



EDFacts

Shared State Solution

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ESP Solutions Group, Inc.

Highlights

- **Fully Functional ED-Facts System**
 - Unit & aggregate staging data stores
 - ETL to EDFacts submission specifications
 - Submission file creation
 - Edit reports
 - Longitudinal archives & analytics
 - User Interface to Manage Processes
- **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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ES3 & CEDS: Aligning EDFacts with CEDS

The Student Membership Case Study

[ESP Solutions Group is committed to keeping the ES3 effort open and aligned with all appropriate data standards and practices. As noted in previous newsletters, ESP completed the CEDS "Align" exercise. This is the first in a series of case studies about specific EDFacts submissions issues as they relate to the underlying ES3 staging tables and CEDS.]

The student membership file is the most basic of the EDFacts submissions, and is based on the historical common core of data (CCD) collection, which NCES has received from states for decades.

States get data from school districts. They review the data for internal and cross collection consistency. They may

move "certified" data to various operational systems. Data may get transformed and "flattened" in order to load them into a longitudinal reporting system or data warehouse. They may get additional processing and transformations in loading the ES3 staging tables. Each of these steps implies some degree of calculation or aggregation is occurring against the data. These aggregated and calculated metrics are not defined in CEDS.

Racial ethnic group is a classic example of differing aggregation or summary levels required for EDFacts as opposed to how CEDS defines how the data should be managed at the collection level.

EDFacts asks states to summarize the data into specific tabulation categories (which may vary by submission file). Some states get the data on students from their district clients using the tabulation group categories. That is, while still getting individual student data, they ask states to report a student's racial ethnic background as the tabulation group within which they should be reported to EDFacts. This issue of our using a different level of aggregation or collecting a calculated value will be repeated. This is not a "new" issue—it was also an issue with the legacy NCES handbooks. This issue led to the Forum's need to publish the *Guide to Education Indicators*. —Steve King, ESP Chief Architect

ES3 Handles EDFacts Crunch Periods

ES3 has worked hand-in-hand now through the crunch time in Missouri, South Dakota, Tennessee, and Idaho. With a mixture of relying upon ES3 to be the only submission process, to being a parallel process, and to being a double check, these SEAs have proven ES3 is efficient, viable, and production-tested. Maine and the U.S. Virgin Islands are just beginning.

In addition to the first six SEAs participating in ES3, ESP has directly assisted five others over the years in submitting their EDFacts data. The best practices from those experiences have been incorporated 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 ensures that ES3 is a practitioner's tool.

Knowing what to have ready before the crunch begins is as important as managing the crunch time itself. For SEAs newly adopting ES3, the processes established by these early adopters will be golden.

ES3 Solution Flows from SEA Data Sources to ED*Facts* Uploads

For the ED*Facts* 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 ED*Facts* itself.

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

Everything within the blue area is kept up-to-date by ESP to remain current with the ever-changing ED*Facts* submission specifications.

How ES3 Evolved

The U.S. Department of Education automated state-to-federal reporting with the ED*Facts* 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. Many SEAs have looked across their borders over the years and wondered which 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 ED*Facts* requirements and deadlines and not on software product development.

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

The SEAs working with ESP consolidated best practices with development resources across their projects to create a new dynamic.

- Microsoft tools are common, standardized, affordable, and easy to use.
- SEAs know enough about the ED*Facts* 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?

- A user interface to manage the processes
- 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 ED*Facts* Coordinator, data providers, and analysts/decision makers) using SSRS
- ED*Facts* Submission Data Store (creating a longitudinal data system for verification and analytics)
- ED*Facts* Submission File Engine (creating ED*Facts*-compliant files for uploading)

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

EDFacts/ES3 Integration into SLDS Solutions

ES3 should be an essential component of an SEA's SLDS solution. ES3 doesn't need to wait for the SLDS data warehouse to be complete and loaded with all EDFacts data sources. The ETL into ES3 will adapt annually as sources evolve.

ES3 was built based upon best practices for meeting the demands of EDFacts reporting. These include:

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.

Tasks that seldom or never get done:

Creating a longitudinal data store of EDFacts submissions; creating

enough edit reports; providing longitudinal analytics and reports; and creating a comprehensive training program for EDFacts data stewards and providers.

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

Integrating these into an SLDS solution is one of ESP's strengths. From establishing metadata standards to adopting data governance policies and procedures, EDFacts reporting must be considered every step of the way.

User Interface Manages Processes for ES3

EDFacts Shared State Solution (ES3) Welcome sking_esp ! [Log Out]

SSIS Package Configuration

Verify and/or Edit Package Configuration, then Schedule for Execution:
EDFacts\Submission Loading\S052 Membership

Package Variable	Configured Value
Edit ErrorMessageLine	
Edit ErrorMessageToLine	sking@espsg.com
Edit ReportingPeriod	2013-2014
Edit SuccessEmailCCLine	
Edit SuccessEmailToLine	sking@espsg.com

This application would be installed behind the state's firewall.

ESP Solutions Group

Originally, ES3 used Visual Studio and/or SQL Server Management studio to trigger the Integration Services packages. To alleviate the need for EDFacts coordinators to learn these power applications, or the state IT staff to be nervous about security issues around them, ESP designed a web front end. Built using standard .NET and ASPX tools, the web application gives an authenticated EDFacts coordinator access to manage the solution. Web pages exist for:

- Editing the various configuration tables,
- Reviewing and editing staged data,
- Running staging data and submission data validation reports,
- Editing parameters for the SSIS packages and then firing them off, and
- Monitoring the EDFacts submission calendar and file creation status.

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

By default, the application comes with the basic .NET security model, but with easy hooks to integrate into an existing Active Directory or other security environment.



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Extraordinary Insight for Support of
 EDFacts Shared State Solution SEA
 Partners

WWW.ES3FACTS.INFO

ESP Offers ETL and Implementation Services

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 is also a service provided by ESP.

The design of the EDFacts Shared State Solution is based entirely 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 a service option provides both the risk mitigation and the support alternative when local staffing needs assistance.

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

Visualizations Planned for ES3 Users: 5-Year Analytics

Imagine handing a program office a 5-year trend report (AKA visualization) as soon as your current EDFacts submission file is ready. ESP is in the development phase now for a set of Tableau-based reports for ES3 users. The first round of reports will access the five most recent submission cycles. SEAs will be able to run the reports as soon as their newest submission file is ready and can distribute them to program offices for review or even out to schools and districts under the license ESP has purchased from Tableau.

Dr. Evangelina Mangino is working with Greg Palmer to create the reports across the appropriate sub-

mission files and expanding significantly upon the reports in the EDFacts Reporting System. That system is limited in the number of past years reported and in how timely the data are available for display. The ES3 reports will be at your fingertips as soon as your submission file is ready.

The future holds an intriguing enhancement. ESP envisions expanding these reports to access the data within the staging databases (unit and aggregate) within ES3. This would allow analytics at the individual student and teacher levels for SEAs who import their data with that granularity.

There has not been a timetable set for beta-testing ES3 visualizations. However, because every SEA has the identical, verified formats for their submission files going back five cycles, the time and effort to implement the reports will be minimum.

Mangino and Palmer will be contacting ES3 partners in the near future to discuss the use of these visualizations. The current plan is for the Tableau reports to be made available under ESP's license to all ES3 partners with a maintenance agreement with ESP. Other SEAs will be offered them at a fee that will help fund future enhancements and support for everyone.