



EDFacts

Shared State Solution

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ESP Solutions Group, Inc.

Highlights

- **Fully Functional EDFacts System**
 - Unit & aggregate staging data stores
 - ETL to EDFacts submission specifications
 - Submission file creation Edit reports
 - Longitudinal archives & analytics
- **Developed with Partner SEAs**
- **Fully Maintainable by the SEAs**
- **No License Fee for the SEAs**
- **Optional SEA Partner Association for Annual Updates and Shared Enhancements**
- **Support Services Available from ESP**

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Plug & Play Solution Fits on Top of SEA Sources

All EDFacts Submission Files Generated

Every State Education Agency (SEA) invests substantial effort into its submission of mandated federal data through the EDFacts system. What was once a unique process for each SEA is now a solution that can be shared. The EDFacts Shared State Solution (ES3) is gaining SEA users this summer in preparation for the full cycle beginning in November. Once an SEA's unique data sources have been mapped to the ES3 staging data store for ETL, the rest of the process of following the detailed rules for deriving statistics, formatting records, and creating submission files is handled by ES3 using these components.

- A set of SQL Server submission tables formatted in the EDFacts submission file specification
- A set of SQL Server Integration Services (SSIS) ETL processes to create submission files from the EDFacts Submission Tables
- A set of standardized SQL Server staging tables for either (a) unit records or (b) aggregate staging records, aligned with the Common Education Data Standards (CEDS) to the maximum degree possible
- A set of SSIS ETL processes to convert from local codes and formats to the federal standards and load the submission tables from the staging data

- A series of SQL Server Reporting Services (SSRS) validation reports against both the staging and submission tables so SEAs can review their data prior to submission
 - All ETL processes with full audit logging and email notification,
 - A centralized web front-end for triggering the ETL and accessing validation and management reports
 - Customized ETL to load the staging tables from the SEA's existing data sources
- The content for the top seven bullets is common for all SEAs. ES3's common structure does not need to be developed 59 times for the states and extra-state jurisdictions.

Development of ES3 in SEA Pressure Cookers

ES3 isn't an architect's rendering of an ideal process flow. This application follows the workflow and business rules of actual EDFacts coordinators in SEAs. Missouri, Idaho, and South Dakota are using ES3 to have their Directory, Membership, and Grades Offered files readied in preparation for the cycle beginning in November. Several other states are in the contract or

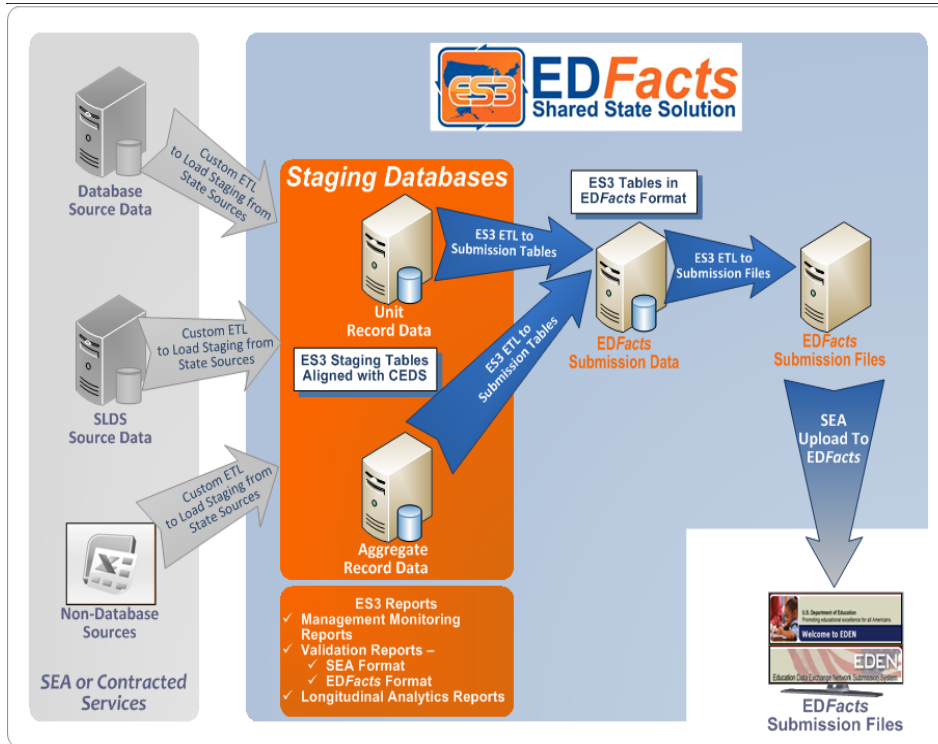
decision phase as the newsletter goes to press.

ESP Solutions Group is the managing partner for ES3. ESP is building the software components of ES3. In addition to the first three SEAs participating, ESP has directly assisted five others over the years in submitting their EDFacts data and they have incorporated the best practices

from those experiences into the Es3 design and processes.

The participation of multiple SEAs is essential to ensuring that ES3 is portable to any other SEA environment, compliant with all of USED's requirements, and responsive to SEA needs. This will ensure that ES3 is a practitioner's tool.

ES3 Solution Flows from SEA Data Sources to Uploads



For the *EDFacts* Coordinator, a solution is just a partial fix unless it encompasses everything from the rawest source file to the very final acceptance of a submission file by the EDEN/*EDFacts* system itself.

This high-level picture shows just that. The darker blue area outlines the common ES3 components across SEAs. Those in gray are unique to an SEA; performed by them or contracted.

Years of *EDFacts* experience have gone into refining a solution that can be shared across SEAs but still accommodate individual SEA needs.

How ES3 Evolved

The U.S. Department of Education automated state-to-federal reporting with the EDEN/*EDFacts* system. The task of compiling a state’s data into compliant files for uploading was left to be solved by each one. Most of the core processes are duplicated within every SEA.

BIG ED COULD NOT DEVELOP AND MANDATE A SINGLE SOFTWARE PRODUCT FOR EVERY SEA. ES3 EVOLVED AS AN OPTIONAL STANDARD SOLUTION.

Many SEAs have looked across their borders over the years and wondered how many of their processes and software applications they could share—and by doing so save time, effort, and money. However, their time and resources were concentrated on meeting the immediate *EDFacts* requirements and deadlines and not on software product development.

The SEAs working with ESP consoli-

dated best practices with development resources across their projects to change the dynamic.

- Microsoft tools are common, standardized, affordable, and easy to use.
- SEAs know enough about the *EDFacts* processes to pinpoint where the commonalities are and where the uniqueness of each SEA remains.
- ESP has enough clients to allow it to devote sufficient resources to building the common data model, databases, documentation, and ETL processes.
- The ES3 SEA Partnership Association model with an annual fee to support updates and on-going enhancements will be viable as enough states adopt a common architecture.

What are the common ES3 components?

- Two Staging Databases (allowing

the SEA to ETL and process either unit or aggregate records and to transform unit records to aggregate) in SQL Server

- Three Types of Reporting (providing feedback to the *EDFacts* Coordinator, data providers, and analysts/decision makers) using SSRS
- *EDFacts* Submission Data Store (creating a longitudinal data system for verification and analytics)
- *EDFacts* Submission File Engine (creating *EDFacts*-compliant files for uploading)

Unique to every SEA is the ETL into the staging databases from the data sources.

Groundhog Signals Near-End of Busy ED Facts Winter

The ED Facts Coordinator for an SEA runs on adrenaline from December through February. That's when the majority of the 105 annual submission files are due. Barbara Clements, Steve King, and Glynn Ligon of ESP visited 17 SEAs in 2011 along with AEM and USED experts providing ED Facts technical support under the SEISS contract.

What did we discover takes the Coordinators' time?

Keeping up with the updates; finding new and changed source data across the SEA; making changes to the local ETL processes; keeping the SEA data providers up-to-date (conducting an annual meeting, publishing an annual calendar, communicating requirements changes, communicating changes in processes); updating the submission file formats; creating/maintaining the data dictionary; creating error, edit reports for data stewards and providers; maintaining business rules.

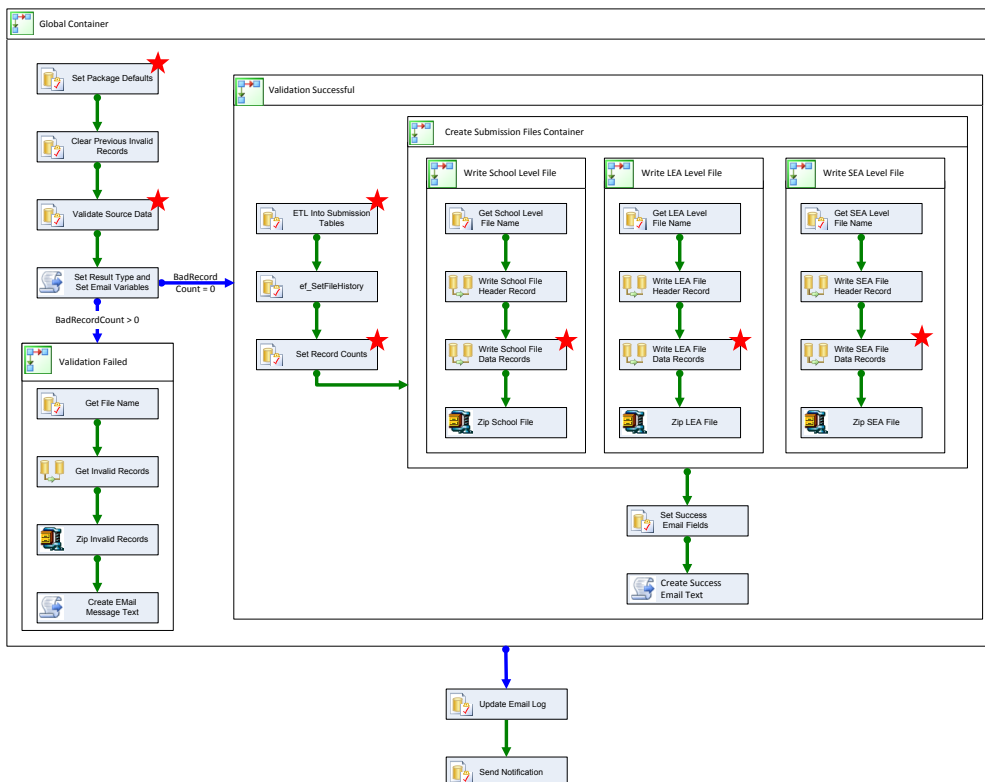
What seldom or never gets done?

Creating a longitudinal data store of ED Facts submissions; creating enough edit reports; providing longitudinal analytics and reports; creating a comprehensive training program for ED Facts data stewards and providers.

Tough job! These last three tasks have become the roadmap for ES3.

Process Flow Management for ES3

Steve King, ESP's Chief Architect, has mapped the processes for ES3 in Visual Studio. ESP site visits have uncovered multiple instances where new ED Facts Coordinators are rebuilding processes and management systems because they could not understand or follow the ones they inherited.



The economy of scale derived from multiple SEA partners means we can build a robust, professional solution. ES3 incorporates best practices in ETL design and implementation. All steps are logged, the process is auditable, both final staging and submission file histories are maintained, and a system for notifying the appropriate parties is built.

Individual stage loading or submission file creation processes can easily be triggered by non-technical program staff. This potentially frees the ED Facts Coordinator to focus on managing the ED Facts process.

There is a standard approach and set of ETL templates for each component. ES3 uses standard tools in the Microsoft SQL Server development stack. The entire development and operational process is well documented.

The diagram shown is the standard SSIS template that copies staging data to the Submission File table and creates the submission files. Only the seven starred tasks need to be updated to create a new ED Facts Submission file process.



ESP Offers ETL and Implementation Services



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Extraordinary Insight for Support of EDFacts Shared State Solution SEA Partners

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ESP Solutions Group is the developer of the EDFacts Shared State Solution (ES3) as an enhancement of its contracts with several SEAs. For newly adopting SEAs, the tasks of installing and configuring the solution, creating the ETL for the local sources to the staging data stores, and managing the process for the first year are available from ESP as contracted services. In future years, the maintenance of the ETL from local sources to the ES3 data stores can also be a service provided by ESP.

The design of the EDFacts Shared State Solution is entirely based upon Microsoft tools. These were purposely adopted by the early SEAs to ensure that they and future partners could maintain the solution themselves without an obligation to any vendor. However, the availability of ESP as an option provides both the risk mitigation and the alternative when local staffing or priorities require assistance.

Contact ESP at 512-879-5300 or info@espsg.com.

ESP to be the Managing Partner for ES3

States have shared software applications in the past with varying success. Challenges have ranged from:

- Who writes the documentation?
- Who maintains the code?
- Who coordinates communications among all the users?
- Who ensures everything is up—dated with changing standards and requirements?

For the EDFacts Shared State Solution, ESP became the natural managing partner for the SEA Partner Association. ESP has a deep understanding of EDEN/EDFacts from working with USED/NCES on the data standards

and reporting processes for the Common Core of Data (CCD), the Integrated Performance Benchmarking System (IPBS), the Performance Based Data Management Initiative (PBDMI), and others that contributed to the foundation for EDFacts.

ESP has directly assisted multiple SEAs in the design and delivery of recognized EDFacts solutions. Those insights, combined with the expertise of participating SEAs supplied ESP with the architecture for ES3.

SEA Partner Association membership enrolls an SEA in ESP's managing partner services. ESP will provide project management, annual updates

to requirements, current table and field structures for the data stores (unit staging, aggregate staging, and submission files), support, and documentation.

Steve King, ESP's Chief Architect, is only one of ESP's experts who will be ready to provide that value-added service for which ESP is known.

Darrell Prather, Data Analyst, is also well known for working directly with multiple SEAs to move their EDFacts reporting status right to the top. His in-depth knowledge of file specifications, business rules, and ETL from SEA sources make him an invaluable resource to partner SEAs.