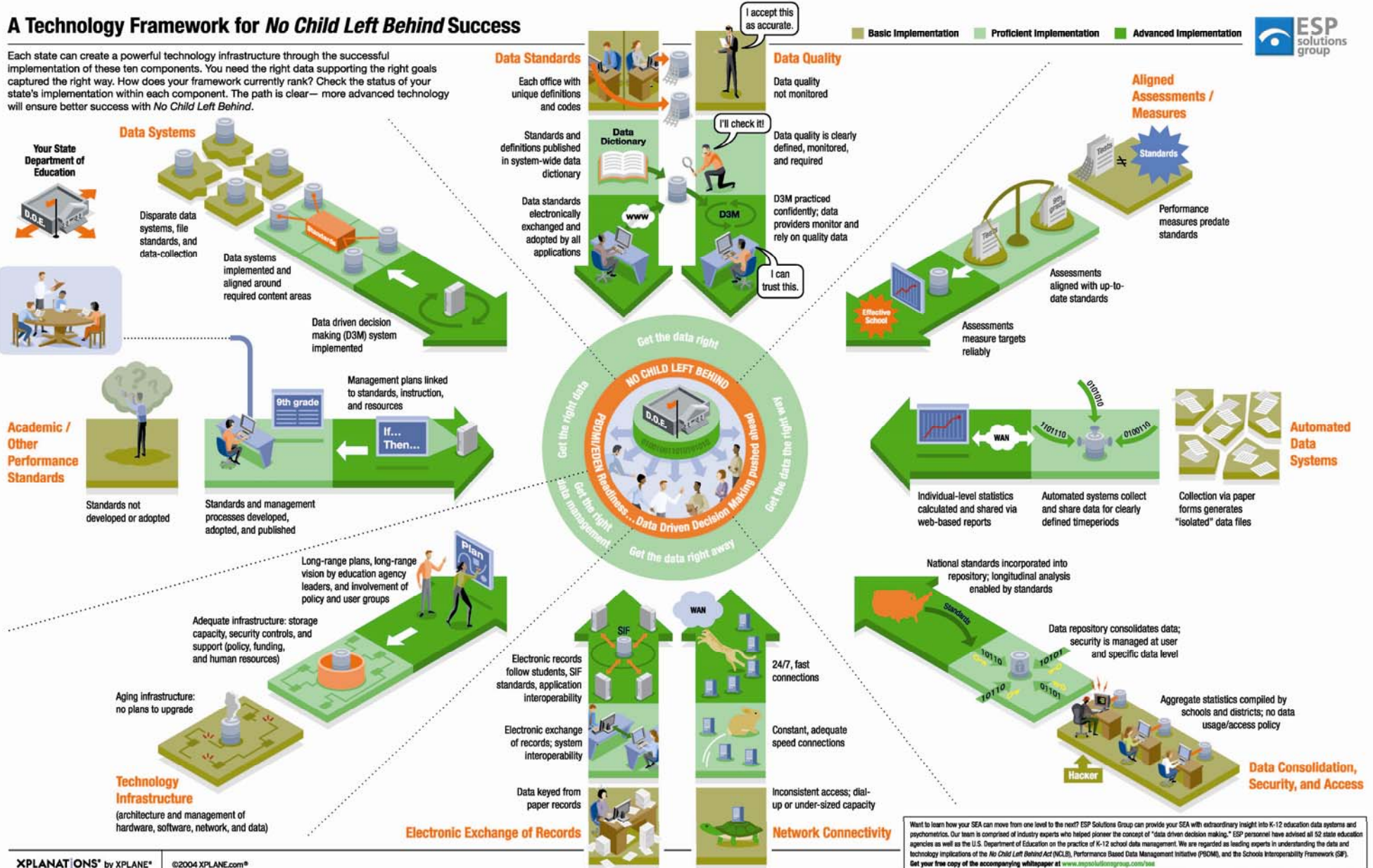
Official statistics are about counts, and data quality is of utmost importance. Decision support requires a more complex understanding of the constantly changing relationships between educators, their curriculum, and the students for whom they are responsible.

Getting Here

When the No Child Left Behind Act was itself a child, the Secretary of Education called upon ESP to define the technology framework required for education agencies to comply with the expanded requirements. Figure 1, and its accompanying white paper, started an on-going process to define these requirements and align them with solutions.

A Technology Framework for No Child Left Behind Success

Each state can create a powerful technology infrastructure through the successful implementation of these ten components. You need the right data supporting the right goals captured the right way. How does your framework currently rank? Check the status of your state's implementation within each component. The path is clear— more advanced technology will ensure better success with *No Child Left Behind*.



Want to learn how your SEA can move from one level to the next? ESP Solutions Group can provide your SEA with extraordinary insight into K-12 education data systems and psychometrics. Our team is comprised of industry experts who helped pioneer the concept of "data driven decision making." ESP personnel have advised all 52 state education agencies as well as the U.S. Department of Education on the practices of K-12 school data management. We are regarded as leading experts in understanding the data and technology implications of the No Child Left Behind Act (NCLB), Performance Based Data Management Initiative (PBDMI), and the Schools Interoperability Framework (SIF). Get your free copy of the accompanying whitepaper at www.espsolutionsgroup.com/ncsl

Figure 1: A Technology Framework for NCLB Success

When the Schools Interoperability Framework Association (SIFA) held a Board meeting in Austin in 2004, ESP hosted a dinner and unveiled our Secretary to Secretary poster, Figure 2. This picture remains our best perspective on how all the components of an information system should interoperate to share data across all levels of the education enterprise.

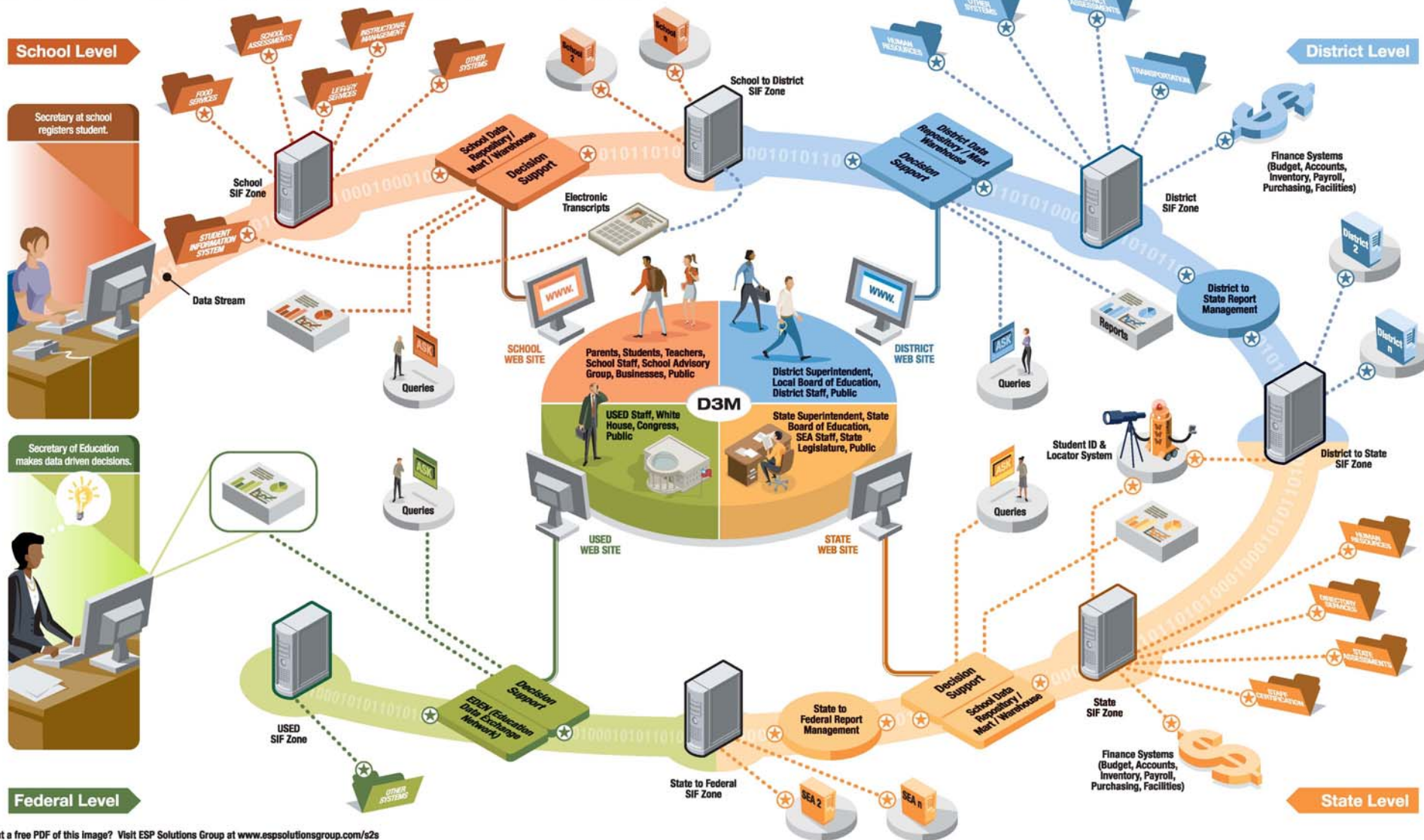
Secretary to Secretary: The Path from Data to Decisions

From a keystroke at a school to a stakeholder's decision, a network of software applications supports data driven decision making (D3M). Linking software applications for data sharing is the role of technology standards such as SIF (Schools Interoperability Framework). System interoperability, as illustrated here, reduces the burden on school staff, strengthens data quality, and improves timeliness of data collection/reporting efforts.

★ Agent enables connectivity.



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Want a free PDF of this image? Visit ESP Solutions Group at www.espsolutionsgroup.com/s2s

Figure 2: Secretary to Secretary: The Path from Data to Decisions

Responding to the two references, the Microsoft Corporation and ESP formed the D3M Alliance with Edustructures, Choice Solutions, and TetraData. Our purpose was not to create an exclusive partnership, but to demonstrate that five disparate companies can create an environment in which data can be shared across everyone's applications.

In February, 2007, Alex Jackl, ESP's Chief Architect, drove a demonstration of 18 separate applications operating within a shared environment to enroll students, update related applications, and generate both standard and *ad hoc* reports for D3M. The system worked. We have now shown that separate companies faithfully using national, open standards can significantly reduce the redundancy and burden of managing education data from entry to decisions.

Figure 3 is a high-level view of the D3M Education Connection that was demonstrated.

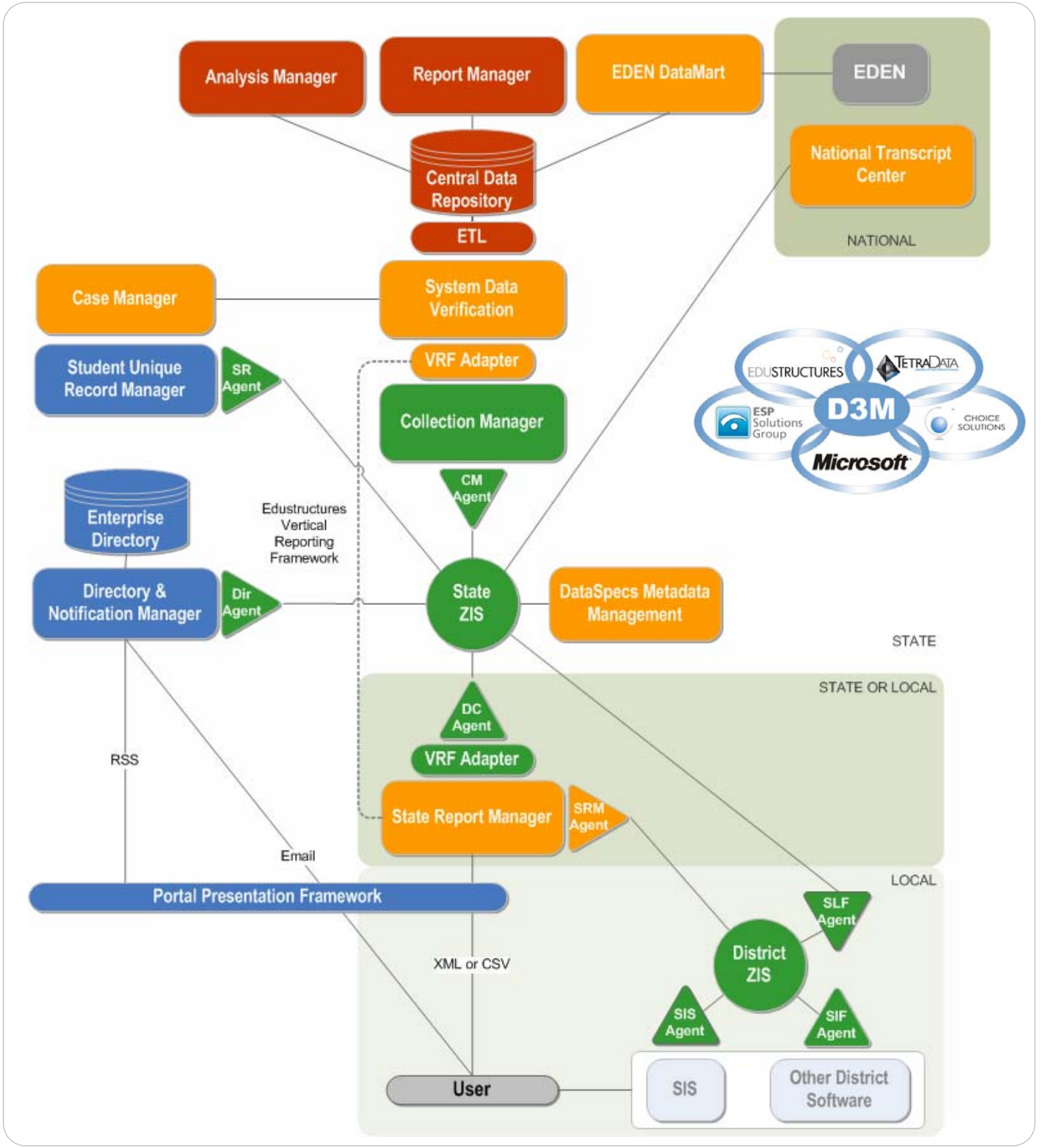


Figure 3: The D3M Education Connection Framework

Our Vision

ESP's vision is that when students and the adults who support them reach a decision point, all the information they need to make the right choice will be at their fingertips.



About ESP Solutions Group

ESP Solutions Group provides its clients with *Extraordinary Insight*™ into K-12 education data systems and psychometrics. Our team is comprised of industry experts who pioneered the concept of “data driven decision making” and now help optimize the management of our clients’ state and local education agencies.

ESP personnel have advised school districts, all 52 state education agencies, and the U.S. Department of Education on the practice of K-12 school data management. We are regarded as leading experts in understanding the data and technology implications of the **No Child Left Behind Act (NCLB)**, **Education Data Exchange Network (EDEN)**, and the **Schools Interoperability Framework (SIF)**.

Dozens of education agencies have hired ESP to design and build their student record collection systems, federal reporting systems, student identifier systems, data dictionaries, evaluation/assessment programs, and data management/analysis systems.

To learn how ESP can give your agency *Extraordinary Insight* into your PK-12 education data, contact Greg Nadeau at (512) 879-5346 or gnadeau@espsg.com.

This document is part of *The Optimal Reference Guide Series*, designed to help education data decision makers analyze, manage, and share data in the 21st Century.

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