

DATA COLLECTION INTEGRATION AND STANDARDIZATION *In Real Time*

Who is CPSI

About Us and What We Do

Service

CPSI has been servicing education organizations exclusively since 1989 and writing software for the market since 1992.

Experience

We have extensive experience with teachers, administrators and state departments of education.

Commitment

Our proven software and support show our commitment to provide districts and schools with the tools they need to ensure student success.

Our Customers

Districts

We have numerous district implementations across the country and Canada.

Cloud

We have two very exciting cloud projects in Illinois and Texas.

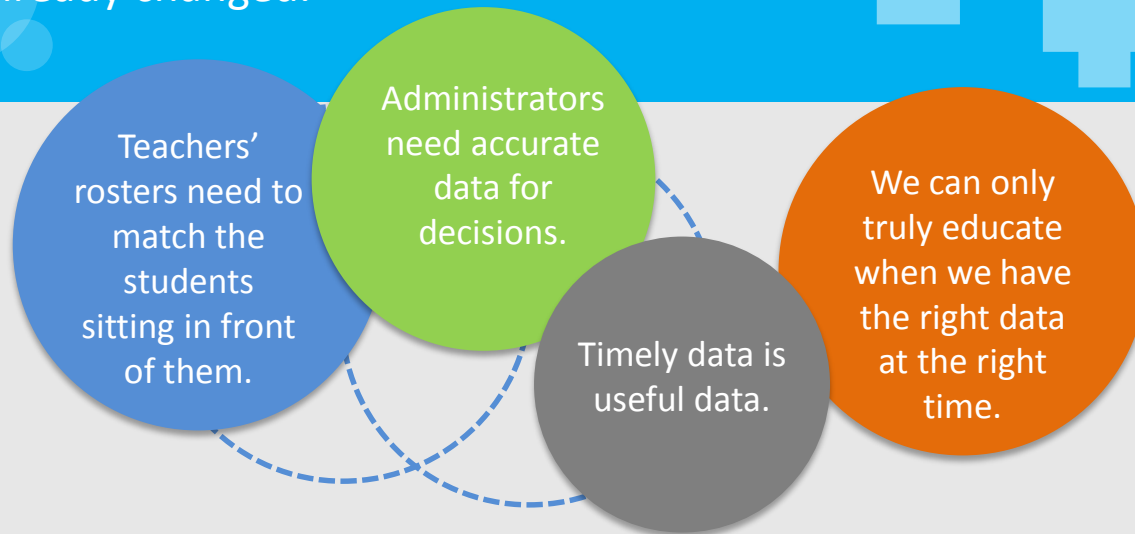
States

We work with several state departments of education – including Oklahoma State Department of Education, Hawaii Department of Education, and the Illinois State Board of Education.

Why Real Time Data?

When we say real time, we really mean it.

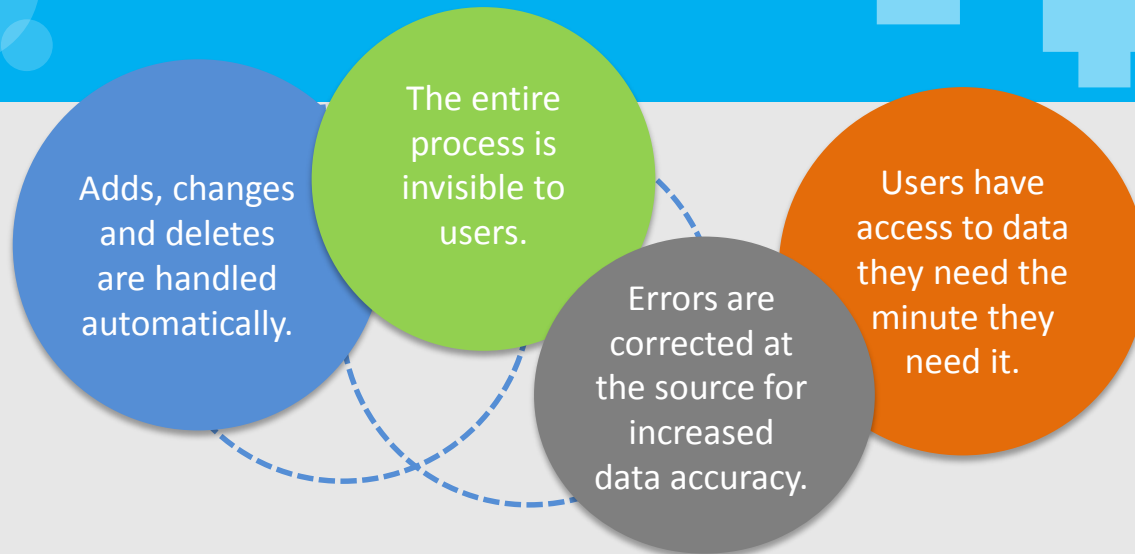
School districts are always dealing with data that is in motion. Students are constantly enrolled and dropped, change courses and enter and exit programs. In the time it takes for student to go from one class to another, the class roster might have already changed.



What is Real Time Data?

When we say real time, we really mean it.

Real time data is the ability to see information within minutes of entering, modifying, or deleting the data.



The Real Time Challenge

So much data in so many places.

The Challenge

Design a real time data collection system scalable for both states and districts that is easy to use and extendible for reporting and beyond.

The Stakeholders

Data is needed by every user in the system, from students to teachers to guidance counselors and principals. Real time data aids these users in their every day tasks so they can do what they do best – educate children.

The Data

From the largest state to the smallest district, gathering the relevant data from all of the various sources can be challenging. A lot of data is needed to make reporting and analytics truly effective.

Validated Real Time Data Makes a Difference

Real time data is not enough in the education ecosystem. To make this data truly effective validation of the data is added to the mix.



Students



Teachers



Staff



Administrators



Assessments



Financial



Reporting



Analytics

How We Answer the Challenge

1

Implement data standards such as SIF.

Implementing the Schools Interoperability Framework, or SIF, allows us to collect data using a standard format and protocol. SIF was built for education and by education and has the support of hundreds of vendors of K-12 software. Other standards can be used as well, if the district has alternate requirement.

2

Store it all in one big tank.

The data is collected into a single Operational Data Store (ODS). From here, the data can be used for the many difference processes within the system – including data validation.

3

Validate and correct the data at the source.

Validation is an important step in the process. The data is validated in real time and errors are reported to users where they fix the data at the source.

4

Pass the data on to the systems that need it.

We know the ODS is not the final stop and many states and districts want to implement other functional data marts – such as EdFacts-CEDS, EdFi and more. The stored accurate data can also be used to feed Learning Management Systems, content management systems, and others

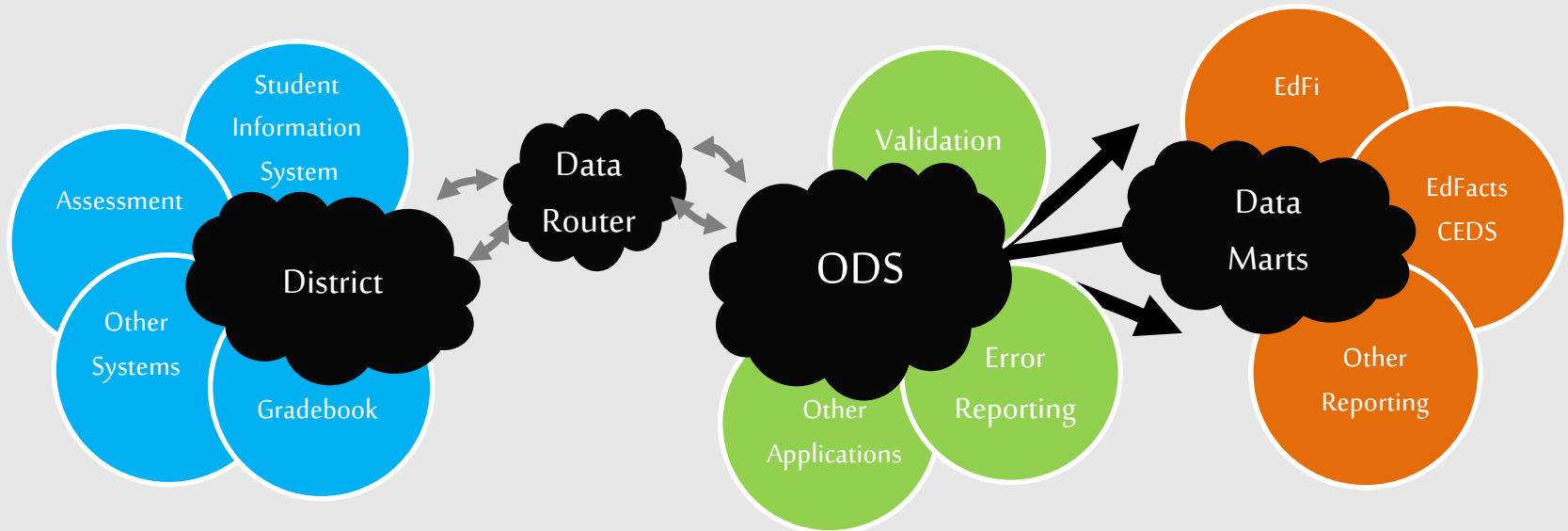


TheProcess

Lets get into the details.

The Process of Real Time Data

How it works.



The Process

Basics of collecting your data

Your data is stored in many different core systems throughout your district and primarily in your Student Information System.

Using the vendor SIF agent or the CPSI toolset, the data is transmitted via web services.

This data is collected into an Operational Data Store, or ODS, which we call the xDStore. The xDValidator checks every record against a set of business rules for correctness.

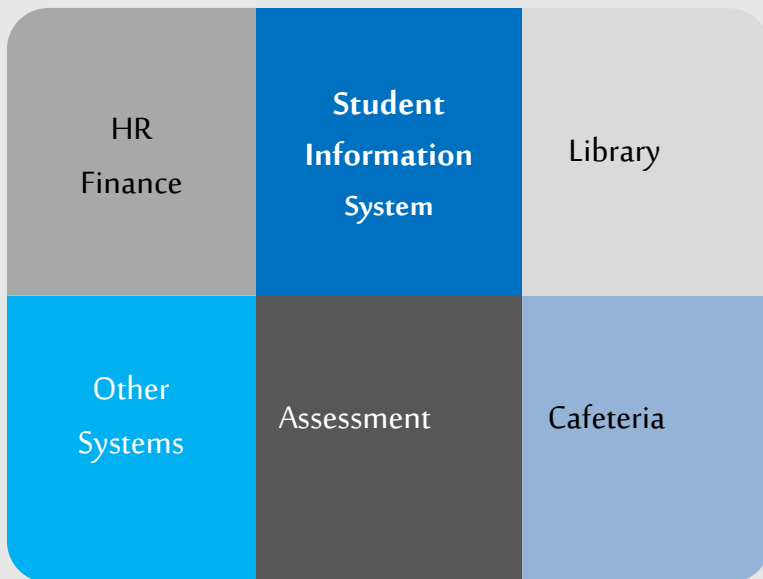
After correcting any errors at the source, your data is ready to move on to data marts and other applications

Using the power of the xDComposer, your data is mapped and converted into the various formats needed for the data marts, even custom data marts using an XSD schema to create a data standard, such as CEDS or Ed-Fi.

Make the data available to other applications as well, such as an LMS.

Gathering Data **from the Source**

The key is gathering data from the source.



Data is contained in many different systems throughout the districts. The data needs to be gathered into one Operational Data Store, or for short, the ODS.

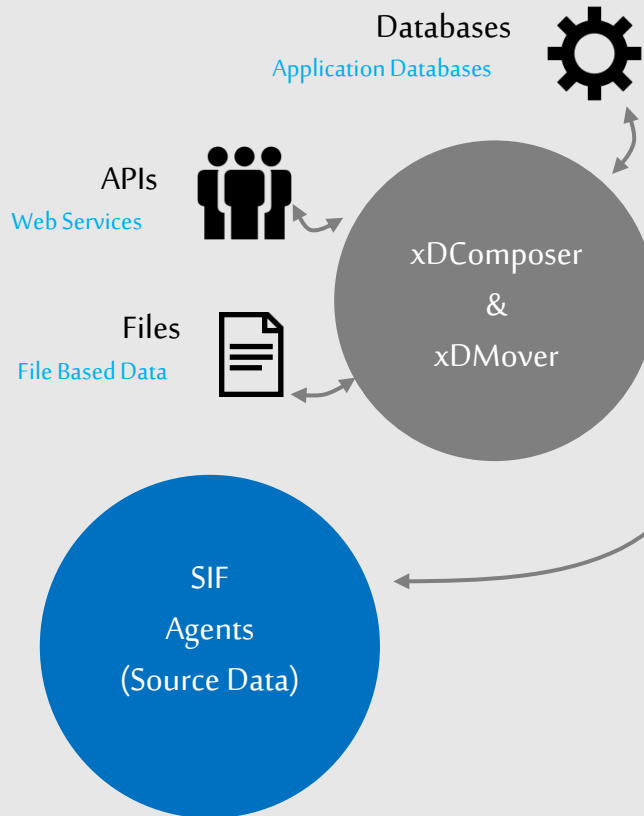
Data is collected from the source.

Get data as it is entered by the key system.

Data is transported mainly via SIF, but other standards can be used in combination with SIF, such as PESC, custom XML schemas, and web services as well as batch file uploads.

Step One Data Collection

Now we are all speaking the same language.



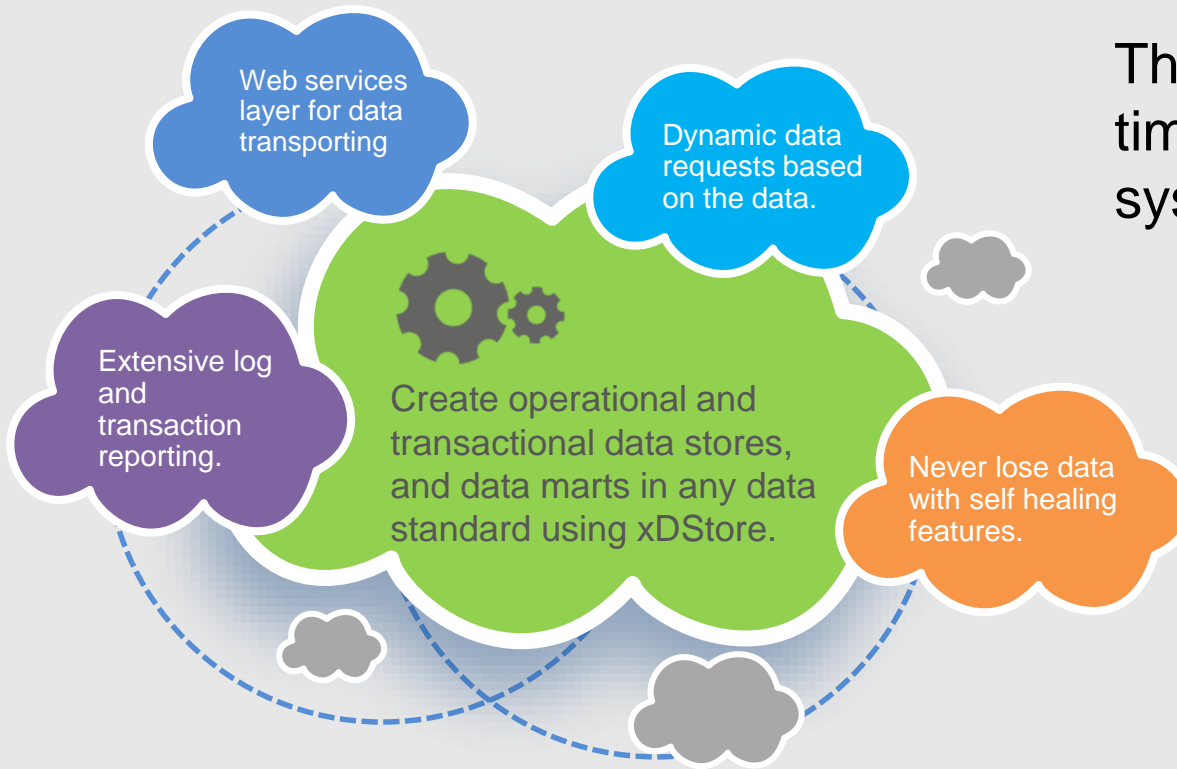
Each source system uses an agent to send and receive data using the Schools Interoperability Framework standard,, or SIF for short.

SIF is the common language.
Schools Interoperability Framework

Applications without a dedicated SIF agent can still play with the group. Using the xDMover and xDComposer, application data can be easily mapped and converted into SIF standards. The ODS will still get all of the data that application has to offer just as if it had its own SIF agent.

Meet The xDStore – Your ODS

All of the data in one place moving at the speed of data.



The xDStore is the real time brain of the system.

The xDStore acts as both an operational and transactional data store, and can both publishing and receive data to and from the source systems.

Additionally, the xDStore acts as a data mart builder. Utilizing any standard XSD schema, the xDStore can create infinite data marts to store data.

Application vendors can attach to the xDStore to populate roster and other data into their own systems. Data virtualization is also an available option.

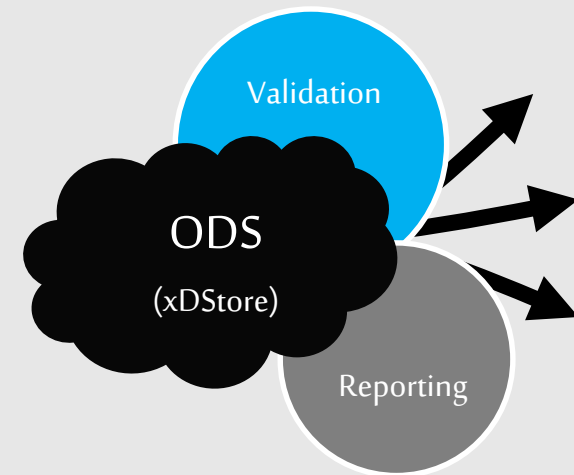
Getting Ready for Validation

The data is collected, so what to do next?

The data is now in the ODS.
So what to do now?

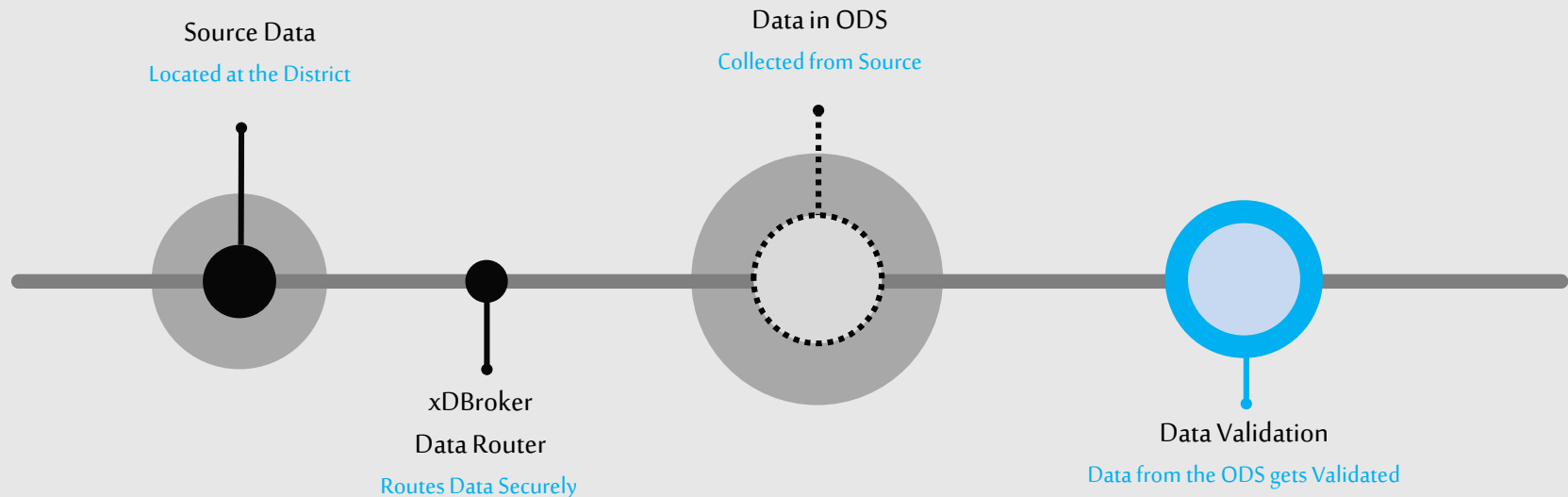
The data has been collected from the many different source systems and integrated into a single standard. So what happens to the data from here?

The next step in our process is to check the data for validity and accuracy using the xDValidator. Data quality rules and business rules are used to validate the data.



Step Two Data Validation

Clean data corrected at the source leads to better reporting



The data from the ODS is validated automatically as it arrives into the xDStore using the xDValidator.

Errors are generated based on rules. The errors show missing data as well as complicated cross checks.

Errors are reported via a web based user interface to district and school users.

Validated data that is clear of errors is passed to data marts for reporting and other purposes.

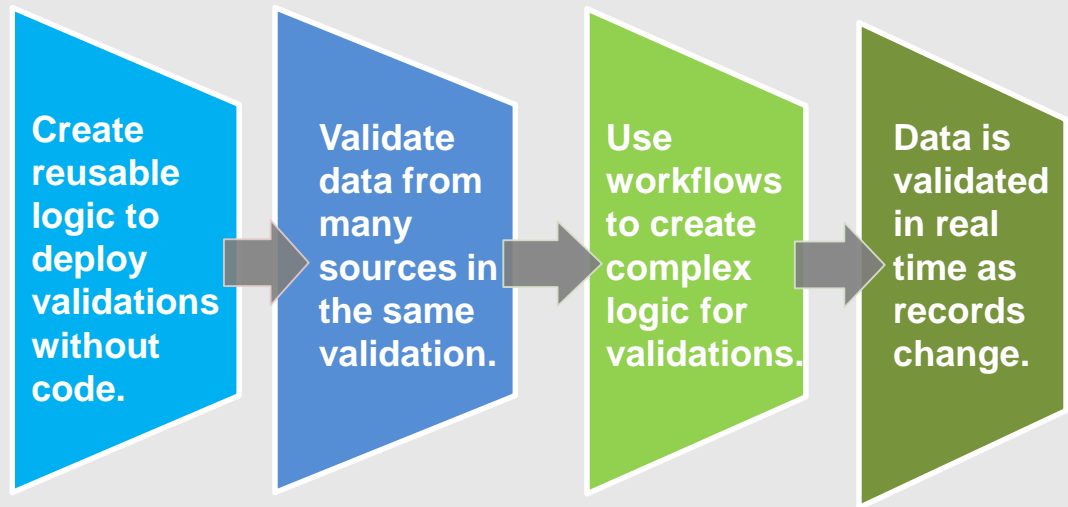
Validation with xDValidator

Get that data clean and ready to use.

Validate at the speed of data

Efficient and Effective

The xDValidator can run over 32 validation threads at one time. There are no limits on the number of validations that can be written and implemented.



Big data is no problem.

800,000

An average of 400,000 to 800,00 records can be validated per hour.

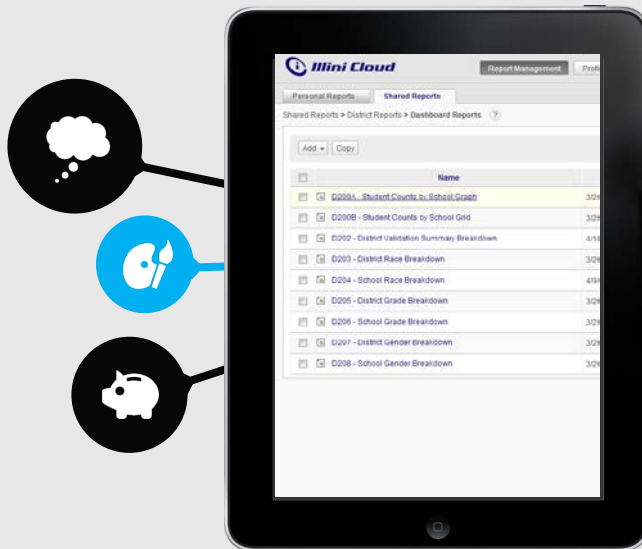
Performance is never an issue.

30,000

Real-time validations are performed at a rate of over 30,000 validations per minute.

xDAdHoc is Different

What makes it so unique?



Real Time Report Generation

Reports are never generated until you click the button to display the report to the screen.

Easy to Use Report Creation

It is easy for users to create reports from the data they already have access to.

Data Filtering Based on the Data

Data is filtered and secured to the field level to ensure the safety of the data. The data filters are based on the data itself – so as enrollments and staffing change, the filters change automatically.

xDAdHoc is Secure

How only you can see your own data.



Integrated Authentication

xDAdHoc is integrated with the authentication systems put in place. This means users do not have to login multiple times.



Automated Filtering

The data a user has the ability to see is controlled by filters that integrate with the data in the xDStore. This means a user can only see their own school or district and nothing else.



Role Based

Security is privilege and role based. This means a users role controls the functions they can execute as well as the folders and reports they can view.



Field Level Security

For users who are allowed to create their own reports, what tables and fields a user may use can be controlled via security.

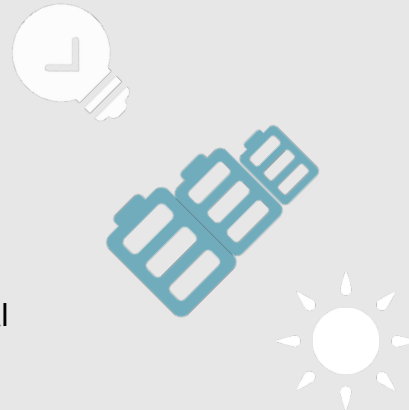
Step Three Error Reporting

Getting data out of the ODS

Error Reporting

View errors with ease.

Error reports are generated in real time as users run reports. The data within the reports are automatically filtered based on the user's role and authentication information. Reports can be exported to many formats – including PDF and Excel. Reports can also be printed or emailed.



Correct Data

Correcting at the source means cleaner data over time.

Correcting the errors is easy – simply fix the record in the source system. When the record is changed in the source system, the record will automatically get updated in the ODS and re-validated. Any new errors on the record will be reported. If the record is clean, it will move on for reporting and other processes.

How to Correct Data

Getting errors corrected is easy

Go back to the SIS or other source system and look up the students that have errors.

1

2

Correct the data that was in error in the source system record.

Errors that have been corrected will disappear from the error report as they are corrected.

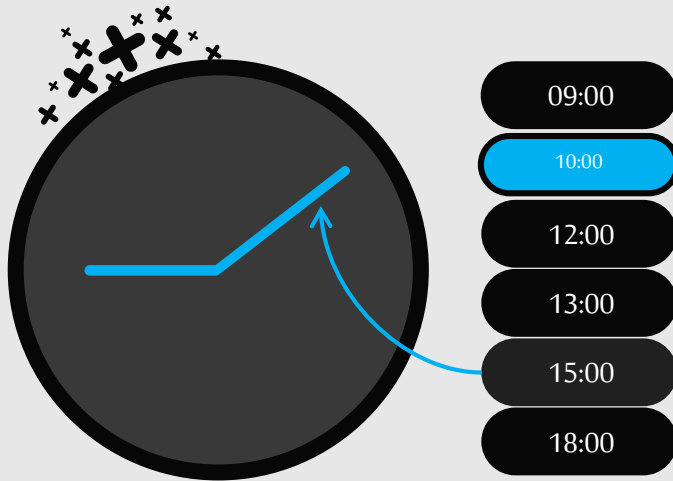
4

3

The changes and corrections will be sent through the system once when the record is saved.

Correcting Data **At the Source**

Correcting data at the source saves time and effort.



Correcting data at the source has many benefits. The data validation process saves time and effort for many uses - including state level reporting.

Cleansing the data may initially be a time consuming process, but over time, the data will become cleaner and errors within the district are reduced when data owners continuously fix data errors as they occur.

Clean Data **Moves Onward**

So many possibilities.

Data marts created by the xDStore are populated using the xDComposer. The xDComposer translates data between the various schemas and standards.

Clean data that meets the needs of the data mart is automatically pushed into the mart. Data can be mapped from one or multiple sources to gather all of the needed data.



EdFacts – CEDS – Ed-Fi

Map data easily between SIF and EdFacts, the CEDS framework, and/or Ed-Fi..



Other Applications

Use the ODS data to populate other applications that require real-time data.

Use any standardized schema, such as SIF, CEDS, EdFacts, and Ed-Fi. Use your own schemas for longitudinal reporting or any other purpose that may be required.

More Ways to Use Your Data

Keep that data working for you.

Unique Student
IDs
using xDUID

Real Time
Reporting
using xDAdHoc

Unique Student IDs

xDUID is an intelligent and scalable unique ID solution.

Real Time AdHoc Reports

xDAdhoc is a fully customizable ad hoc reporting solution for presenting data to users in real time.

Real Time
Analytics
using BI Tools

Automated Identity
Management
using xdAD

Business Intelligence

Use any standard BI tool set to analyze data in your ODS or TDS.

AD Automation

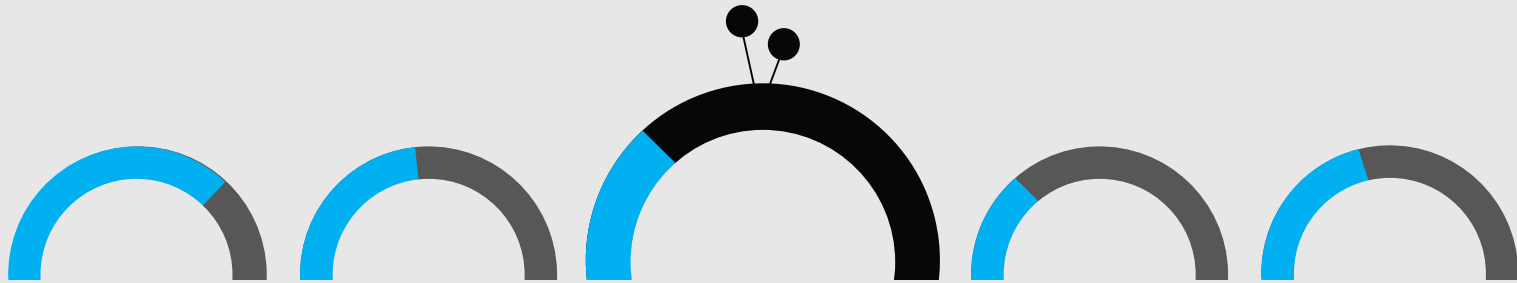
Automate AD account creation in real time from the data in your SIS and HR systems.

P-20W Record
Linking and
Integration

Record link your entire P-20W data set without concern for PII data using the toolset from CPSI to link and track data between systems and agencies.

Real Time Real Benefits

Districts truly benefit from real time solutions.



Data is collected automatically from the various source systems located at the district without the need of human intervention.

Data validation rules allow for complex data checking to help prepare for state reporting and other needs.

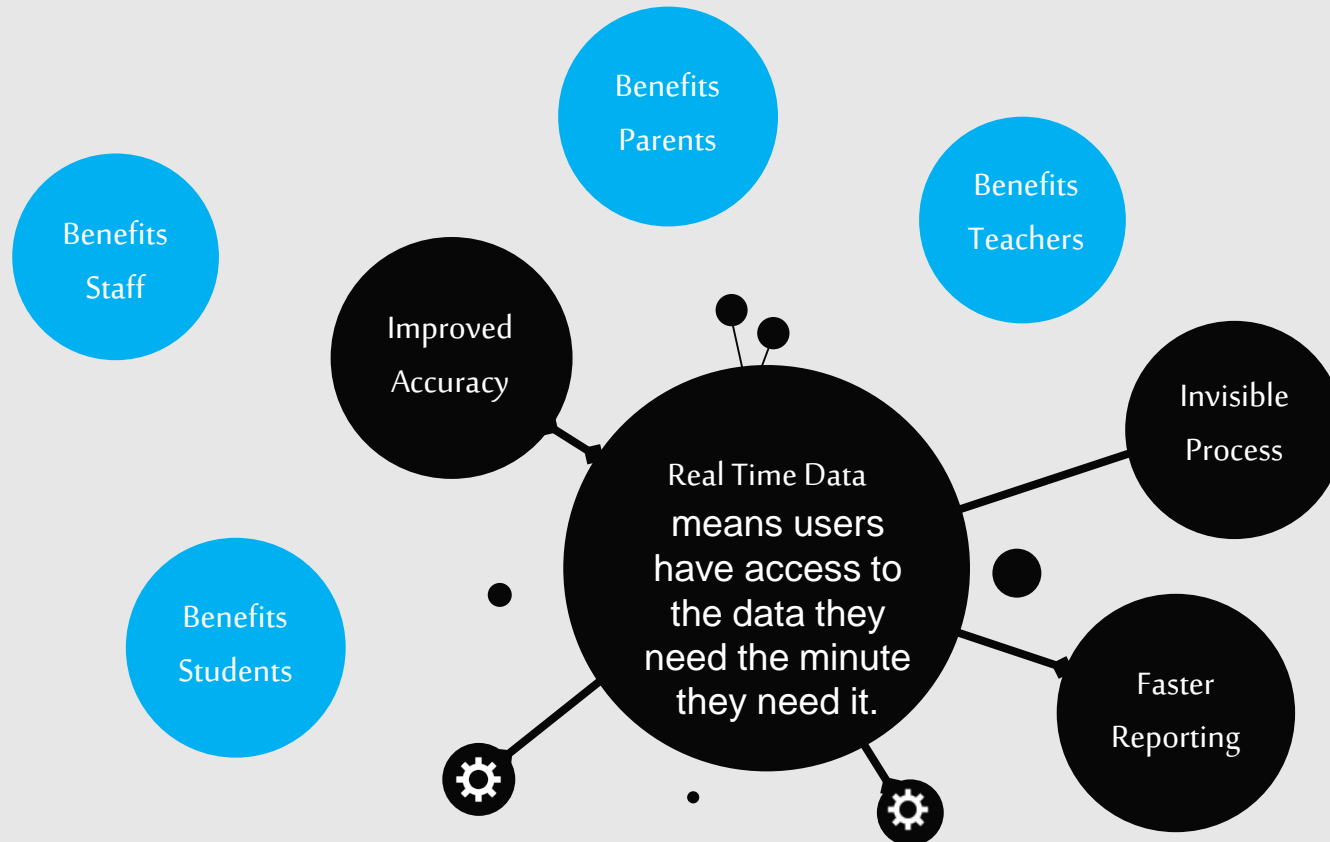
Daily notifications on errors. Errors are fixed at the source for better data quality over time.

Data is stored based on standards. This allows for accurate reporting data analysis over time. Data analysis is reliable and efficient.

Functional data marts expand the capabilities of the system as the needs to the organization grow.

The Benefits

Why Real Time Data Makes a Difference





Question Time

How to Contact Us

By web, phone or email we have you covered.

<http://www.cpsiltd.com>

Hit up our web page for lots of great information and to schedule a demo.

800-659-8240

You can call us anytime – but our normal business hours are 8AM – 6PM CST.

sales@cpsiltd.com

You can always send us an email any time of day or night.

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If you ever come visit us, we are just outside of St. Louis, MO

