ED*Facts* Shared State Solution Proposal

Prepared for State Department of Education

October 7, 2019

ESP Solutions Group

Table of Contents

1   Introduction

ESP Solutions Group is pleased to provide this proposal to the State Department of Education for the ED*Facts* Shared State Solution (ES3).

The core U.S. Education Department (USED) data reporting mandate for each state education agency (SEA) is called ED*Facts*. ED*Facts* collects data across all federal education programs gathering aggregate state totals, as well as district-level and school-level counts. The state departments of education must compile data for over 80 submission files on an annual basis. Each state initially put together a unique state process for generating the required submissions.

ES3 is a collaborative cross-state solution designed to maximize shared components, reduce duplicate effort, and yet still accommodate unique SEA configurations and adaptability.

ES3 includes:
1. A set of SQL Server submission tables formatted in the ED*Facts* submission file specification,
2. A set of SQL Server Integration Services (SSIS) extract-transform-load (ETL) processes to create submission files from the ED*Facts* submission tables,
3. A set of standardized SQL Server staging tables for (a) unit records and/or (b) aggregate staging records, aligned with the Common Education Data Standards (CEDS) to the maximum degree possible,
4. 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,
5. 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,
6. All ETL processes with full audit logging and email notification,
7. A centralized web front-end for triggering the ETL and accessing validation and management reports, and
8. Customized ETL to load the staging tables from the SEA's existing data sources.
9. A set of longitudinal dashboards to provide decision support as soon as submission files are ready.
10. Consolidated State Performance Report (CSPR) I and II reporting functionality.

The content for the top seven bullets is common for all SEAs. The ED*Facts* Shared State Solution means this common content does not need to be developed 59 times for the states and extra-state jurisdictions.

Bullet number 8, customized ETL from SEA data sources to ES3 staging databases, is unique to each agency. For an SEA, the ETL will be built from your existing authoritative data sources to the up-to-date cycle of ED*Facts* specifications beginning with the current annual cycle of submissions. To be ready for this cycle, the most recent Directory and Membership counts will be processed by ES3 or replicated from the SEA submissions.

Bullet number 9, Longitudinal Dashboard Visualizations, are a value-add service provided only by ESP.

The first SEAs to contribute code to the components of the ED*Facts* Shared State Solution were Idaho and Missouri. South Dakota and Wyoming are also currently fully implementing ES3. Others for whom ESP has prepared data for submission have added concepts to the architecture or have used the open-source solution. (e.g., Delaware, Tennessee, North Carolina, Louisiana, New Hampshire, District of Columbia, and Georgia). As other SEA partners use ES3, their contributions will enhance the solution, especially in the area of reports.

From this core, ESP has committed to be managing partner for all states joining an SEA Partner Association to share the maintenance of requirements, business rules, and the data model. ESP will manage documentation and sharing of enhancements such as reports.

Because the solution is founded on these multiple SEAs' ideas and processes, ES3 is portable across agencies and is provided with a no-fee license. This proposal provides for the initial documentation of data sources, ETL into ES3, and production of one annual cycle of submission files. In future years, an SEA may choose to maintain the ETL or contract for services for assistance. The SEA may choose to maintain the data model and data mart tables to be up-to-date with USED's ED*Facts* specifications. Alternatively, the SEA may contract for those services through the Maintenance and Support Agreement and join the Partner Association to receive those updates.

2   The Evolution of the ED*Facts* Shared State Solution

The U.S. Department of Education revolutionized state-to-federal reporting with the ED*Facts* system. Every state is mandated to submit data in the same format. Most of the core processes are duplicated within every SEA. Many SEAs have looked across their borders over the years and wondered how many of their processes and software applications they could share. However, their time and resources were concentrated on meeting the ED*Facts* requirements and deadlines and not on software product development.
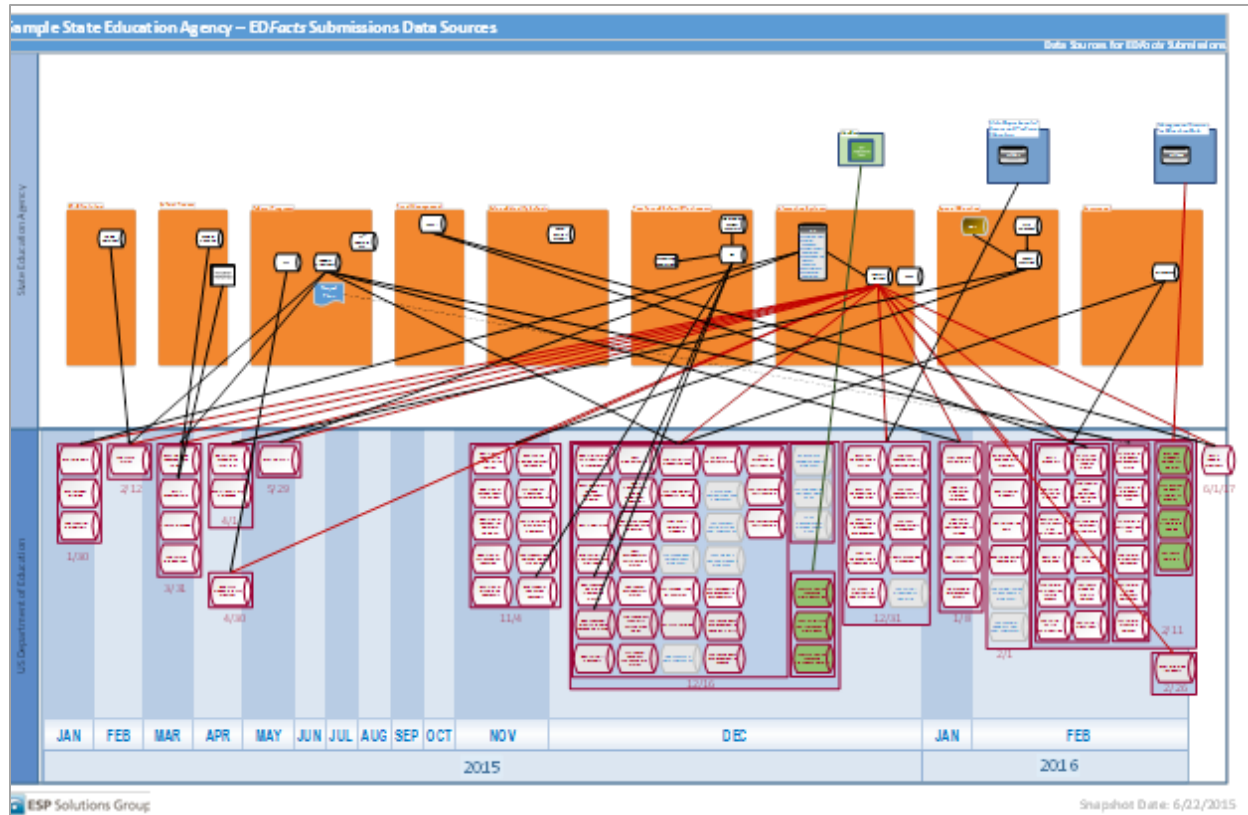
What has changed?

- Microsoft tools eventually became more common, standardized, affordable, and easy to use.

- SEAs learned enough about the ED*Facts* processes to pinpoint where the commonalities are and where the uniqueness of each SEA remains.

- ESP accumulated experience with 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 became viable as enough states adopted a common architecture.

What are the common components of ES3?

- Two Staging Databases (allowing the SEA to ETL and process unit and/or aggregate records 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)

- An ES3 Web Management System Application (allowing the ED*Facts* coordinator, and designated program office staff, the capability of managing the system from a browser)

Unique to every SEA is the ETL into the staging databases from the data sources. For the SEA, we propose that the data sources be documented during an initial task using ESP's IS*Insight*™ process and DataSpecs® metadata dictionary tool.

The IS*Insight*™ ED*Facts* diagram shown below helps identify the data systems that are the authoritative source for ED*Facts* submission files. This diagram also helps identify the submission dates in which staff and data systems will be engaged.

Sample State Education Agency – EDFacts Submissions Data Sources — Data Sources for EDFacts Submissions

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB

2015 — 2016

ESP Solutions Group — Snapshot Date: 6/22/2015

The diagram shows that the ED*Facts* Coordinator for an SEA runs on adrenaline from November through February. That's when the majority of the approximately 80 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 State Information Support System (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 to ensure data quality

- Providing longitudinal analytics and reports to support decision making

- Creating a comprehensive training program for ED*Facts* data stewards and providers

- Providing timely access and availability to graphical representations of the ED*Facts* data

The ED*Facts* Coordinator has a difficult job, thus the last four bullet points have become the roadmap for ES3 and the Partner Association.

3   Proposed Work

Definition of Terms:

- Core Product: Code that creates the staging databases and submission files; maintained by ESP under the Software License Agreement and the Support and Maintenance Agreement
- System and Feature Upgrades: Functions added after an SEA signs its Software License Agreement
- Partner Association: Group of SEAs signing Support and Maintenance Agreements and sharing system and feature upgrades
- Technical Support: Development consulting specific to an individual SEA's needs
- Product Enhancements: System and feature upgrades
- Defect Fixes: Core product code corrections
- New Feature Request: System and feature request by an SEA beyond a defect fix
- Configuration Services: Installing ES3 into an SEA's technical environment
- Technical Environment: The local IT environment at an SEA
- Implementation Services: Tasks including configuration, ETL, and consulting related to the initial annual cycle of ES3 for an SEA
- New or Changed ED*Facts* Data Sources: Source data that require modifications to existing ETL or new ETL. The modifications or new ETL may be either a consequence of new ED*Facts* submissions or changes to submissions, or a consequence of changes in local SEA data sources.
- Managing Partner: ESP
- Annual Cycle of Submission Files: Defined by USED as one school year of submission files
- Local ETL Process: Moving source data from SEA locations into ES3 staging databases

3.1   Overview

ESP Solutions Group will provide the State Department of Education a comprehensive process for satisfying the requirements of the USED for ED*Facts* reporting. ED*Facts* reporting is not a single event, but a continual process throughout an annual cycle. The USED continues to enhance the requirements and business rules for this reporting. Therefore, this proposal is to establish a process for SEA to extract the source data (either unit records or aggregate statistics) from the local sources, transform those data as required into the data elements appropriate to each ED*Facts* specification, and load them into compliant submission files for the SEA to upload.

The major hurdle for SEAs is that USED changes their requirements for both content and format each cycle. Therefore, this proposal is to establish for the SEA the capacity to gather and stage all the required data, then to access from ESP (the ES3 Partner Association) on an on-going basis the updated specifications, submission file formats, and business rules. If the SEA chooses to maintain these formats and business rules internally, there will be no on-going support and maintenance fees.

A major advantage for ES3 partners will occur as USED implements changes from the Every Student Succeeds Act (ESSA). These changes will be incorporated by ESP into the core ES3 product and the partners will all be part of the vetting process. Having multiple states working together with each other as the changes are implemented will be a tremendous savings in time and effort for everyone.

ESP has worked with many SEAs in the design of their ED*Facts* reporting process. We have worked directly with some to submit their data, then transitioned the process to internal resources.

3.1.1 Process Flow

Most state ED*Facts* coordinators have assembled a set of scripts or routines they can run to:

1) Read in source data,
2) Transform the data into the ED*Facts* format, and
3) Create the submission files.

In most cases, the interim steps are not maintained, nor is the processing logged or a notification system put into place. This was reasonable when the process was needed only once a year, and a single individual in the state needed to understand how it works.

These custom scripts are often documented well enough for the current ED*Facts* Coordinator, but not well enough for others coming in behind them. ESP site visits have uncovered multiple instances where new ED*Facts* Coordinators are building new processes and management systems because they could not understand or follow the ones they inherited.

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

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. The solution uses the standard tools in the Microsoft SQL Server development stack. The entire development and operational process is well documented.

The approach proposed by ESP will provide the following.

> ***High-level view based upon best practice:*** A persistent data store—a data "mart" -- will be built internally to create a persistent repository both to generate reports for data providers to verify their files and to document SEA's submissions to ED*Facts*.
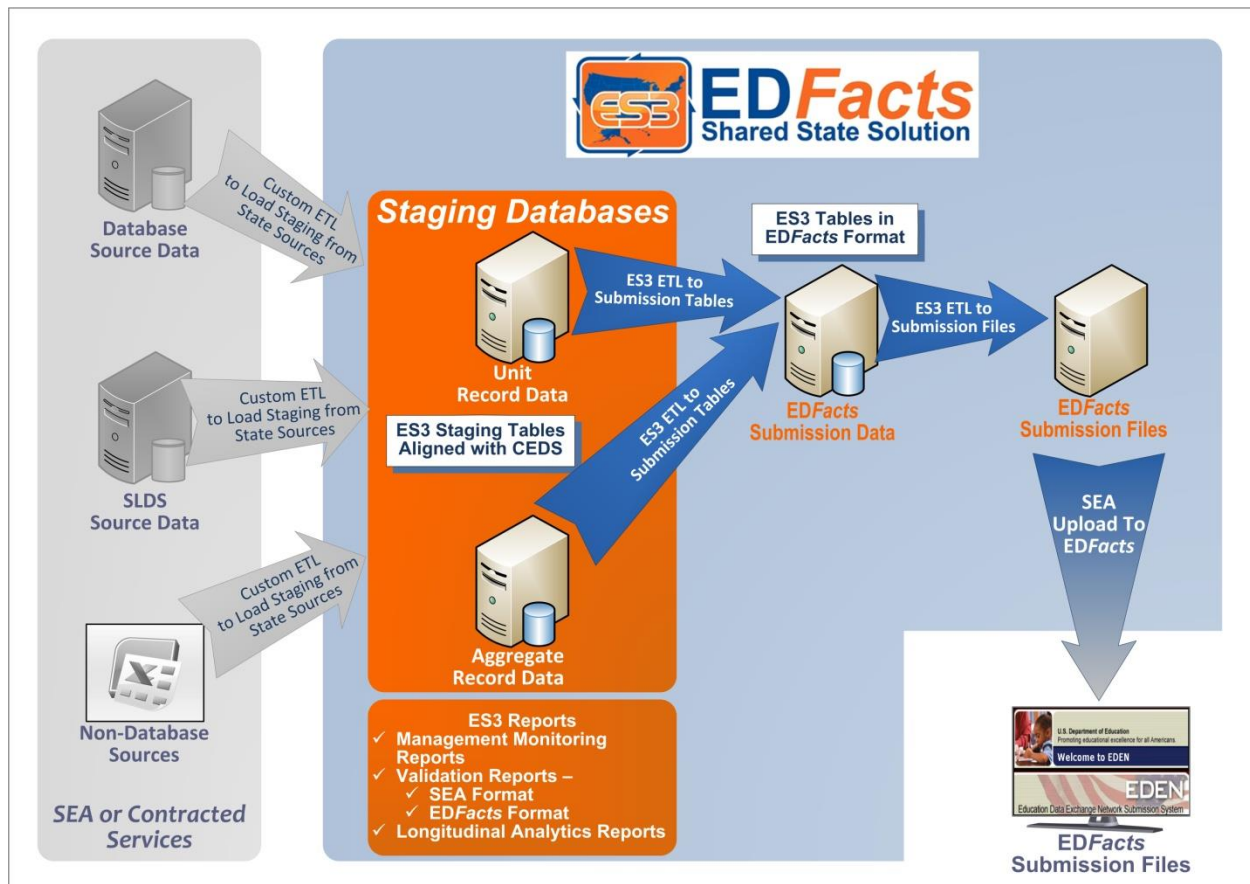
This figure describes the standard process for ES3. For additional information, please visit www.ES3facts.info.

Data sources would be brought into the Staging Databases using SQL Server Integration Services. Two options are available for loading the required ED*Facts* data into their respective tables within the Staging Databases.

1. **Initial ETL into Staging Database Tables:** In some cases, the data for the ED*Facts* submission will come from unit record data that have been loaded into SEA's data warehouse. (We are using data warehouse to represent a central data store.) SSIS brings in the source data; stores them in Staging Database tables as desired by SEA. The SSIS ETL process then transforms the data as specified by ED*Facts* into required statistics/elements and stores them in the appropriate ED*Facts* file table.

2. **Direct ETL into ED*Facts* User Schema:** In limited cases, ED*Facts* gathers data on small programs or in small files where the source data may not be in the data warehouse as unit records (these should go down in number over time). In these cases, the ED*Facts* table will be loaded directly from SEA's raw data formats via scripts or SSIS. The process transforms them as specified by ED*Facts* into required statistics/elements and stores them in user schema.

When submission to ED*Facts* is required, SSIS would be used to create the required ED*Facts* packages in tab-delimited format.

DataSpecs®, one of ESP Solution Group's core services, is a metadata inventory tool that is used to improve the overall quality of an organization's data. It is used to increase proper interpretation and use of data, the availability of data to decision makers in a timely manner and usable format, and to enhance the value of longitudinal information systems by ensuring that they are sustainable and extensible. DataSpecs® helps manage an education agency's data through defining their collections (data coming into your agency), repositories (where the data are stored in the agency), and outputs and reports (data leaving the agency).

DataSpecs® is not required to implement the ED*Facts* Shared State Solution; however, the use of DataSpecs® provides a means for the automation of the complete ED*Facts* reporting process. Because DataSpecs® is maintained with the current ED*Facts* submission files and data elements, ESP will map the SEA's available data elements to those required by ED*Facts* in the annual cycle. DataSpecs® has a standard report, the ED*Facts* Map and Gap Report, which will be generated to meet the ED*Facts* requirements.

The SEA's DataSpecs® metadata dictionary will ensure that all data elements required for Federal reporting using the ES3 reporting system are identified and defined in the SEA's Data Dictionary. The ED*Facts* Map and Gap Report will identify any missing data elements that must be collected and added to the Data Warehouse. ESP's staff is expert in the requirements for ED*Facts* from having assisted USED in establishing the data standards for ED*Facts*, built and run the ED*Facts* submission systems for several of the top-performing SEAs, and being under contract to USED to provide technical assistance to SEAs to improve the quality of their ED*Facts* data. This involvement will ensure that the SEA's process is up-to-date with current requirements.

Below is an example of the use of Visual Studio to document and monitor the processes of ES3.
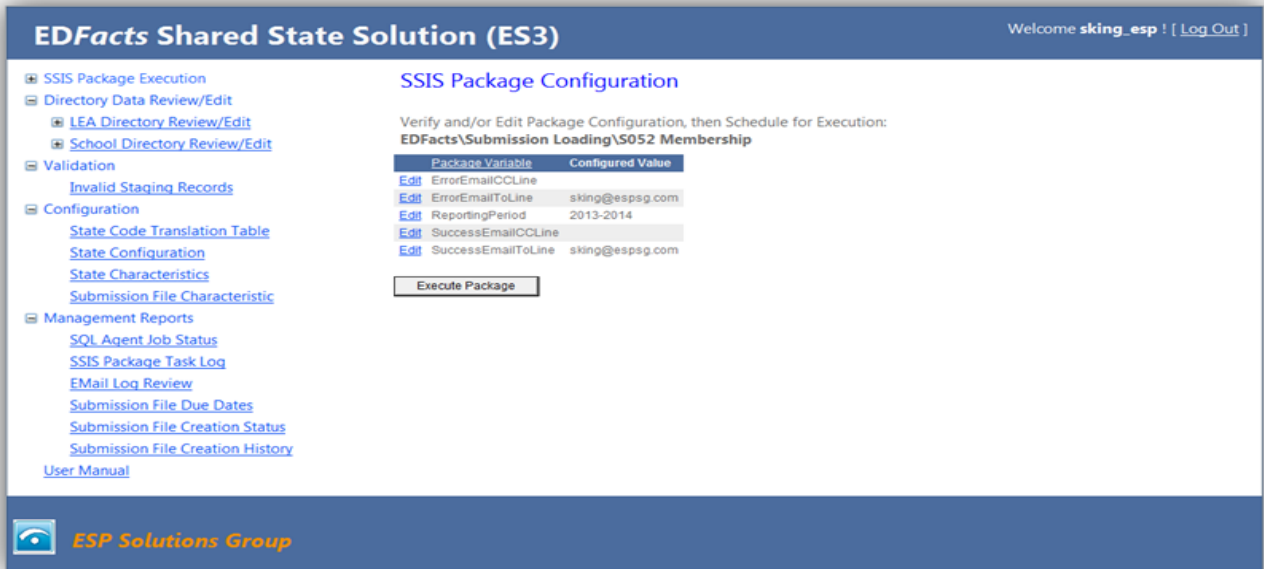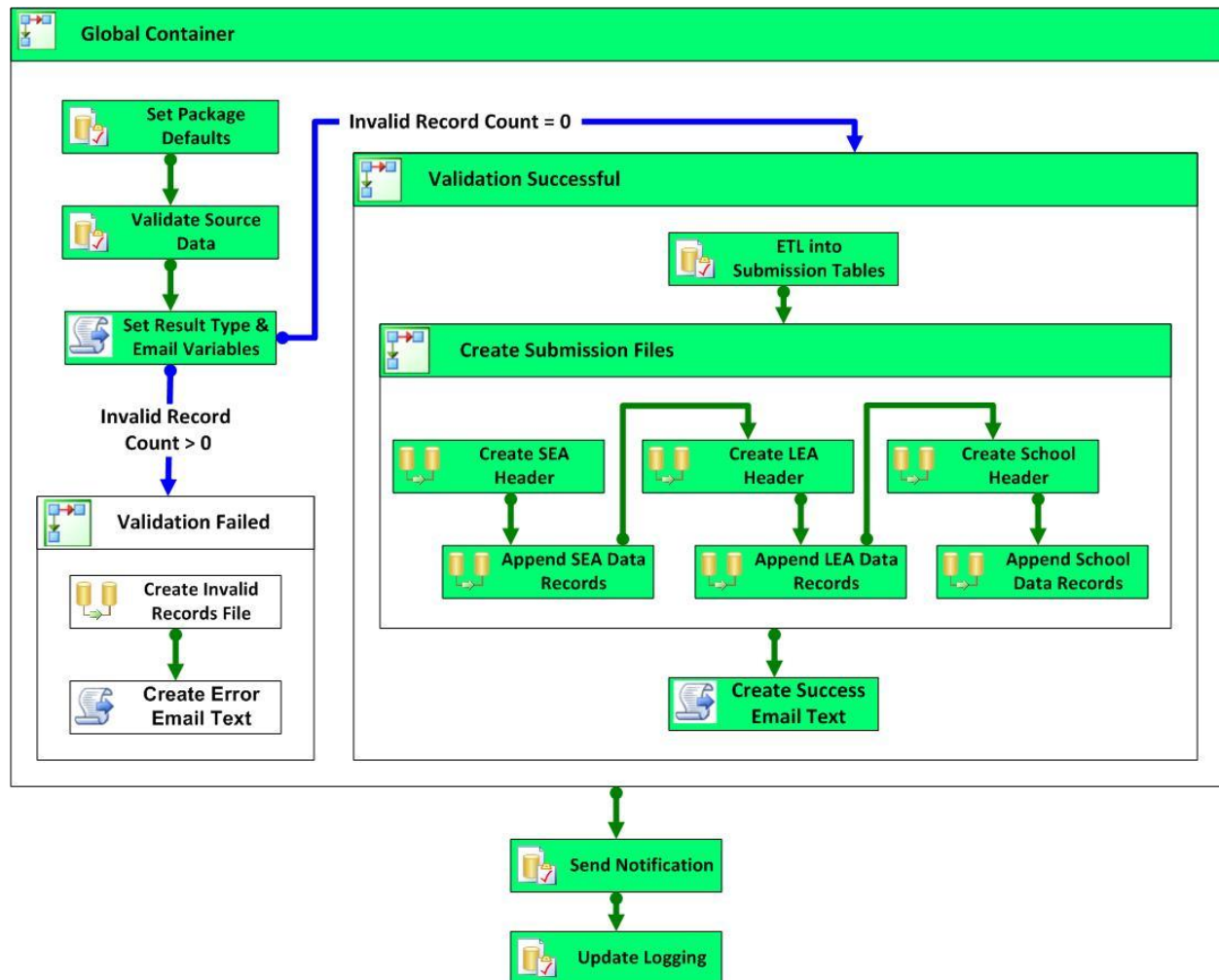

Originally, ES3 used Visual Studio and/or SQL Server Management studio to trigger the Integration Services packages. To alleviate the need for ED*Facts* coordinators to learn these power applications, or the state IT staff to be nervous about security issues around them, ESP designed a web front end. Built using standard .NET and ASPX tools, the web application gives an authenticated ED*Facts* 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 ED*Facts* 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 ED*Facts* Coordinator to focus on managing the ED*Facts* 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.

Steps for a Successful Completion and Documentation of ED*Facts* Submission Files

Step	Approach
1. Document Current Authoritative Sources (Month One)	ESP will review the current status of submissions and the processes used. ESP will create an IS*Insight*™ diagram to document the current sources of data for ED*Facts*. Through interviews and review of documentation, the flow of these data will be captured in the Visio diagram with annotations.
2. Document Evolving Authoritative Sources (ONGOING)	Over time, the sources will continually change. ESP and the SEA will use DataSpecs® to document those changes and when they replace current sources. ESP will work with the SEA and their departmental staff to identify the content and submission files that will be scheduled for completion during the annual cycle. USED will be notified in the SEA's annual plan.
3. Maintain Current Requirements (ONGOING)	ESP will monitor and incorporate changes to the ED*Facts* specifications as they are proposed and adopted for the annual cycle.
4. Extract and Load Source Data into ES3 (Begins as soon as the sources are identified and follows the periodicity of the associated data collections)	ESP will integrate the scheduling of ETL with the authoritative data sources for extant and additional data elements. ESP will work with the SEA to ensure all required source data are extracted and compiled. Then ESP will review the completeness and quality of these data. (ESP understands that not all the data specified for ED*Facts* will be available or cleared for reporting to USED.)
5. Transform Data to ED*Facts* Standards (Begins immediately upon moving of data to the ES3 Data Mart)	ESP will create the ETL scripts to move the source data from the sources into the ES3 Data Mart. Rules, calculations, code crosswalks, and other processes will be applied as appropriate. These maps and code will be owned by the SEA and are maintainable by internal staff in the future.
6. Clean Data (ONGOING)	ESP will assist the SEA in the process of understanding ED*Facts* edit reports in order to clean data for re-submission. The cleaning and submission/resubmission process is the responsibility of the SEA.
7 Install and configure ES3 Web Management Application	ESP will work with the SEA to install and configure the ES3 Web Management Application on the SEA's Intranet web server. This .Net application provides management tools via a web browser to designated staff.
8 Complete One Annual Cycle (begins on the date work begins on the first uploaded submission file)	ESP will work with the SEA to complete the submissions during a 12-month cycle.
9. Train SEA Staff	During the one-year cycle, ESP will train designated departmental staff on the processes for ETL.
10. Transition Processes to the SEA (during the final two months of the annual cycle)	ESP will implement a transition plan to ensure that knowledge transfer occurs from ESP to SEA's designated staff.
11. Maintain the Submission File Standard (begins at the start of the second annual cycle)	SEA may choose to maintain the submission file requirements internally or to engage ESP to do so.

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 to changing standards and requirements?

For the ED*Facts* Shared State Solution, ESP became the natural managing partner for the SEA Partner Association. ESP has a deep understanding of ED*Facts* 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 ED*Facts*.

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

Partner Association membership provides an SEA with 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.

3.2   Scope of Work:

The following table illustrates the tasks, milestones, and estimated completion dates that occur in the first year of an ES3 Project. ESP estimates approximately 12-18 months to complete the first reporting cycle of a standard ES3 implementation.

Task	Description	Date
Sample Timetable and Deliverables
1	**System Hardware and Software Acquisition and Configuration**	1-Apr
	ESP will work with State IT staff to acquire the necessary environment for the system. System components include an SQL Server ED*Facts* database with Integration Services, reporting services. The system can be accessed from a web application running on a state web server. ESP staff needs access to a development environment within SEA's intranet with access to the various SEA source systems.	
2	**Document Current Authoritative Sources**	1-May
	ESP will review the current status of submissions and the processes used. ESP will create an IS*Insight*™ diagram to document the current sources of data for ED*Facts*. Through interviews and review of documentation, the flow of these data will be captured in the Visio diagram with annotations.	
3	**Document Source Details in DataSpecs**	1-Oct
	ESP will work with the SEA and IT staff to document the details about the field contents of the data sources identified in the step above. ESP will document these details in SEA's copy of DataSpecs®.	
4	**Load Directory and Other Background Data**	1-May
	There are files and data that the SEA has already reported to ED via ED*Facts* that are required for future submissions, specifically education directory, student membership, and staff records. ESP will use these submission files to backfill the ES3. ESP will also work SEA staff to populate ES3 configuration files, such as the state code translation tables.	
5	**ED*Facts* File Set Creation – Group 1**	15-Jun
	ESP will work the SEA and IT staff to implement the system to construct the ED*Facts* files due through mid-December. The source data to be used to generate submission files has to be electronically available to ES3.	
6	**ED*Facts* Dashboards and Analytics**	1-Jul
	ESP will establish secure access to the Dashboards and Analytics environment for the SEA and assist with the configuration and the initial loading of ED*Facts* historical data.	
7	**ED*Facts* File Set Creation – Group 2**	1-Aug
	ESP will work with the SEA and IT staff to implement the system to construct the ED*Facts* files due through the end of January (approximately 48 file sets).	
8	**ED*Facts* File Set Creation – Group 3**	1-Dec
	ESP will work with the SEA and IT staff to implement the system to construct the ED*Facts* files due through June 1st (approximately 13 file sets).	
9	**Systems Operations Training**	30-Jun
	ESP will train SEA staff on the task required for system design, development processes, and system operation.	

This includes work to:
- Document the SEA's data sources for the required ED*Facts* submission specifications cycle that coincides with project start.
- Identify the authoritative sources at the SEA, and to document them using IS*Insight* for current and future management.
- Map the sources into the ES3 Data Mart.

- Document the sources, data elements, code sets, and other details in DataSpecs®; and map all elements to the ED*Facts* elements in the specifications for reporting.
- Install the ES3 software at the SEA, test, and certify acceptance.
- Build the ETL from the electronic data sources to the ES3 Data Mart for one annual cycle of ED*Facts* specifications. ("Data source" is defined for mapping and import purposes as the location nearest the ES3 Data Mart.)
- Upload the data during the annual cycle into the ES3 Data Mart from the identified data sources
- Process each specification through to the creation of the submission file (which is uploaded to the ED*Facts* Submission System by the SEA)
- Maintain the ES3 application including the specifications to be current with (USED) requirements and changes; and any updates and reports contributed by the ES3 partners to the ES3 Partner Association.
- Provide on-going ETL services at the hourly rate as called upon.

ESP will pursue all options to complete this project ahead of schedule. Payments of invoices will be based upon ESP's meeting the stated deadlines for deliverables and upon the SEA's acceptance of the proposed deliverables.

Because ES3 is a collaborative solution jointly developed by ESP and the partner states, there is no on-going license fee.

There is an optional annual maintenance fee. The maintenance fee covers system expansion, updates to the core product to meet federal ED*Facts* requirement changes, and implementation of improvements developed in other states and by ESP.

3.3   ESP Expectations of the State

ESP will rely upon the SEA to provide assistance with contact information, review of milestones as they are completed, and general responsiveness to project needs and questions as they arise.

In addition, ESP expects that the SEA will provide the hardware and software to host the solution. The software consists of the standard Microsoft SQL Server stack with Integration Services and Reporting Services.

SEA resources will be able to manage and interact with the ES3 Solution via an ASP.NET web application to be installed on a state webserver behind the state firewall.

ESP employees will need a development environment within the state network. ESP can use whatever VPN and remote access solution the state wishes to provide. The development environment will need access to ESP's Team Foundation Server over port 80.

SEA staff will need to review the files generated by the solution and submit them to the ED*Facts* submission system. These staff will need to share USED feedback with ESP regarding issues and potential system improvements.

ESP appreciates any input and/or critiques and will work closely with the primary point of contact to ensure all goals and requirements of this project are met.

3.4   ED*Facts* Shared State Solution Contract Terms and Conditions

This section describes the terms that guide the relationship between the SEA and ESP in the implementation, continued development, use, support, and maintenance of ES3. These terms would be in support of a master contract for ES3 services between ESP and SEA. Should any conflicts arise, the order of precedence for resolution would be as follows.

1. The Master Contract
2. The ES3 Software License
3. These ED*Facts* Shared State Solution Contract Terms and Conditions

Definitions

Cycle 1: A one-year reporting cycle for ED*Facts* from the beginning date of the master contract

Cycle 2: The one-year reporting cycle beginning at the end of Cycle 1

Partner Association: The collective group of ES3 users who contract with ESP for maintenance services, support, and updates to the staging database and submission files (There may or may not be a formal Partner Association charter or affiliation at the time of SEA's master contract.)

Source Data: The file from which data will be accessed for ETL into the ES3 staging database

Submission File: The file sent from the SEA to the ED*Facts* system

ETL: The process of extracting, transforming, and loading data from the data source into the ES3 staging database

ESP Deliverables and SEA Tasks
1. ESP will provide the documentation for installing the ES3 application in the SEA's environment.
2. The SEA will acquire and install the required hardware and software licenses.
3. ESP will install these ES3 components remotely or guide the SEA's IT staff through the process.
    a. A user interface to manage the processes
    b. Two staging databases in SQL Server allowing the SEA to ETL and process either unit or aggregate records and to transform unit records to aggregate records for submission
    c. Reporting feedback using SSRS
    d. ED*Facts* submission data store, which creates a longitudinal data store for verification and analytics
    e. ED*Facts* data submission file engine, which creates ED*Facts* -compliant files for uploading
4. The SEA will provide this information for each data source identified in Attachment A.
    a. The data provider/steward and contact information
    b. The name, type, and format of the data file
    c. The location of the data file and the process for ESP to access the file
5. The SEA will provide ESP a file containing the source data for each ED*Facts* submission file.
    a. Consolidated into a single file for the sources defined and listed in Attachment A
    b. Complete as of the designated as-of-dates for each file in Attachment A
6. The SEA will clean the file based upon this edit feedback.
    a. ESP feedback
    b. ED*Facts* submission process edit reports
7. In Cycle 1, ESP will perform these tasks.
    a. Build the ETL script from the source file to the staging database
    b. Import the source data
    c. Create the submission file
    d. Document whether ETL was completed for each source-data in Cycle 1
8. In Cycle 1, the SEA will perform these tasks.
    a. Provide the source files with documentation
    b. Submit the final submission files to ED*Facts*
    c. Perform editing of the data for resubmission and final acceptance by ED*Facts*
    d. Pay ESP upon these milestones
        i. Installation of the ES3 application

      ii. Completion of Attachment A and initial collection of source data documentation for the first month's submission files

      iii. Agreed upon interim milestones

      iv. The end of Cycle 1

      v. The beginning of Cycle 2

9. At the end of Cycle 1, the SEA will pay ESP for the remainder of the ETL contract, and ESP will complete any data sources not done in Cycle 1 during Cycle 2.

10. At the end of Cycle 1, the SEA will determine whether initiate the Maintenance and Support License and to join the ES3 Partner Association or to begin performing updates of the ES3 software.

11. At the end of Cycle 1, the SEA will determine whether to begin maintenance of the ETL for all completed sources or to contract with ESP for those services.

12. As modifications to current submissions or new submissions are released from USED, the SEA will determine whether to build the ETL for them and to begin maintenance of the ETL, or to contract with ESP for those services.

13. In Cycle 2, ESP will perform these tasks.

    a. For those not completed in Cycle 1, the SEA will provide ESP a list of source files they require to be loaded in Cycle 2.

    b. For those required to be loaded in Cycle 2, ESP will build the ETL script from the source file to the staging database(s).

    c. For those required to be loaded in Cycle 2, ESP will import the source data.

    d. For those required to be loaded in Cycle 2, ESP will create the submission file.

    e. ESP will document which source data ETL was completed in Cycle 2.

      i. Source data ETL not completed in Cycle 2 will become the responsibility of SEA.

      ii. Sources that change or require updates to their ETL after ESP has created and completed the initial ETL process will be the responsibility of the SEA unless contracted to ESP.

    f. If the SEA is a Partner Association member, ESP will update submission file formats.

    g. If the SEA is a Partner Association member, ESP will update the staging database tables.

    h. If the SEA contracts with ESP at an hourly rate, ESP will:

      i. Build new ETL for <u>new</u> sources resulting from changes initiated by the SEA or required by new or modified specifications from USED;

      ii. Update ETL for <u>changed</u> sources resulting from changes initiated by the SEA or required by new or modified specifications from USED;

      iii. Work with the SEA for knowledge transfer, training, or assistance with ETL; and

      iv. Work with a contractor for knowledge transfer, training, or assistance with ETL.

The Software License Agreement

The SEA is granted a nonexclusive license as shown in Attachment B. The License Agreement will be signed at the time of the initial contract for implementation services with ESP. The Support and Maintenance Agreement is included as Exhibit A to the License Agreement. The Support and Maintenance Agreement is the SEA's membership in the Partner Association and provides ESP's services beginning in year two.

4   Company Information and Qualifications

4.1   Company Experience – ESP Solutions Group, Inc.

ESP Solutions Group (ESP) (www.espsolutionsgroup.com) is a P20W data consulting and technology firm specializing in education data systems and analytics. Since 1993, we have provided innovative leadership and insight into the most challenging education information technology projects. Our team is comprised of education experts who pioneered the concept of "data-driven decision making" (D3M) and now help optimize the management of our client education agencies' local, state, and federal information. ESP is exclusively focused on P20W education. This is not a sideline business for our firm. We believe in what we do. We are former teachers, administrators, and district and state education agency personnel. ESP has a comprehensive view of the current state and future potential of the entire P20W data ecosystem. We understand how campus, district, state, and federal education technologies are related. ESP is focused on providing education agencies with expert services in the design of information systems in support of data-driven decision making.

ESP designs into each information system and data exchange project protections of personally identifiable information. As a signatory of the Student Privacy Pledge, ESP ensures that not only their systems but their clients' are compliant with FERPA, state laws, and best practices.

De-Identification was the topic of one of ESP's Twiminars (http://p20wforum.info/twitter-seminars/esptwiminars-de-identification/) with the white paper, Demystifying De-Identification (http://p20wforum.info/wp-content/uploads/2015/06/De-Mystifying-De-Identification-White-Paper-6-30-15.pdf) published at the conclusion.

ESP recently consulted with the State of Utah on their 2016 student privacy legislation HB358. ESP's data governance consulting has helped develop plans, including privacy policies, for several state education agencies and districts.

Our early statewide systems integration projects were individual identifier systems, including statewide SIF student locator systems. ESP implemented the first statewide SIF data collection, built the National Transcript Center (sold to Pearson and now owned by National Student Clearinghouse), and currently operates nine statewide data collection systems. In all, we have implemented more than two dozen statewide information system projects. Our content experts have occupied leadership positions in education standards organizations such as the Schools Interoperability Framework (SIF), the Postsecondary Electronic Standards Council (PESC), the National Center for Education Statistics' National Forum on Education Statistics, as well as in professional organizations such as the American Educational Research Association. ESP personnel have advised local school districts, all 52 state education agencies and the extraterritorial jurisdictions, and the U.S. Department of Education on the practice of PK-12 school data management.

We are nationally recognized as leading experts in understanding the data and technology implications of the No Child Left Behind Act (NCLB), the recent Every Student Succeeds Act

(ESSA), ED*Facts*, Schools Interoperability Framework (SIF), and Ed-Fi. We have also focused on the need for and requirements to implement P20W education data systems. ESP's experience with best practices for designing, building, and managing education data systems was a significant factor in our winning, along with our partner AEM Corporation, the U.S. Department of Education's five-year contract for State Education Information Support Services (ED-PEP-10-R-0058) to provide technical assistance to all states in support of their longitudinal data systems for the improvement of ED*Facts* federal reporting. ED*Facts* is a particular area of expertise for ESP. We have assisted numerous states directly in the preparation and submission of their ED*Facts* data to USED's ED*Facts* system. From this experience, ESP has led the effort to create the ED*Facts* Shared State Solution (ES3) for partnering states to leverage jointly developed applications to increase efficiency, productivity, and data quality.

We are focused on delivering quality data into the hands of decision makers. We provide consulting services for information systems architecture planning and large-scale implementations. We also develop products and services for improved quality, collection, confidentiality, recovery, accessibility, and state and federal reporting. Our collective expertise is represented in our Optimal Reference Guides and Books. Recent timely topics such as growth models and action reports have joined our traditional papers on data warehouses and project management, and balance the thought-provoking "Reinventing Data Standards...Again, " "Data-Driven Decision Making 2016," "FERPA: Catch 1 through 22," and "Why Eva Baker Doesn't Seem to Understand Accountability." For our complete library of Optimal Reference Guides, Optimal Reference Books, and other education related resources, please visit http://www.espsolutionsgroup.com/espweb/library.html.

The ESP team has historical and deep understanding of both the technical maturation and evolving usage of longitudinal data systems in P20W. Our diverse clients have provided us a rich opportunity for hands-on work experience with a full range of data sources. Our ESP team has personally visited every state education agency multiple times. We have executed contracts in almost every state to gain a broader appreciation for the diversity and necessity to customize a solution to each environment and requirements set. We currently have active contracts with 14 state education agencies. We have been the prime contractor and project manager for five statewide student identifier implementations, two with the use of a SIF student locator framework. Another distinguishing expertise ESP offers is our depth of experience in specifying requirements for data systems. The Montana Office of Public Instruction, Texas Education Service Center Region 10 (737,000 students, 80 districts), Natrona Public Schools, Idaho Department of Education, Missouri Department of Elementary and Secondary Education, and the Alaska Department of Education and Early Development all have longitudinal data systems with which ESP experts have partnered significantly in the development of requirements.

ESP's State Report Manager™ (SRM) software collects teacher/student/class data for four states and was selected to ensure data quality in the ETL process for Tennessee's Race to the Top Project. SRM has been used by the Wyoming Department of Education since 2005 to

collect data from school districts, as well as by the Missouri Department of Elementary and Secondary Education, the Alaska Department of Education and Early Development, the Idaho Department of Education, and the Arizona Department of Education. SRM's companion product, VRF (Vertical Report Framework), manages ESP's state reporting contracts in three states: Connecticut, Ohio, and Utah.

DataSpecs®, ESP's premiere metadata management product that also creates and maintains statewide course numbering systems (CourseWalk™), is in production in about a dozen states, including Alaska, Idaho, Pennsylvania, Montana, Oklahoma, Colorado, and Wyoming. CourseWalk has been used in Wyoming, Arizona, and Alaska. No other company has developed a comparable product, particularly with the capability to manage statewide course numbering systems. These products and our content experts' involvement with the continuing development of national standards for education data and interoperability keep ESP at the forefront of this fast-paced industry.

Visit Us on the Web:

www.espsolutionsgroup.com

www.ES3Facts.com

www.DataSpecsCentral.com

www.espStateReporting.info

www.EDTECHdocs.info

www.ARNIEdocs.com

Twitter: @espsg

Facebook: facebook.com/espsolutionsgroup

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

4.2 References

Missouri Department of Elementary and Secondary Education (DESE)	
Contact Name:	Kim Oligschlaeger
Project Name:	Missouri ES3, MOSIS SRM, and Missouri Comprehensive Data System (MCDS)
Contact Address:	205 Jefferson Street, Jefferson City, MO, 65101
Contact Phone Number:	(573) 751-3543
Contact Email Address:	kim.oligschlaeger@dese.mo.gov
Start Date of Engagement:	September 2006 (MOSIS SRM), February 2011 (MCDS), July 2013 (ES3)
End Date of Engagement:	Current
Approximate Cost of the Project:	$2 million (MOSIS SRM), $2.5 million (MCDS), $100,000 (ES3/EDFacts)
Description of Service(s):	ESP has guided Missouri through the planning, design, and development stages of their state education information system. This process has resulted in the Missouri Department of Elementary and Secondary Education's MOSIS State Report Manager (SRM) data collection system and the Missouri Comprehensive Data System (MCDS) P-20 state longitudinal data system. In 2008, Secretary of Education Margaret Spellings stated, "Missouri is helping raise the bar by setting high standards and developing a strong data system that honestly and accurately looks at student achievement and helps target federal resources to serve the neediest students." The primary objective of MOSIS from the beginning was to collect data more effectively, efficiently, and in a manner that was optimized for decision-making while meeting mandated reporting requirements. The results of ESP's engagement in Missouri has led to faster turnaround times to collect and certify data for state and Federal reporting and improved data quality and increased reliance on collected data throughout the State. Results: - The creation and maintenance of a new unit level data collection system for Missouri using SRM. - The transformation of collected unit data into aggregate data that seamlessly feeds Missouri's existing data system. - Moved 522 school districts, 35 charter schools and 3 state board operated programs from sending low quality aggregated data to sending high-quality unit level data in which Missouri was able to aggregate into the data needed for reporting. In 2011 ESP was selected to design and develop the Missouri Department of Elementary and Secondary Education's state longitudinal data system known as MCDS. ESP is in the process of implementing Missouri's P-20 the Insight Warehouse data warehouse and reporting system. The project also includes ESP's DataSpecs metadata dictionary and ES3 EDFacts reporting system.

Idaho State Department of Education	
Contact Name:	Todd King
Project Name:	Idaho System for Education Excellence (ISEE)
Contact Address:	650 West State St, PO Box 83720, Boise, ID 83720-0027
Contact Phone Number:	(208)332-6937
Contact Email Address:	tking@sde.idaho.gov
Start Date of Engagement:	June 2008
End Date of Engagement:	Current
Approximate Cost of the Project:	$950,000 (SRM), $100,000 (ES3/ED*Facts*)
Description of Service(s):	ESP conducted a site review and developed a proposed system architecture design for ISDE. ESP wrote Idaho's successful SLDS grant application. ESP developed the design for ISDE's ISEE monthly student, staff, course, discipline, special education and gifted student data collections. ESP continues to maintain and conduct this on-going data collection process. Idaho is also an ES3 partner agency.

Additional references available upon request.

4.3   Resumes of Key Staff

Kathleen Browning

PROFESSIONAL EXPERIENCE
ESP Solutions Group, Inc.
Product Manager (2016 – Present)

Ms. Browning is ESP's foremost expert on product management. Her responsibilities include: project design and direction; data analysis; and strategy for local, state, and federal education agencies. As a Product Manager, she provides leadership and planning direction for projects that include data warehousing, data inventory, Ed-Fi, and data collection and reporting.

Ms. Browning has over 15 years of experience in the Education space; 10 years collecting Texas Education (K-12) data at a state level as well as over 5 years collecting data at the student, school and district level. Worked extensively collecting data from different vendors' Student Information Systems, Staff Information Systems and District Information Systems. Part of the team who trained dozens of administrators, principals and teachers in using the Ed-Fi Student Dashboards.

Ms. Browning serves as the product manager for ESP's DataSpecs® metadata dictionary tool, the ED*Facts* Shared State Solution™, and Ed-Fi implementation. DataSpecs manages an agency data dictionary and links to national standards for content mapping and alignment review, such as the Data Handbooks, SIF, ED*Facts*, and CEDS.   The ED*Facts* Shared State Solution and Ed-Fi Solutions have common tables and routines for generating ED*Facts* submissions from a set of standardized staging tables.

Recent Client Projects
- Product Manager, Delaware Department of Education
  - DataSpecs Data Dictionary Implementation
- Product Manager, Missouri Department of Elementary and Secondary Education
  - ED*Facts* Reporting Project
- Product Manager, South Dakota Department of Education
  - ED*Facts* Automated Reporting System Manager
- Product Manager, U.S. Virgin Islands
  - ED*Facts* Reporting Project
- Product Manager, Wyoming Department of Education
  - Ed-Fi Dashboard Implementation
  - DataSpecs Data Dictionary Implementation
  - ED*Facts* Reporting Project

Double Line Partners (July 2013 – October 2015)
Director, Manager, Project Technical Lead

Oversaw multiple Ed-Fi Dashboard Implementations from initial requirement gathering phase thru production implementation and production support. Led ETL development team to design, code, test and implement quality software. Once in support, focus shifted to triage – assigning and monitoring issues as they arose, working closely with client teams to ensure satisfaction. Worked in collaboration with the Project Manager and Team Lead to support their project resource allocation, timelines, deliverables and budget, for specific projects, and worked with organization leadership to ensure overall strategic objectives in these areas were being met. Identified and communicated technical risks and obstacles for project completion, discussing the risks with other management team members to garner the attention and resources necessary to address any risks. Assisted with story (task) identification, documentation, and progress management. Oversaw development of ETL best practice processes and procedures to make sure the DLP methodology is consistent within the ETL population. Built training

documentation and led onsite knowledge transfer sessions for technical training during transfer of projects from DLP to the client.

Double Line Partners (July 2010 – July 2013):
Senior Systems Engineer

Through the multi-state vendor engagement project, worked with Student Information System (SIS) vendors coordinating and assisting with their submission issues as well as helped them submit valid and accurate data. Led the effort to build internal metadata databases for documenting various data artifacts and the required data elements for populating the Ed-Fi dashboards. As project lead for the Texas Student Data System (TSDS) Limited Production Release (LPR) implementation, performed some of the initial data mapping for the project, then trained and led a team of ETL developers on loading district data and coding dashboards packages for five of the districts that joined the project. Worked closely with the four vendors that participated in the LPR on mapping their student and staff data into the Ed-Fi schema to power dashboards. Served as lead for the multi-year TSDS - LPR Production support phase, supporting district clients on day to day basis on dashboard functionality and ETL issues, developing or modifying SSIS ETL packages and SQL Server database artifacts as needed to refine code base.

Texas Education Agency (Feb 2000 – July 2010):
Senior Software Developer

Led mainframe programming staff on several education data projects at the Texas Education Agency (TEA), including PEIMS Maintenance, PEIMS PID Replication and PEIMS Mainframe Migration. Collected Texas Education data from over 1,200 school districts across the state of Texas. Managed the PEIMS Data collection software releases and production support. This data was collected four times a year: Fall, Mid-Year, Summer and Extended Year. Over a ten-year span, led a small team of developers in the full development life cycle: requirements gathering, estimation, software design and implantation, testing and documentation for all legislative changes. Developed batch aggregation software that powered the PEIMS Maintenance databases which were then utilized by the entire agency. Coordinated with other TEA departments in utilizing the PEIMS data as an integral part of their department's business processes. Vital team member in the architectural redesign of the PEIMS Mainframe Migration project which replaced all PEIMS mainframe Ideal software with Data Stage software. Led the documentation efforts of all existing PEIMS software and the parallel Test Drive methodology efforts to verify all new software produced an exact data replica of the retiring software.

EDUCATION
B.A. in Business Administration – Management Information Systems (Texas A&M University)

PROFESSIONAL TRAINING
Supervisory and Management Skills Administration Division Training for First Line Supervisors
Leadership Development Program, Southwest Texas State University School of Business

TECHNICAL PROFICIENCY
Microsoft SQL Server Integration Services (SSIS), SQL, Altova Mission Kit (XML Spy, XML Mapforce), GitHub, TeamCity Professional (build management), IBM Information Server 8.1, DB2, MSSQL Server, Windows, Ideal (programming language), COBOL and CICS/VS with BMS mapping functions.

PROFESSIONAL EXPERIENCE

ESP Solutions Group, Inc.
Data Analyst (1999 – Present)
Mr. Prather leads ESP's ED*Facts* initiative. He is in charge of the data mapping, data transformations, and reporting for all of ESP ED*Facts* clients. He conducts in-depth analysis of upcoming ED*Facts* system changes and documents the impact to the current data collection requirements. He documents authoritative data sources for all the ED*Facts* submissions. He performs extensive analysis of client's raw data for suitability for ED*Facts* reporting. He documents the data issues and works with the client to ensure a timely resolution. He coordinates with clients to fulfill additional data requests for the Office of Special Education Programs (OSEP), Consolidated State Performance Report (CSPR), and Common Core of Data (CCD) data collection/edits efforts. He also assists clients with various *ad hoc* data request such as Standard and Poor's (S&P).

Mr. Prather works with DataSpecs clients to provide information technology support. He specializes in the areas of data standards, collection, analysis, and on-line access of data for reporting purposes.

Mr. Prather also performs routine maintenance and administration for web servers/software (Windows and LINUX); installs, maintains, and configures server software applications and utilities; provides extensive off-site user support and consulting for supported software; and installs, maintains, and configures in-house PC applications and utilities.

Recent Client Projects
Analyst, North Carolina ED*Facts* Reporting
Analyst, Louisiana ED*Facts* Reporting
Analyst, New Hampshire ED*Facts* Reporting
Analyst, Delaware ED*Facts* Reporting
Analyst, Statewide Tools for Teaching Excellence – documenting Texas school districts' capacity to collect, clean, and provide data required for measuring leading (and lagging) indicators

U.S. Department of Agriculture (USDA) / National Agricultural Statistics Service (NASS) / Federal Supply Service (FSS)
Systems Analyst (1997 – 1999)
Mr. Prather designed, developed, and maintained the NASS Intranet for the U.S. Department of Agriculture. Other responsibilities related to the NASS Intranet included: performing routine maintenance and administration on Intranet servers and software; installing, maintaining, and configuring Intranet-based software applications and utilities; designing and enhancing web graphics used on the Intranet; developing and implementing various Intranet applications such as phone directories, feedback surveys, and glossaries; and he provided Intranet technical support to various organizational units and individuals.

Mr. Prather also provided extensive technical consulting for supported software throughout the agency. He installed, maintained, and configured DOS, Windows 3.1, Windows 95, LINUX, and LAN-based applications and utilities. He designed and maintained databases on Windows (dBASE) and LINUX (MySQL) platforms.

Mr. Prather evaluated and recommended operating systems and software such as; Intranet operating systems (LINUX and AIX); search engines (ht:/Dig); Intranet SQL software (MySQL); and scripting languages (PHP). He coordinated and participated in regional and national training (BLAISE and Dreamweaver).

Systems Support/Junior Network Administrator (1993 – 1997)
Mr. Prather's responsibilities included: providing technical assistance to end-users; installing, configuring, and supporting server and workstation hardware; performing maintenance and administration on a Novell NetWare

network; developing and documenting end-user applications and utilities; conducting end user training on NASS software; evaluating and recommending system changes to in-house systems; and developing and implementing computer programs for trade shows using BORLAND DELPHI.

TECHNICAL PROFICIENCY
Database Environments: Microsoft SQL Server and MYSQL
Programming Languages: FoxPro, ASP, and PHP

EDUCATION
M.Ed. in Agriculture – Southwest Texas State University (1989)
B.S. in Agriculture – Southwest Texas State University (1987)

PROFESSIONAL EXPERIENCE
ESP Solutions Group, Inc.
President and Chief Executive Officer (1993 – Present)

Dr. Ligon is the founder of ESP Solutions Group, Inc., a leading P20W education data management firm. He is responsible for the overall strategic direction and operational performance of the company. He has a comprehensive view of the current state and future potential of the entire P20W data ecosystem. He understands how campus, district, state, and federal education technologies are related; and how state agencies share their data in longitudinal data systems.

His client-facing responsibilities include the executive management of the specification, design, development, and management of longitudinal data systems; although his expertise allows him to become personally involved in these activities whenever possible. Dr. Ligon is professionally trained and experienced in content areas such as psychometrics; value-added methodologies; academic growth models; confidentiality and reliability techniques; and key performance metrics and indicators.   His clients have included the U.S. Department of Education, most state education agencies, Race to the Top partnership state agencies, many local education agencies, and key private companies that serve the education market.

When Dr. Ligon was with the Austin Independent School District, his evaluation team implemented a value-add assessment system in the 70's and 80's; his IT team began delivering electronic student transcripts in the 80's; his assessment team developed local graduation exams in the 80's; and his decision support team reported benchmarked key performance indicators in the 90's. These innovative and leading-edge approaches moved him into leadership positions in regional and national associations; and in 1993 led to his founding of ESP Solutions Group, Inc.

With ESP, Dr. Ligon has worked in the lead of national efforts to standardize data definitions through contracts with the U.S. Department of Education and individual states. ESP's premier metadata dictionary product, DataSpecs®, reflects his vision for documenting an agency's data standards and mapping them to all existing national standards. Dr. Ligon and ESP have worked on the development of all of the national standards (e.g., NCES Handbooks, Schools Interoperability Framework, National Education Data Model, ED*Facts*, Common Education Data Standards, Postsecondary Electronic Standards Council). Using these standards, he and ESP have created enterprise metadata dictionaries for more than 30 states and districts.

A major goal and accomplishment of his in Austin was the reduction of the data collection burden for schools. With ESP, Dr. Ligon worked with his development team and clients to implement fully the concept of a management system for state reporting to improve data quality and cycle time. ESP's product that accomplishes this is State Report Manager™.

Data warehouses, longitudinal data systems, and business intelligence systems have all been specified, designed, and implemented under his executive direction. He is considered a national expert in improving data-driven decision making at the local, state, and national levels. In 2000, Drs. Ligon and Clements conducted a series of activities on best practices for education decision support systems for the Office of the Chief Information Officer of the U.S. Department of Education. Examples of other recent activities include integration of analyses from large-scale databases with graphical web-delivery systems, development of data standards to improve quality within information systems, and consultation with the state education agencies on building longitudinal data systems.

Dr. Ligon envisioned and led the successful development of the National Transcript Center, Incorporated, which was purchased from ESP by Pearson in 2009. NTC created and deployed a methodology and technology for the electronic exchange of education records.

Austin Independent School District
Executive Director, Department of Management Information (1985 – 1993)

Dr. Ligon was responsible for managing the activities of the Department of Management Information. He served on the Superintendent's Cabinet and provided coordination and efficiency among the District's offices, collecting, analyzing, and reporting information. He directed the activities within six major areas: 1) research, evaluation and student testing; 2) student records, eligibility, transfers, and District elections; 3) systems and applications computer programming; 4) computer operations and production; 5) telecommunications for voice, data, and video transmissions; 6) and planning and projections for student enrollment and facility use.

Director, Office of Research and Evaluation (1983 – 1985)
Dr. Ligon was responsible for providing AISD with information for the improvement of instructional programs. He supervised federally and locally funded project evaluations. He prepared, administered, and reviewed various budgets under which the office is funded. He recruited, screened, and hired competent personnel. He supervised all research activities conducted in the District by external agencies. He acted as a general consultant to the AISD staff in all phases of evaluation. He served as official liaison between the public, the media, and the District.

Senior Evaluator (1972 – 1983), Austin I.S.D. and Edgewood I.S.D.
Dr. Ligon evaluated programs such as system-wide testing, compensatory education, the Title VII bilingual program, the ESEA Title VII bilingual project, and the ESEA Title I program

Edgewood I.S.D.
Elementary Remedial Reading Resource Teacher (1969 – 1972)

Mission I.S.D. (Texas)
Grade 4-6 Teacher, Wilson Migrant Elementary School (1969 – 1972)
Adult Basic Education, English for Native Spanish Speakers (1972 – 1972)
Intern, Teacher Corps (1969 – 1971)

EDUCATION
Ph.D. in Educational Psychology – The University of Texas at Austin (1980)
M.A. in Psychology and Education – Texas A & M University (1971)
B.A. in Psychology – Baylor University (1969)

PUBLICATIONS AND PAPERS
Dr. Ligon has written over 30 education technology white papers for ESP Solutions Group, available at www.espsolutionsgroup.com/resources.php. He was also asked to write one of the cornerstone components of the **2005 National Education Technology Plan**, submitted by the U.S. Department of Education, available at http://www.ed.gov/about/offices/list/os/technology/plan/index.html
An extensive list of evaluation papers, presentations, and other publications are available upon request.

PROFESSIONAL ORGANIZATIONS
American Educational Research Association,
Vice President (1991 – 1993)
Division H, Pre Post Press Editor (1988 – 1990)
Division H, Public School Evaluation, Program Chair (1987)
Southwest Educational Research Association, President (1990 – 1991); President Elect;
   Program Chair (1989 – 1990); Secretary (1987 – 1989)
Directors of Research and Evaluation of Large City Schools, Chair (1989)
Texas Joint Urban Evaluation Council, Chair (1987 – 1989 and 1991 – 1993)
National Association of Test Directors, Board Member (1989 – 1993)

PROFESSIONAL APPOINTMENTS

Evaluation Review Panel, United States Department of Education (1992 – 2002)

Campus Leadership Team, Anderson High School (1994 – 1996)

National Education Goals Panel, Data Definition Task Force (1993 – 1995)

National Center for Education Statistics Interstate Student Records Transfer Task Force (1989 – 1993)

Annual Texas Testing Conference, Planning Committee (1986 – 1988); Steering Committee (1988 – 1993)

Science Academy of Austin Advisory Board (1988 – 1993)

Cooperative Education Data Collection and Reporting Standards Task Force (1990)

Information Systems Advisory Committee, Texas Education Agency (1988 – 1990)

Commissioner's Advisory Committee for Research & Evaluation (Texas Education Agency), Chair (1988 – 1990)

Council of Chief State School Officers Steering Committee, National Assessment Planning Project (1988 – 1989)

Research and Development Center Committee on Collaboration, University of Texas (1989)

Steering Committee for the Community Needs Assessment for Travis County, City of Austin, and the United Way; Chair of the Technical Advisory Committee (1988)

5   Attachment A – SEA Data Sources

Information provided by the SEA for each data source:

a.   The data provider/steward and contact information
b.   The name, type, and format of the data file
c.   The location of the data file and the process for ESP to access the file

Software License Agreement
ED*Facts* Shared State Solution

*This software license agreement describes how the **EDFacts Shared State Solution** will be provided and maintained for participating state education agencies by ESP Solutions Group, Inc. The software is available at no fee under the conditions described herein. The purpose of this free sharing is to assist states in the efficient compliance with federal reporting and to enhance the availability of comparable data within the EDFacts system.*

THIS SOFTWARE LICENSE AGREEMENT ("Agreement") is made and entered on November 1, 2019 (the "Effective Date") by and between ESP Solutions Group, Inc., ("ESP") a Texas corporation having offices at 8627 North Mopac, Suite 400 Austin, TX 78759, and **State Department of Education** ("Licensee"), located at XYXY ("You," the "Licensee").

RECITALS

A. ESP is the owner of, or has acquired rights to, the Software and Documentation (as defined below).

B. ESP desires to grant to Licensee and Licensee desires to obtain from ESP a nonexclusive license to use the Software and Documentation solely in accordance with the terms and on the conditions set forth in this Agreement.

NOW, THEREFORE, the parties hereto agree as follows:

Preamble

ESP holds the copyright on the core of the ED*Facts* Shared State Solution. You must abide by the terms of this license or your right to use the software will be revoked.

Within this license, ESP is granting You the right to:

- Use the software for any purpose,
- Change or modify the software to suit your needs,
- Share the software with other states, and
- Share your modifications with other states.

In return, You must:

- Provide ESP with contact information for whom You share this Program and

- Provide ESP with details of any modifications You make and share with others. You do not have to notify ESP about changes You make for Your own use.

Definitions

"The Program" refers to the ED*Facts* State Shared Solution and any copyrightable component licensed under this License. "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make You directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), and making available to the public.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

The "core product" is code that creates the staging databases and submission files; maintained by ESP under the Software License Agreement and the Support and Maintenance Agreement.

The "system and feature upgrades" are functions added after an SEA signs its Software License Agreement.

The "Partner Association" means the group of SEAs signing Support and Maintenance Agreements and sharing system and feature upgrades.

The "technical support" is development consulting specific to an individual SEA's needs.
The "product enhancements" are system and feature upgrades.

The "defect fixes" are core product code corrections.

A "new feature request" is a system and feature request by an SEA beyond a defect fix.

The "configuration services" are installing ES3 into an SEA's technical environment.

A "technical environment" means the local IT environment at an SEA.

The "implementation services" are tasks including configuration, ETL, and consulting related to the initial annual cycle of ES3 for an SEA.

The "new or changed ED*Facts* data sources" are source data that require modifications to existing ETL or new ETL. The modifications or new ETL may be either a consequence of new ED*Facts* submissions or changes to submissions, or a consequence of changes in local SEA data sources.

The "managing partner" is ESP.

An "annual cycle of submission files" is defined by USED as one school year of submission files.

The "local ETL process" is moving source data from SEA locations into ES3 staging databases.

7   Grant of Rights

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that You do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for You, or provide You with facilities for running those works, provided that You comply with the terms of this License in conveying all material for which You do not control copyright. Those thus making or running the covered works for You must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with You.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed.

8   Conveying Verbatim Copies

You may convey verbatim copies of the Program's source code as You receive it, in any medium, provided that You conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 6 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You must provide ESP with the contact information of anyone to whom You convey verbatim copies.

9 Conveying Modified Source Versions

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 3, provided that You also meet all of these conditions:

a) The work must carry prominent notices stating that You modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 6. This requirement modifies the requirement in section 3 to "keep intact all notices."

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 6 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if You have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

You must provide ESP with the contact information of anyone to whom You convey modified source copies. You must provide ESP with a copy of the modified or extended source code.

10 Conveying Non-Source Forms

You may convey a covered work in object code form under the terms of sections 3 and 4, provided that You also convey the machine-readable Corresponding Source under the terms of this License

"Installation Information" means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information.

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

11 Additional Terms

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When You convey a copy of a covered work, You may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when You modify the work.) You may place additional permissions on material, added by You to a covered work, for which You have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material You add to a covered work, You may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 12 and 13 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 9. If the Program as You received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, You may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, You may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If You add terms to a covered work in accord with this section, You must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

12 Termination

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License.

However, if You cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify You of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies You of the violation by some reasonable means, this is the first time You have received notice of violation of this License (for any work) from that copyright holder, and You cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from You under this License. If your rights have been terminated and not permanently reinstated, You do not qualify to receive new licenses for the same material under section 9.

13 Acceptance Not Required for Having Copies

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants You permission to propagate or modify any covered work. These actions infringe copyright if You do not accept this License. Therefore, by modifying or propagating a covered work, You indicate your acceptance of this License to do so.

14 Automatic Licensing of Downstream Recipients.

Each time You convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, You may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and You may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

15 ESP Modifications

ESP will occasionally provide error corrections, bug fixes, patches, or other updates to the Program in both object and source code format.

You may, from time to time, request that ESP incorporate certain features, enhancements, or modifications to the Program. ESP may, in its sole discretion, undertake to incorporate such changes and distribute the Program so modified to any or all of the Licensees. ESP may charge a fee to make the modifications requested or provide a requested service.

All such error corrections, bug fixes, patches, updates or other modifications will become the copyright property of ESP and are subject to the terms of this license agreement. That is, whether You paid for them or not, they will become freely available to other users of the Program.

16 No Surrender of Others' Freedom

If conditions are imposed on You (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse You from the conditions of this

License. If You cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence You may not convey it at all. For example, if You agree to terms that obligate You to collect a royalty for further conveying from those to whom You convey the Program, the only way You could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

17 Disclaimer of Warranty

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

18 Limitation of Liability

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

19 Interpretation of Sections 12 and 13

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

The following have been duly notified of the scope of this software license agreement and agree to its content.

ESP Solutions Group, Inc.   **State Department of Education**

_____   _____
Name   **Name**

_____   _____
Signature   **Signature**

_____   _____
Title   **Title**

_____   _____
Date   **Date**

EXHIBIT A
Support and Maintenance Agreement
ED*Facts* Shared State Solution (ES3)
SELF-HOSTING END USER

This Agreement, dated November 1, 2019 between ==State== **Department of Education** ("Licensee"), located at ==XYXY==, and **ESP Solutions Group, Inc**. (ESP), with its address at 8627 N. Mopac Expressway, Suite 400, Austin, TX 78759, describes the terms and conditions under which ESP will provide ED*Facts* Shared State Solution (ES3) support and maintenance for the ("Licensee").

ESP Solutions Group's Software Support and Maintenance Agreement provides system and feature upgrades to the core product that are developed for other ES3 clients under contract to ESP or who have contributed their compliant code to the ES3 Partnership, as well as technical support.

Specifically, this Software Support and Maintenance Agreement provides:
- Standard product enhancements - added to the core product
- Defect fixes - added to the core product
- Updates to the ETL to accommodate new or changed ED*Facts* data sources required by modifications to USED's ED*Facts* requirements

This Software Support and Maintenance Agreement does **not** provide:
- Fulfillment of new feature requests
- ES3 Configuration Services for the SEA's technical environment changes
- ES3 Implementation Services for new or changed SEA ED*Facts* data sources

New features and requests for changes to existing features will require the processing of an ESP change order request document (change severity to be determined on a case-by-case basis utilizing ESP's QPM Change Management Process). New functionality requests can also potentially generate a change order.

Via the annual Software Support and Maintenance Agreement, ESP will also continue to provide:
- Offsite/remote technical assistance for designated staff,
- Updated versions of ES3, and
- Updates to online help functionality.

EXHIBIT A
(Continued)
Support and Maintenance Agreement
ED*Facts* Shared State Solution (ES3)
Software and Consideration

Description of Software	ESP Solutions Group's ED*Facts* Shared State Solution (ES3)
Initial License Fees	TBD based on scope – split over the initial 18 months of the project.
Term of Annual Support and Maintenance Agreement	Beginning in month 19, and renewable annually thereafter.
Annual Support and Maintenance Agreement Fees	TBD based on scope - Payable at the beginning of Support Year 1 (month 19) for ES3 Annual Support and Maintenance. In each subsequent support year, ES3 maintenance will be subject to a nominal annual increase. Annual fees may increase if significant modifications are made to either the ED*Facts* reporting system or related USED Federal reporting requirements. Pre-paid Support and Maintenance fees include the following: • In ES3 Year 2 (Support Year 1) upon receipt of source data documentation, ESP will complete any submission ETL not completed during ES3 Year 1. In ES3 Year 3 (Pre-paid Support Year 2) upon receipt of source data documentation, ESP will complete any submission ETL not completed in ES3 Years 1 and 2. This effort will be completed at a pre-paid TBD rate.
Termination Provisions	Licensee may terminate this license agreement by notifying ESP within 60 days of the end of an annual support and maintenance period. Failure to pay a subsequent annual fee within 30 days of the start date of a new period will terminate this license agreement.

Requirements for Installing and Configuring ES3	ESP requires access to a workstation in the client environment. The workstation must include:
	   o VPN access,
	   o Port 80 open to access ESP's TFS and the internet,
	   o Word and Excel installed,
	   o SQL Server Data Tools (free with SQL Enterprise), and
	   o SQL Management Studio.
	ESP requires access to the client's IIS Web Server ES3 application folder in order to update the ES3 web app.
	   o If this access is not provided, any time expended related to this effort will be charged the hourly configuration rate.
	ESP requires a SQL account with:
	   o Read access to all ED*Facts* Source Systems,
	   o Read/Write and admin privileges on the client ED*Facts* database, and

	o Read/Write access to the SSISDB.
	    ▪ ESP work will be restricted to an ED*Facts* SSIS Projects folder.
	    ▪ ESP requires an EDFacts_Admin schema in the SSISDB.
	    ▪ ESP requires the capability to deploy stored procedures and views to the EDFacts_Admin schema.
	o The SQL agent must be running on the SSISDB server.
	• The ES3 web app comes with basic ASP.NET authentication. ESP can integrate the ES3 web app with the client's preferred authentication method, but this additional effort will be charged the hourly configuration rate.

ES3 Configuration Services	Technical or configuration services subsequent to the initial ES3 install and related to the use of ES3 are not covered by this agreement. ESP support for subsequent changes to the **State Department of Education** technical environment that render the ES3 install unusable are available optionally at the hourly rate of $175/hour.
ES3 Implementation Services	ES3 Implementation Services for new or changed SEA ED*Facts* data sources that occur after the initial contract, are not covered by this agreement. ESP support for the loading/ETL of new or changed ED*Facts* data sources is available optionally at the hourly rate of $150/hour.

The following have been duly notified of the scope and pricing of the ES3 Support and Maintenance Agreement and agree to its content.

             ESP Solutions Group, Inc.   **State Department of Education**

Name   **Name**

Signature   **Signature**

Title   **Title**

Date   **Date**