



Colorado CCED Data Sharing Pilot

Vision Document

Data Sharing Pilot - Version 1.0

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Document Revision History

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Vision

The CCED Data Sharing Pilot will provide a vision for how technology can be used within the state to efficiently solve a number of business problems shared by the education community. To accomplish this, an architecture will be developed that will facilitate the secure and efficient sharing of data and resources within the educational community. A number of small applications will be developed on this architecture to demonstrate the effectiveness of the architecture in solving a variety real-world business problems and providing participating districts hands-on experience with these technologies.

Problem Statement

Cannot move data from district to district efficiently (no data standards, no transport standards, etc.) This ability is required to support of student movement across district boundaries, and is the most critical problem in the scope of this project.

No standard approved secure way to move data between agencies.

Cannot move data from the districts to the state efficiently.

The districts are required to send duplicate to the state in multiple formats that change frequently.

Districts do not receive all of the data they would like from the state in standard formats.

Currently do not leverage infrastructure, resources, etc. across districts well. This is especially important for smaller districts.

Every time districts apply for funding they are required to report data in different formats that the state has already collected.

Business Solution

Key Business Drivers

- Provide a vision for how standard architectures, exchange formats, and transports can be utilized within the Colorado education community.
- Provide concrete, real-world examples showing how technology can be applied to key business problems within the education community.
- Provide key contacts in the Education community who are currently working on similar problems to promote information exchange and to provide lessons learned and success stories for the community.
- Provide working systems to tangibly demonstrate the benefits in real-world scenarios.
- Provide districts with hand-on experience with these technologies.

Key Customers

The CCED Data Sharing Pilot will be broad in operational scope but restricted to certain key data exchange scenarios. That is, the pilot will demonstrate how a number of different education data exchange operations can be efficiently performed based upon key technology standards and infrastructure. Because of this, there are a number of key customer groups that will participate or be interested in the pilot.

1. Primary Customers

- District Superintendents
- CDE
- School Districts with significant existing computing infrastructure and applications, which are usually districts with large numbers of students.
- School Districts with limited or no computing infrastructure and applications, which are usually districts with fewer students.

2. Primary Partners

- Microsoft
- SIS Vendor (TBD)

Key Customer Requirements

1. In Scope

Priority ¹	Scope Item
A	Exchange student information between districts
A	Streamlined district application for state funding (one application TBD)
A	District accreditation indicator reporting (student achievement)
B	ASP Application Hosting (simple SIS for multiple small districts)
C	Provide student exchange information to CCED
C	Tie-in to C2D3 initiative (implement ScholarsMart on proposed architecture)

2. Out of Scope

Scope Item
Integrate ASP SIS to participate in student data exchange.

¹ Priority “A” items must be included in the application for it to ship. “B” items are very important, but we will not change the schedule to incorporate them. “C” items may be incorporated if time allows.

Use Cases

1. **Student Transfer between Districts**

When a student transfers between districts within the state, particular data about that student needs to be transferred to the new district. Typically, this data transfer takes place via phone calls, paper documents, etc. which then need to be entered into the new district's student information system. Automated ways to request this data, package the data, and securely send it to the requesting district need to be implemented. The receiving district will need to be able to receive this data in an automated manner, as well as un-package and integrate it in a seamless manner; this functionality also needs to be implemented.

2. **Student Transfer Alert to CCED**

The CDE currently tracks which each student attends twice each year. A student transfer alert will allow an accurate picture of student attendance to be maintained throughout the year. An automated way of packaging the alert data and securely sending it to a tracking entity needs to be implemented.

3. **Streamlined District Application for State Funding**

With each new application for state funds, the districts typically need to submit a new set of data to the state. Many times, this data is just a slight reformatting of data previously submitted. A standard way of submitting this data needs to be implemented so that each new application can easily be supported by existing data. For the pilot, the data would support one of the following:

- Gifted and Talented reporting for reports 8.03(2&3)
- ELPA collection
- AYP calculations

4. **District Accreditation Indicator Reporting**

Each school district needs to send accreditation data to the state on a regular basis. For the pilot, a standard format for this data needs to be designed, a secure way of exchanging the data needs to be implemented, a database needs to be designed to store the data, and a report needs to be created to access the data in the correct format. As well, because only certain indicators are held in common interpretation between the various districts, only those indicators that are useful across districts will be included in the pilot scope. These common indicators will need to be defined as part of the planning phase of the project

5. **ASP-based Student Information System**

There is currently a number of small districts that do not have a student information system. Moreover, many of these districts do not have the capacity to install or maintain one of these systems. A centrally-hosted SIS needs to be implemented that could easily be shared by multiple small districts. A preference is noted for any SIS chosen to expose a web interface for potential use by Portal technology.

6. **C2D3 System**

To tie this pilot in with the C2D3 initiative, a sample C2D3 application needs to be implemented on the proposed pilot architecture. It is proposed that the ScholarsMart application be modified to work on the pilot architecture.

Success Metrics

- Two Districts decide to participate in the Student Transfer pilot.
- Two Districts decide to participate in the ASP-hosted SIS pilot.
- Two District Superintendents and the CDE are introduced to the District Accreditation Indicator Report pilot.
- Two District Superintendents and the CDE are introduced to Streamlined District Application pilot.
- CDE is introduced to and two Districts decide to participate in the C2D3 pilot.
- Each of the communication components introduced by the pilot will be exposed as a Web Service or as a Web Application for consumption by Portal technology.
- Data of sufficient (real-world-like) complexity is presented to the vendor by the Districts, and the vendor makes use of it in validating the data transfer functionality.

Solution Concept

Overview

The CCED will maintain a central repository of student information keyed to the State's unique student identifier. Each student in the State will be represented. Each school in the State will be known, and will be able "claim" students and so access the student's record. Audit trails of school use of student data will be kept, and exception reports of students not claimed and claimed more than once will be issued to the party owning the centralized data. (Supports all use cases)

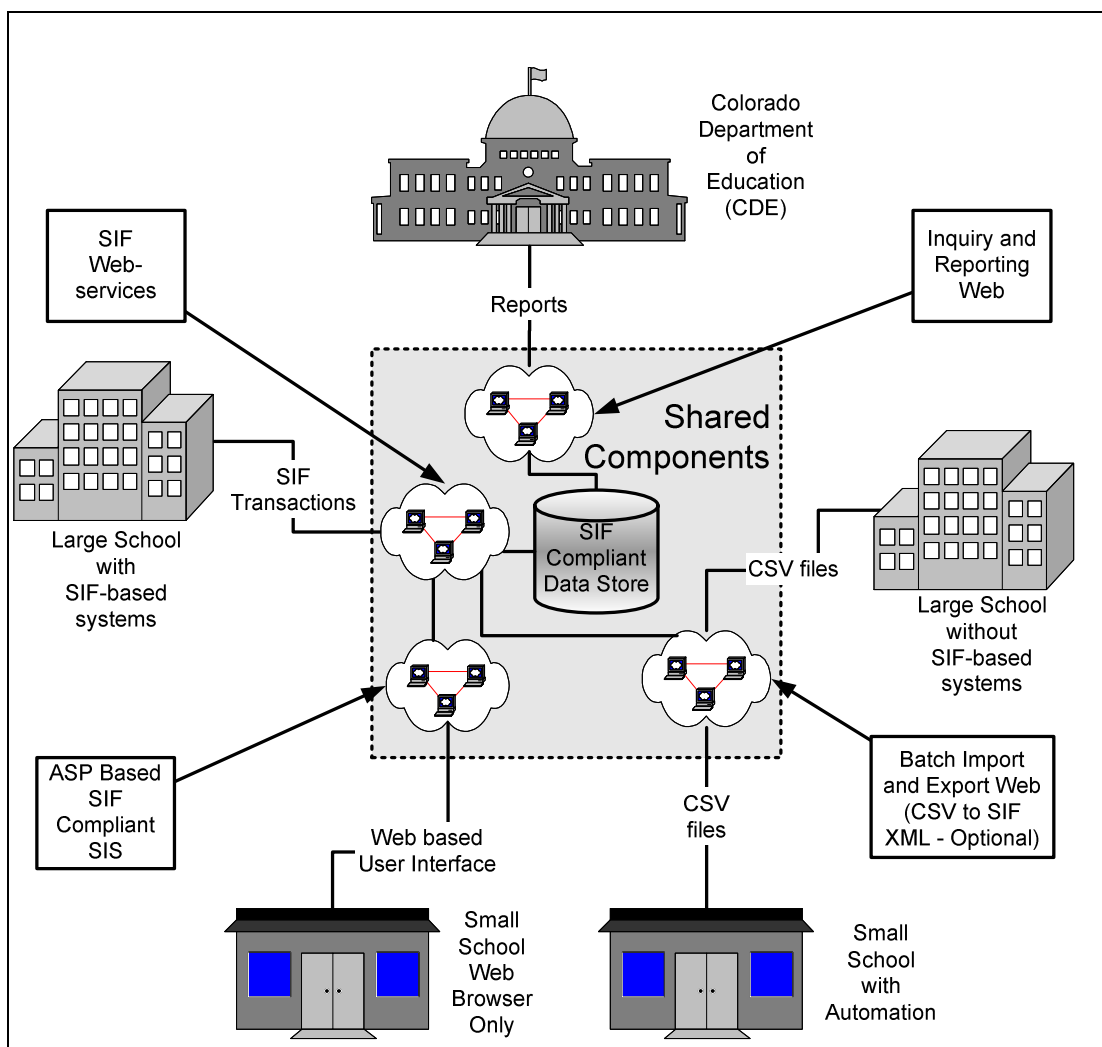
This student information will be kept as SIF transactions. Because this is so, the system can be supported directly by any SIF compliant SIS. Agreement on the specific supported transaction sets will be made early in the project. Only these agreed on items will be supported during the pilot phase of the project. (Supports all use cases)
CCED will work with MCS to develop an informal Request for Quotation and with third party Student Information System (SIS) vendors to select a SIF compliant SIS, host and vend that product to school districts with no current SIS. (Supports Use Case 5)

Not all schools will have a SIF compliant SIS – for example larger schools with significant non-SIF investments and smaller schools with existing automation. Optionally, these schools can use an Import and Export Web to interface their non-SIF systems with the required SIF transaction sets through the use of CSV files. This service will lessen the skill level needed by each participating school by providing a simpler

interface into the system. (This portion of the project could become optional should CCED decide to support only SIF compliant school systems.)
 (Supports Use Cases 5 and 6)

The Colorado Department of Education and the schools will have access to a web application allowing information to be submitted to CDE from the schools in differing formats to support the State's needs. Either the schools (for their particular students) or CDE (for any student in the system) can use this system to gather the information in usable formats. C2D3 is also supported by this system. (Supports Use Cases 3, 4 and 6)

Conceptual Architecture:



Conceptual Diagram

In the diagram there are four shared service areas connecting with a SIF compliant data store. The four shared service areas are:

- **SIF Web-services:** SIF Web-services are used to communicate valid SIF transactions between schools that have SIF compliant Student Information Systems and the centralized SIF compliant data store. This service is part of the SIF engine setup.
- **ASP Based SIF Compliant SIS:** Allows schools with little or no automation to place information on their students into the SIF compliant data store by using a SIF compliant Student Information System. This SIS will be provided by a third party vendor.
- **Batch Import and Export (CSV to SIF XML) Web:** Allows schools with automation that produces “comma separated values” (CSV) files (or other formats, such as fixed with columns or tab delimited files) to be used as the transfer mechanism. This allows CCED to focus their resources on developing non-SIF interface standards that will be easy for schools to use, so limiting the amount of work that needs to be done at individual schools to implement this system. This website would convert these standard formats into SIF transactions and would then interface into the SIF Web-services site.
- **Inquiry and Reporting Web:** Allows the schools and CDE to inquire into the data repository. Mechanisms will be provided to allow self-definition of reports and certain standard reports will be available on request. As well, Microsoft SharePoint Portal could be used with Office Web-Parts to provide ad-hoc aggregate/disaggregate reporting solutions.

Project Methodology

Software development succeeds best when certain proven strategies are followed. These strategies are often placed together and are referred to as a “methodology”. MCS uses the Microsoft Solutions Framework (MSF) as its methodology.

MSF – Microsoft Solution Framework

MSF is a Microsoft’s suggested methodology, derived from the years of product development cycles at Microsoft. It is currently in use at Microsoft, acting as the management framework for multi-million dollar projects as well as small “maintenance” projects.

Only a framework, MSF allows great flexibility in how it is used – for example in how often reports should be issued, or what forms should be used. It is consistently implemented in several critical areas of need, though: Project Phases, Roles and Team Model.

Project Schedule

According to MSF, projects should decompose into four project phases, Envisioning, Planning, Developing and Stabilizing.

Project Phases

1. **Envisioning** has as its outcome a vision-scope document that discusses the project's business drivers, success criteria and scope, and a high-level project plan that shows the steps necessary to produce the vision. This material can be used to decide whether to proceed.
2. **Planning** has as its outcome a completed functional specification for the vision and a project plan that fully supports that functionality. This plan is an extension of the plan produced in the envisioning phase, but includes detail based on the functional specification. The budget becomes firm based on the detail of the functional specification.
3. **Developing** has as its outcome code complete functionality supporting the functional specification. The code has been unit tested and appears to work correctly to the development team.
4. **Stabilization** has as its outcome thoroughly tested functionality supporting the functional specification. The code has been tested, bugs fixed and those fixes re-tested. The code appears to work correctly to the test team and to the end users

Sub Projects

The project is made up of four smaller sub-projects, one run first, and three run simultaneously afterward. These are treated as projects on their own right, and are:

1. **Infrastructure Project** – Providing the SIF infrastructure, this project is run before the remaining three.
2. **ASP Based Student Information System Project** – Providing the smaller schools with an online SIS.
3. **Inquiry and Reporting Web Project** – Allowing CDE and the schools to get data in the store in both download and report formats.
4. **Import and Export Web Project** – Optionally allowing the non-SIF compliant schools a more flexible way to participate in the system.

Project Timetable

Each of these projects has its own work phases, but the overall duration is targeted at less than 90 days. According to the attached Work Breakdown Structure, a theoretical start date of 9/15/2003 would project a completion date of 12/31/2003. Because projects 2, 3 and 4 will be run in parallel, the phases overlap as shown in the table below.

Task	Begin Date	End Date	Duration
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Envisioning	7/1/03	7/31/03	4 weeks
Planning	9/15/03	10/31/03	6 weeks
Developing	10/10/03	11/19/03	5 weeks
Stabilizing	10/29/03	12/10/03	6 weeks

For further detail on the project schedule, please refer to the associated Work Breakdown Structure

Project Team

The Project Team will be formed during the Planning phase of the Infrastructure Project.

As mentioned above, in MSF there are certain roles that must be filled for a project to be a success. Some of these roles may be filled by a single person, but others need different people filling them.

Roles

1. **Product Manager** - The Product Manager owns the “vision” of the product. This person can say whether functionality is required for product delivery and is the one who can trade off features and functions when working with the Program Manager in case of scheduling or budget constraints. It is recommended that this position be staffed by a CCED member at 20% time as shown in the WBS.
2. **Program Manager** – The Program Manager is the person who is responsible for producing the project within the time and budget constraints. The Program Manager works with the Product Manager to define feature trade-offs to keep the project within budget and time. The Program Manager works with the Development, Test, User-Education and Operations Managers to establish and track the project schedule. It is recommended that this position be staffed by an MCS consultant at 20% time as shown in the WBS.
3. **Development Manager** – The development manager is responsible for the day-to-day operations of the development team. The Development Manager works with the Program Manager to assure that the development phase is accomplished on time and in budget. It is recommended that this position be absorbed by the Lead Developer.
4. **Test Manager** – The test manager is responsible for the day-to-day operations of the test team. The test manager works with the Program Manager during the test phase to assure that testing, rework and regression testing is performed on time and in budget. It is recommended that this position be absorbed by the Lead Developer.

5. **User Education Manager** – The user education manager is responsible for the quality of user documentation and training materials for the project. It is recommended that this position be absorbed by the Product Manager.

6. **Operations Manager** – The operations manager is the person responsible for the operation of the system being built when it's in production. The operations manager works with the Product, Program, Development, Test and User-Education Managers to assure that the system is designed and built to be maintainable, and that enough documentation exists to support production. It is recommended that if there is an existing CCED Operations Manager that this position be staffed by that person at a 10% level. Otherwise, this position could be absorbed by the Product Manager.