

# Case Study – Michigan

## Michigan Technology Readiness Infrastructure Grant

The focus of Michigan’s Technology Readiness Infrastructure Grant (TRIG) is to develop or improve the technology infrastructure of Michigan school districts in preparation for the implementation of online growth assessments. The grant supports several initiatives, one of which is the Data Integration Systems Project. With a vision to streamline the use of educational information statewide, the mission of the Data Integration System Project is:

To develop and implement a Standards-Based Enterprise Data Architecture that facilitates the exchange of information among the stakeholders in Michigan who work to improve student achievement.

## Challenge

The Michigan Department of Education faced challenges relating to management of data quality, ease of data sharing, and costliness of state and federal accountability reporting. Their educational data was spread across multiple systems at different levels.

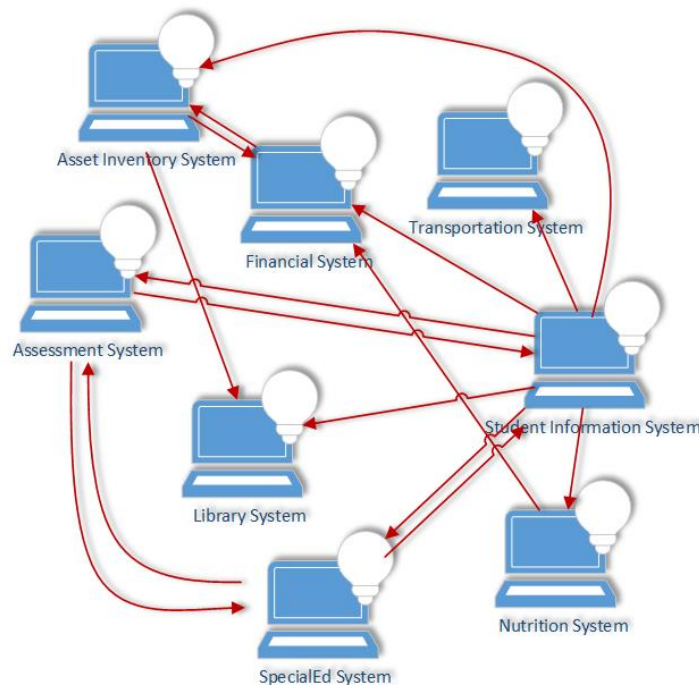


Figure 1 - Districts struggle with multiple systems silos, developed by different vendors, which do not natively talk to each other. Districts often invest in custom point-to-point integrations, which often only work until the next upgrade cycle.

The project's goals are:

- Develop a means of achieving a common, limited set of statewide, interconnected Student Information System programs.
- Integrate data systems to enable districts to have access to accurate, timely, and comprehensive information needed to inform school processes.
- Allow classroom, building, and district utilization of data on a daily basis to better impact student achievement.
- Establish 5 regional data hubs

## Approach

Double Line Partners (DLP) was hired to help the TRIG group provide a mechanism for siloed district applications to talk to each other in a secure, FERPA-compliant manner without costly custom point-to-point integration.

The project team engaged in several stages of design and implementation to create an advanced configuration module that automates production rollout of an Ed-Fi powered Operational Data Store (ODS) and dashboards as well as a virtual machine image to replicate the solution across five regions within Michigan with minimal deployment effort.

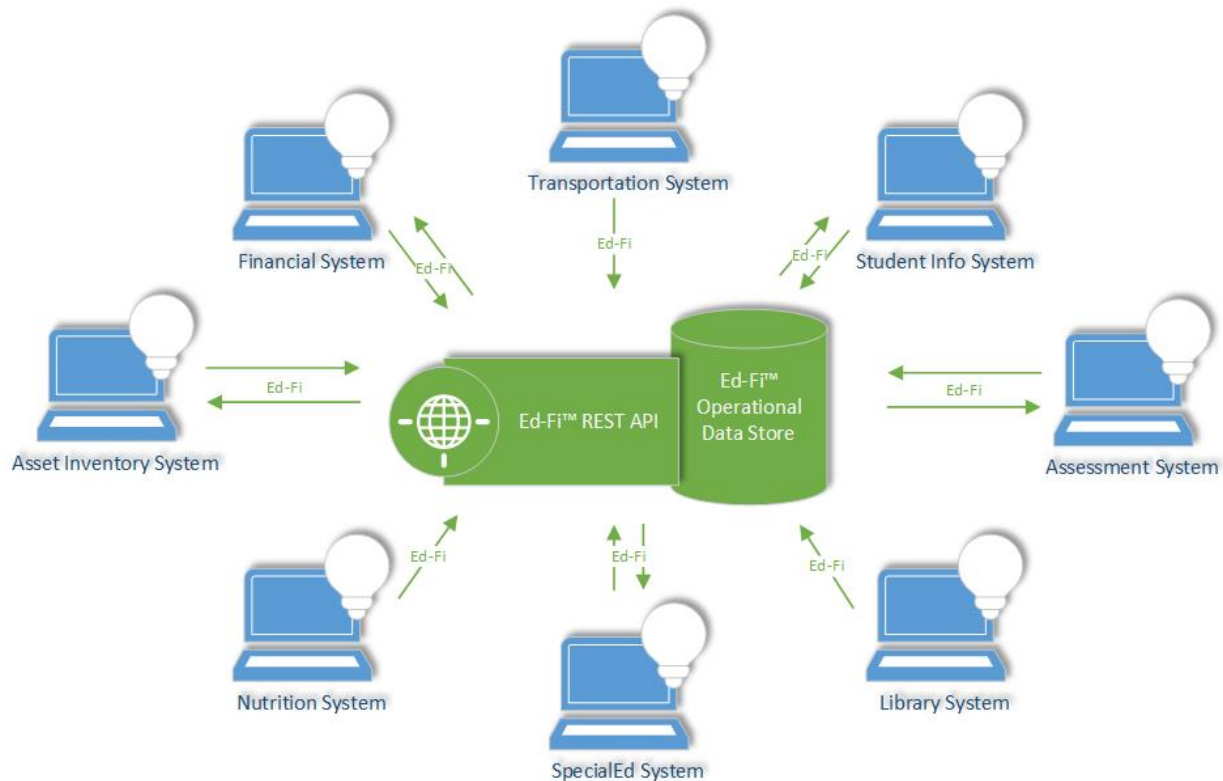


Figure 2 - Michigan realized a hub model using the Ed-Fi data standard would vastly reduce the permutations of integrations and allow the vendors themselves to maintain integration support through upgrade cycles.

## *Data hubs and hosts*

DLP created data hub for each school district that provides a unified data source based on the Ed-Fi data standard. This data hub allows for consolidation and standardization of data from multiple disparate sources. Examples of the data sources include Student Information, Transportation, Special Education, Food Service, Assessment, Library Management, and Alert Notification systems. Rather than requiring brittle point-to-point integration between each system, the communication occurs via the Ed-Fi data standard to the hub, vastly reducing the permutations of source-target mappings required. Additionally, changing one type of system in a district does not cause ripple effects through integrations with all connected systems.

## *Data Cockpit*

DLP designed and implemented a data cockpit that allows for the orchestration of basic administration and ingestion of data files for districts at regional centers. From a web interface, administrators are able to initiate the provisioning of the ODS, Dashboard Data Store (DDS), and the SFTP resources for districts in an automated process. Data ingestion, ETL, and extraction activities are able to be scheduled and their executions monitored via logs and reports. The web interface is user friendly and the entire data cockpit application is easily replicated to Michigan's regional hubs.

## *Extractors and Reports*

Outbound integrations have been built into the data cockpit allowing data sets to be extracted from an Ed-Fi ODS and sent out to districts or vendors. DLP has built the infrastructure and mechanism to deliver Ed-Fi XML interchanges and SSRS reports giving Michigan the capacity to customize outputs going forward.

## *Conversion to Web Services*

Michigan's drive for a service-based data hub has been advanced by moving to a version that provides a REST Application Program Interface (API) for a real time systems solution. DLP assisted in the upgrading of the data hub to an API approach resulting in data integrations with lower refresh latency and reduced load times.

## *Single Sign-On Implementation*

DLP is implementing a federated identity and Single Sign-On (SSO) solution that is able to be leveraged by applications across the state. Identities in the SSO solution are automatically provisioned, managed, and decommissioned in real-time based on data from the system of record (e.g., the student information system or the human resources system). The initial consumers of this infrastructure will be the data cockpit application, the statewide MISchoolData application, and dashboards. Applications that are integrated with the SSO solution will allow their users to log in using a single set of credentials. The benefits include time and cost savings, increased security and improved efficiency and user experience.

## *State Reporting*

DLP is designing a solution for generating state reports from data already gathered automatically and stored in the data hub. These reports will be used to supplement and possibly replace existing state accountability reporting, leading to improve reporting accuracy as well as districts spending less time on compliance and more time on instruction.

## *Dashboards*

The infrastructure for student, school and district dashboards has been built through the efforts of this development. As Michigan rolls out statewide, the dashboards are providing educators with access to instructionally relevant data in near real time. The timely data helps educators monitor student progress, identify problem issues, and detect opportunities for improvements in daily education approaches and methods.

## *Impact*

The success of the initial development has created momentum for data standardization. The TRIG group is targeting an audience of 900 districts in Michigan. Further, the data hubs are increasingly recognized nationally as extremely forward looking and a catalyst for the next wave of Ed-Fi API adoption by education application vendors. This adoption drastically lowers data integration costs for districts and ISDs in Michigan. Because of these great strides, other states have shown interest in leveraging the advances originally envisioned by the Michigan TRIG team, enhancing them, and contributing them back to Michigan.