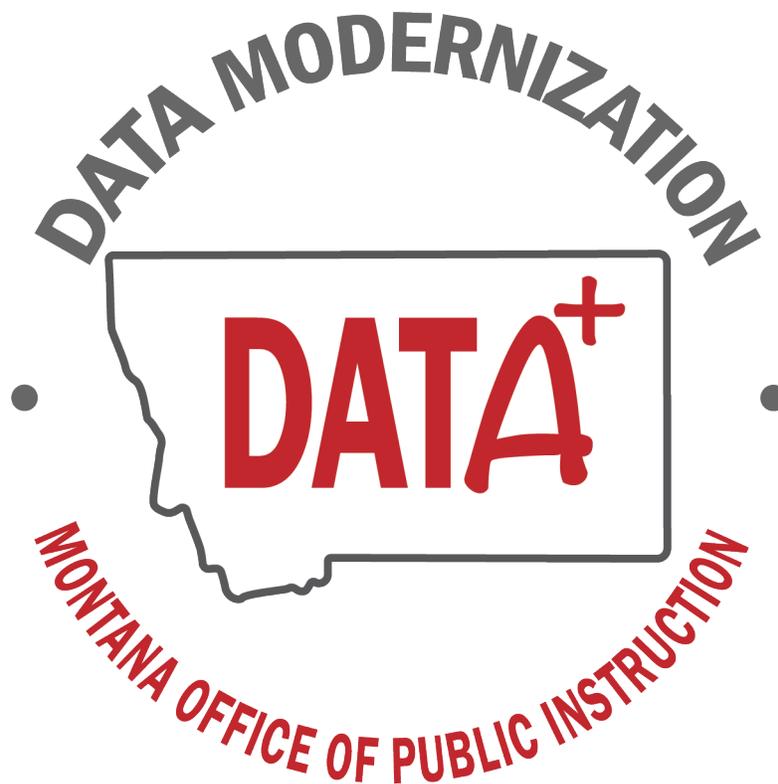




Montana
Office of Public Instruction
Elsie Arntzen, Superintendent



Educational Data Integration

April 29, 2024

Office of Public Instruction

HB [367](#) OPI Data Modernization
Status and Overview Report



Superintendent Elsie Arntzen
April 29, 2024

To:
Legislative Finance Committee
Education Interim Committee
General Government Budget Committee
Education Budget Committee

Subject: Progress Update on Office of Public Instruction Educational Data Integration: Costs, Timeline, and Goals

I am happy to present this introduction for the Office of Public Instruction (OPI) Data Modernization Legislative Report. This report details the progress we have made over the last two months. We remain committed to transforming Montana's educational landscape through data modernization.

OPI and the vendor are working to meet milestones and are committed to staying on track for timely delivery. We have made great process over this reporting period. We have worked with our vendor, PowerSchool, on the continual replication of data from Infinite Campus (IC) State Edition to Connected Intelligence (the data lake). The connector from the data lake to pull data into Unified Insights (the dashboarding tool) is well underway. Below is a brief list of some of the workstream items taking place

- Connected Intelligence Setup and Integration with Infinite Campus 100% complete.
- Map and Gap analysis for Unified Insights 100% complete.
- Ongoing replication of data into data lake 100% complete.
- Custom Connector Analysis and Mapping from PowerSchool Districts 100% complete
- Load data into Student Analytics from IC State Edition 23% complete.
- Security Setup and configuration for Unified Insights 2% complete.
- Assessment Load for Dashboard 2% complete.

The OPI team has continued to communicate progress on this project with internal and external stakeholders. We have hosted several presentations to various groups to share updates on our project and provide additional information about the functionality of the product.

My office is actively participating in the Education and Workforce Data Governance Board from House Bill 949. OPI staff has participated in the three workgroup meetings: Data Governance and Policy, Data Research, and Project Design and Implementation. Additionally, OPI hosted a meeting between OCHE and DLI to provide an update on the project.

OPI has continued monthly meetings with the School Implementation [Steering Committee](#) and has met twice in this reporting period. The committee is providing guidance and feedback on project activities and requirements that impact users. We also have met with the PowerSchool districts in a user group meeting to give updates and answer questions.

In this report, you will find information on the OPI's goals for this project, details of the progress in the last reporting period, and the identification of next steps.

OPI is looking to the future and are conducting internal discussions concerning the sustainability of the project. We will be looking at more formal discussions in the future as it will have an impact to our state's general fund.

Please feel free to visit our [website](#) to see the most recent progress throughout the implementation of this project. Thank you for your unwavering commitment to our shared goals.



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Introduction Educational Data Integration

In the current reporting period, PowerSchool and OPI actively worked through Milestone 4a: Deployment of Connected Intelligence and Milestone 5a: Base deployment of Unified Insights modules. During this reporting period, we utilized the connection from the State Edition of Infinite Campus to Connected Intelligence for ongoing replication of the data. PowerSchool also completed a map and gap analysis of the data to Unified Insights to begin the setup of the dashboards. OPI is working on the security setup for users' roles in Unified Insights and has met with the vendor's assessment team to develop a plan to load state assessment data into the dashboards. Additionally, the steering committee with representatives from schools across the state met twice. This group has provided valuable feedback on existing processes to shape how we will utilize the tools in the Data Modernization project to better meet their needs.

Data Modernization Vendor Partner Role

PowerSchool and the Office of Public Instruction (OPI) have been working collaboratively and meeting weekly with progress reports on this project. They have provided training to our staff on Connected Intelligence and assisted with security set up. OPI has received ongoing support for implementing the communication plan. Their expertise and involvement show they're dedicated to making the project a success and are crucial in helping Montana's education system transition to modernized data management, in line with House Bills [367](#) & [949](#).

Partnership Foundations

Montana's OPI Data Modernization vendor has forged a strategic partnership with Snowflake to establish a robust data lake through their Connected Intelligence product. The connector is set up to allow Connected Intelligence to replicate the data from the State Edition of Infinite Campus into the data lake, which in turn will feed Unified Insights and its modules. PowerSchool is working diligently to create a resilient and agile infrastructure that enables efficient data utilization, sharing, and analysis to ensure the success of Montana's data modernization project.

Contractual Framework

OPI and its vendors established a Contract and Statement of Work to clarify responsibilities, expectations, and deliverables. This framework is broken into seven milestones, with milestones 4 and 5 having two sub-milestones. The milestone and delivery schedule are provided on page 6 of this report.

Unified Direction

OPI and PowerSchool worked together to set clear goals for program management. The team meets weekly with project status updates and the Project Managers from both organizations meet biweekly to touch base. The aim is to improve services, streamline IT and data interactions, make better use of data for everyone involved, cut costs, boost security, and improve overall governance.

Preparation and Solutioning

With the ongoing replication of data from Infinite Campus State Edition to Connected Intelligence, work has begun on the implementation of Unified Insights. Working closely with both vendors, we identified the pertinent databases to replicate to make sure that we are utilizing Unified Insights at its full capacity. PowerSchool has completed the



mapping of all the data for the dashboarding and is working on getting the data in a warehouse so it is in a format that can feed to the Commercial-off-the-Shelf (COTS) dashboards. Additionally, the work has just begun on mapping data from districts that use PowerSchool as their Student Information System (SIS) to then be able to build the connector to pull the data into Connected Intelligence. The same connector will be used for Districts that have their data on-premises and cloud-based with PowerSchool. The following PowerSchool districts will require a Virtual Private Network (VPN): Belt, Billings, Great Falls, Kalispell, Polson, and Ronan.

Financial Outlook: Project Expenditures & Future Projections

3-Year PowerSchool Contract Cost by Milestones: Including Implementation, Hosting, Licensing, Professional Services, Maintenance & Operation

Note: Recurring cost encompasses the ongoing costs associated with software and technology solutions utilized in the Montana OPI data modernization project. These costs include software licensing, release management, infrastructure hosting, and data integration. It also incorporates annual price increases, which may be influenced by factors like inflation and expanded usage.

Contract Term 1 - By Milestone	One Time	Recurring	Total	Delivery Date	Completed
Milestone 1				9/8/2023	
PS Consulting Services	\$73,728.00		\$73,728.00		✓
AWS Consulting Services	\$300,000.00		\$300,000.00		
Subtotal			\$373,728.00		
Milestone 2				9/15/2023	
PS Consulting Services	\$2,304.00		\$2,304.00		✓
AWS Consulting Services	\$20,000.00		\$20,000.00		
Subtotal			\$22,304.00		
Milestone 3				9/22/2023	
PS Consulting Services	\$3,456.00		\$3,456.00		✓
AWS Consulting Services	\$17,500.00		\$17,500.00		
Subtotal			\$20,956.00		
Milestone 4				November 2024	
PS Provisioning Services	\$18,000.00		\$18,000.00		
Subtotal			\$18,000.00		
Milestone 5				June 2025	
PS Customization Services	\$774,000.00		\$774,000.00		
PS Provisioning Services	\$230,956.00		\$230,956.00		
CI - Annual Subscription		\$1,351,498.81	\$1,351,498.81		
UI - Annual Subscription		\$1,231,331.42	\$1,231,331.42		
Subtotal	\$1,004,956.00	\$2,498,795.25	\$3,503,751.25		



Initial Term Discount		(\$1,000,000.00)	(\$1,000,000.00)	
Total (Contract Term 1)	\$1,489,944.00	\$1,498,795.25	\$2,988,739.25	July 1, 2023  July 2024 July 2025
Post-Deployment	One Time	Recurring	Total	
Annual Term 2		\$2,633,114.41	\$2,633,114.41	
Annual Term 3		\$2,733,172.76	\$2,733,172.76	
Contract Total (All 3 Terms)	\$1,489,944.00	\$6,865,082.42	\$8,295,843.48	

Educational Data Integration Payment Schedule

The 3-year term fixed cost project entails creating a payment schedule table that incorporates several key columns to manage the Educational Data Integration project expenses effectively. The table includes:

- Subscription & Deployment Service Cost:** This column captures the initial fixed cost for the project, covering subscription fees and deployment services for each year of the project.
- Annual Increase %:** This column represents the annual percentage increase in costs, reflecting any anticipated inflation or adjustments over the three-year period.
- Annual Increase \$:** This column calculates the dollar amount increase for each year based on the percentage specified in the previous column.
- Subtotal:** This column provides the total cost for each year, accounting for both the initial cost and any annual increases.
- Managed Services:** This column includes any additional costs associated with managed services or ongoing support throughout the project's duration.
- Subtotal:** Similar to the previous subtotal, this column sums up the costs for each year, including managed services.
- Invoice Total:** The final column computes the overall project cost by summing up all expenses over the three-year term, providing a comprehensive view of the project's fixed expenses.

3-Year Annual Payment Schedule

Payment Settlement Date	Subscription & Deployment Service Cost	Annual Increase %	Annual Increase \$	Subtotal	Managed Services	Annual Increase %	Annual Increase \$	Subtotal	Invoice Total
Initial 3 Yr Term 7/1/23 – 6/30/26									
7/1/2023	\$2,929,556.31								\$2,929,556.31
7/1/2024	\$2,304,507.44	1.9%	\$43,786.97	\$2,348,364.41	\$284,750.00			\$284,750.00	\$2,633,114.41
7/1/2025	\$2,348,364.41	3.8%	\$89,237.85	\$2,437,602.26	\$284,750.00	3.8%	\$10,820.50	\$295,570.50	\$2,733,172.76
Total Contract Amount									\$8,295,843.48
Optional Contract Term 7/1/26 – 6/30/28									
7/1/2026	\$2,437,602.26	3.8%	\$92,628.89	\$2,530,231.14	\$295,570.50	3.8%	\$11,231.68	\$306,802.18	\$2,837,033.32
7/1/2027	\$2,530,231.14	3.8%	\$96,148.78	\$2,626,379.93	\$306,802.18	3.8%	\$11,658.78	\$318,460.66	\$2,944,840.59



Paid Invoice



Core Features of the Vendor Products

PowerSchool Products

1. **Unified Insights** will assist Schools and OPI with data analytic tools:
 - Facilitate schools in making data-informed decisions to enhance student outcomes.
 - Provides technical and data analytic tools.
 - Early warning system using artificial intelligence/predictive analytics to identify at-risk students.

2. **Community Engagement** will enhance OPI's ability to publicly display:
 - Demographic information
 - Enrollment / Attendance
 - Statewide assessment data
 - Graduation and dropout
 - School expenditures data

3. **Connected Intelligence** will facilitate and enhance data sharing with:
 - Data lake technology
 - Data collection and integration tools
 - Data governance tools for data sharing

These applications for data modernization bring forth a range of compelling advantages, including centralized data lake construction for consolidated data storage, improved analytics and data visualization capabilities, and fortified data security measures.

Table of Milestone Delivery Schedule

Milestone #	Deliverable	Delivery Date	Completed
1	Draft Assessment Document	September 8th, 2023	✓
2	Montana Review & Feedback of Assessment Output	September 15th, 2023	✓
3	Delivery of Assessment & Future Solution Document	September 22nd, 2023	✓
4	Organizational Change Management	November -December 2023	✓
4a	Infinite Campus Connector to Data Lake	February 20th 2024	✓
4a	PowerSchool Connector to Data Lake	March 2024	✓
4	Connected Intelligence Application Deployed	March 2024	✓
5	Unified Insights Application Deployed	November 2024	
6	Post Deployment Assessment	June 2025	
7	Solution Acceptance & Final Project Sign-Off	July 2025	



Project Timeline

Date	Activity	Status
April 07, 2023	Request for Proposal Release	Completed
June 20, 2023	Vendor Tentative Award	Completed
June 30, 2023	Contract & Statement of Work Executed	Completed
July 20, 2023	Project Kick-off Meeting (PowerSchool & OPI)	Completed
July 24-27, 2023	Organizational Change Management Executive Interviews	Completed
August 9-10, 2023	Cloud Assessment Workshops	Completed
August 14-31, 2023	Application Assessment Workshops	Completed
August 24, 2023	Organizational Change Management Assessment Report	Completed
September 01, 2023	Maturity Assessment Report	Completed
September 22, 2023	Commercial off the Shelf Solution, Architecture & Deployment Strategy	Completed
October 31, 2023	OCM Stakeholder Engagement Plan	Completed
February 20, 2024	Connection and replication of data from Infinite Campus to Connected Intelligence (CI)	Completed
April 24, 2024	Complete Custom Connector Analysis for PowerSchool Districts (Both on Premise Districts and PS cloud hosed districts)	Completed
May 2024-July 2024	Build Custom connector for PowerSchool Student Information System (SIS) replication into CI	Not Started
January-November 2024	Connection from on-premises PowerSchool Districts to Connected Intelligence (6 VPN connections)	Not Started
March 2024-November 2024	Unified Insights Base Module	In Progress (37%)
August 2024-November 2024	Replication of all PowerSchool Districts data into CI	Not Started
April 2024-February 2025	Risk Analysis Module	In Progress (5%)
April 2024-February 2025	Student Readiness Module	In Progress (5%)
April 2024-February 2025	Community Engagement Module	Not Started
April 2024-November 2024	Replication of Additional Data Sources into Connected Intelligence	In Progress (5%)
November 2024-April 2025	Customizations of Dashboards	Not Started
June 2025	Post Deployment Assessment	Not Started
July 2025	Solution Acceptance & Sign-Off	Not Started



Current Activities as of April 29, 2024

Workstream	Activity Overview	Outcomes
<p>Connected Intelligence (CI)</p>	<p>Additional users were set up with access to CI.</p> <p>Ongoing replication of the data from Infinite Campus (IC) State Edition into the CI.</p> <p>The setup for Jira and Community Access was completed with training.</p> <p>Analysis on the custom connector for PowerSchool Districts started.</p>	<p>A User Management Consultation was completed in March.</p> <p>A Data Unloading Session was completed on April 11.</p> <p>Standard Platform Deployment (Database and Dashboard) completed.</p>
<p>Unified Insights</p>	<p>Unified Insights was moved to in progress. A technical deep-dive meeting was held on 2/29.</p> <p>Gap analysis completed and reviewed.</p> <p>Completed Data mapping and connector build is in process.</p> <p>A Security Discovery was completed.</p>	<p>Custom Connector analysis completed.</p> <p>Additional tables were identified for replication to UI.</p> <p>Assessment files are being prepared to load.</p>
<p>Stakeholder Partnerships</p>	<p>OPI met with DLI and OCHE to provide updates on the data modernization project and to facilitate the exchange of information concerning data requirements and accessibility. The last meeting was April 18, 2024.</p> <p>OPI is an active participant on the Education and Workforce Data Governance Board. The last meeting was March 7, 2024.</p> <p>OPI has established a Data Modernization Steering Committee with schools across the state. The last meeting was April 17th. The next meeting will be in May.</p>	<p>Regular meetings continue to provide valuable partnership and feedback on the data modernization project.</p> <p>OPI will participate in the Board's sub-committees to continue the progress of this group and the data modernization project.</p> <p>The Steering Committee has met twice and is providing valuable insight into the project, including how we can tailor the solutions to help with data collection and reporting.</p>



Education Data Integration through Data Modernization

Goals and Vision for Montana OPI

- Goal 1: Improve Services
- Goal 2: Improve IT/Data Workforce Interactions
- Goal 3: Increase the Value of IT/Data for Operations and Business Impacted Audiences
- Goal 4: Reduce IT/Data and Other Operating Costs
- Goal 5: Security Risk Management and Continuity of Operations
- Goal 6: Increase Governance Maturity

Addressing Statutory Compliance for Educational Data Integration

The information in the following section has been previously detailed in the prior report, and there have been no changes or updates for this section.

Montana OPI's Approach in the Data Modernization Project

- Montana's OPI is committed to legislative compliance via its Data Modernization Project, aligning with House Bill 367 and 949.
- The project aims to seamlessly integrate systems, enhance insights, provide academic support, ensure security, and facilitate secure data sharing across education.

Integration: Connected Intelligence

- The Data Modernization Project prioritizes Comprehensive Data Integration, in line with House Bills 367 and 949, to consolidate educational data from diverse sources.
- This approach improves data consolidation efficiency and accuracy, meeting legislative requirements effectively.

Holistic Student Insights: Unified Insights

- Unified Insights, in compliance with House Bill 367, offers educators a comprehensive view of student data, enabling a deep understanding of individual student performance and needs.
- This alignment with legislative intent empowers educators to meet compliance mandates and support students more effectively.

Individualized Academic Enhancement: Unified Insights/Risk Analysis

- Unified Insights and Risk Analysis tools, in line with House Bill 949 objectives, empower educators to utilize student data for personalized academic interventions.
- This approach, focused on identifying at-risk students and customizing interventions, directly supports the bill's intent to enhance student outcomes.

Robust Data Security: Connected Intelligence/Unified Insights

- Montana OPI prioritizes data security in alignment with House Bills 367 and 949, leveraging Connected Intelligence and Unified Insights.
- Robust security measures, including encryption, role-based access controls, audits, and data protection standards, are rigorously enforced to safeguard sensitive student information and fulfill compliance obligations.

Secure Data Sharing: Connected Intelligence

- The Secure Data Sharing component of the Data Modernization Project aligns with the security provisions of House Bills 367 and 949, facilitating controlled and encrypted data sharing for confidentiality and authorized access.



- Montana OPI's Data Modernization Project not only ensures compliance with legislative mandates but also empowers educators with tools to improve student outcomes, all while maintaining high data security and privacy standards.

Enhancing School Customer Experience for Educational Data Integration

Bridging Legacy & Modernization

- Ensuring a smooth link between existing software and new data modernization infrastructure is vital.
- Maintaining uninterrupted compatibility and coordination between older systems and the new framework is essential. This means addressing differences in data formats, communication methods, and operational procedures to ensure seamless connectivity. This collaboration supports ongoing operations and improves functionality, making the transition to modernized data systems seamless.

Elevating Performance

- Leveraging data modernization to streamline processes, optimize data management, and achieve a new level of operational effectiveness, resulting in improved productivity and resource allocation.

Data Integrity

- The data modernization project strengthens data accuracy and reliability, fostering trust in decision-making processes within educational institutions by ensuring data integrity and consistency, enabling confident, data-informed decisions that enhance educational outcomes and organizational effectiveness.

Reduced Downtime

- The data modernization project streamlines operational processes, minimizing system downtime and disruptions, enhancing efficiency, and promoting a resilient educational environment that supports seamless learning experiences and administrative excellence.

Data Modernization Steering Committee

OPI has put together a [Steering Committee](#) of school representatives to help provide oversight, guidance, and strategic direction for the Data Modernization project. The committee has offered valuable insights into both the current data collection practices and makes informed recommendations to ensure alignment with organizational goals. Their advisory role extends to risk assessment, resource allocation, and resolving issues that may arise during the project life cycle. The committee meets monthly to review project progress and provide guidance. The committee includes subject matter experts in educational data systems, data management, and data analysis along with other high-level stakeholders. Members of the committee have been gathered from across the state. For more information and updates on this meeting visit our [website](#).

Data Modernization Steering Committee Members List:

- Sandra Rivas, District Clerk, Browning Public Schools
- Kevin Patrick, Business Director, Butte School District
- Jill Swanson, Technology Director, Conrad Public Schools
- Julie Asbeck, Business Manager, Fairview School
- Stacy Montgomery, District Clerk/Business Manager, Forsyth Public Schools
- Janelle Mickelson, Business Manager/District Clerk, Helena Schools
- Eric Miletich, IT Coordinator, Kalispell Public School District
- Paul Kozlowitz, PC/Network Technician, Missoula County Public Schools
- Colleen Drury, Business Manager, Scobey Schools



Charting the Course Forward

Navigating the Next Steps in Educational Data Integration

OPI is using the data modernization project to prioritize and ensure an educational system that is more efficient, transparent, and responsive to the needs of its stakeholders. The project has made significant progress in this reporting period and

We will continue to align with stakeholders as we make progress on this project. The replication of data from our State Student Information System into Connected Intelligence is occurring. The work on mapping the data for the custom connector to be built from PowerSchool districts has just begun. The plans to build the 6 VPNs to the on-premises districts with PowerSchool will come after the connector has been built. Simultaneously, work has begun on the implementation of Unified Insights using the data captured at the initial connection from the State Edition of Infinite Campus (IC) to Connected Intelligence (CI). Once the data has been put in a data warehouse structure the dashboards can be deployed. The vendor and OPI will start with pilot districts to be able to set up security, access protocols and training.

Upcoming Activities and Efforts

- Monthly Executive Vendor Meetings with the Superintendent and OPI IT program team
- Weekly Project Status Update Meetings with Vendor
- BI weekly Project Manager meetings
- Monthly Data Modernization Steering Committee meetings
- PowerSchool Connected Intelligence team will continue to meet with OPI to discuss governance, security, and access for all components of this project
- Custom connectors build for Unified Insights (UI) completed and deployed for Student Analytics
- OPI Validation and Quality Assurance of Student Analytics Dashboard
- Security Setup and Configuration of UI for State, District, and School Users
- Custom Connector Build PowerSchool districts
- Virtual Private Network (VPN) build for 6 self-hosted power school districts
- Replicating data from PowerSchool districts into Connected intelligence (data lake)
- Student Analytics Customer Education Training
- Mapping and gap analysis for the Risk Analysis and Student Readiness UI modules.
- Community Engagement Deployment

Sustainability of Project

- HB 630 and HB 367 directed and authorized OPI to use federal dollars for this project.
- The funds must be obligated by September 30th 2024.
- There is no money or staff obligated in the current budget to sustain or support this project after the federal dollars are spent.
- OPI will be conducting formal discussions addressing sustainability and ongoing funding for the project.

Next Report Period:

June 24th, 2024
August 26th, 2024
October 21st, 2024
December 23rd, 2024