PowerSchool
Personalized Education for Every Journey

PowerSchool is submitting the following in response to the questions raised by the Education Interim Budget Committee

1. **Is there a way for PowerSchool to pull from Infinite Campus (State Edition) all education data necessary to realize the full analytic potential of the PowerSchool system? If not, what capabilities will be lost?**

   Pulling data only from the Infinite Campus State Edition as it is currently being populated will result in a loss of functionality. Below we explain why.

   To set the context, at the current time we are unable to pull all education data necessary to realize the full analytic potential of CI/UI. OPI defines the data to be pulled into Infinite Campus State Edition, using a data dictionary of 197 data fields. The data dictionary defines each element to be pulled into Infinite Campus State Edition. It is important to note that the data dictionary is not a complete copy of the Infinite Campus SIS (student information system) databases, from which data is pulled.

   Connected Intelligence (a PowerSchool solution) is intended to completely replicate all data from its transactional source system (not just specific fields). The goal of Connected Intelligence is to inform data-driven decision making at all levels. Among other things, it is intended to support ad-hoc data requests, (i.e. often inquiries educators and policy-makers did not know existed yesterday and that cannot be predicted in advance) as well as correlate data sets within and across agencies. When not all data is replicated these functionalities are lost. While the platform can still pull in the fields as defined in the data dictionary, it won't have near the breadth and depth of insights.

   Meanwhile Unified Insights, on average, pulls in about 400 fields from student information systems in addition to other data sources, such as assessment files. Note that in this case, the AIMS data dictionary contains 197, or about half the fields.

   PowerSchool has not completed data mapping activity. But preliminary analysis shows that there would be gaps. Below are a few examples noting that more analysis is needed to flush out finer details.

   - Course data or grade data would not be visualized in the platform. **See below for samples of dashboards that would NOT be available as a result.**

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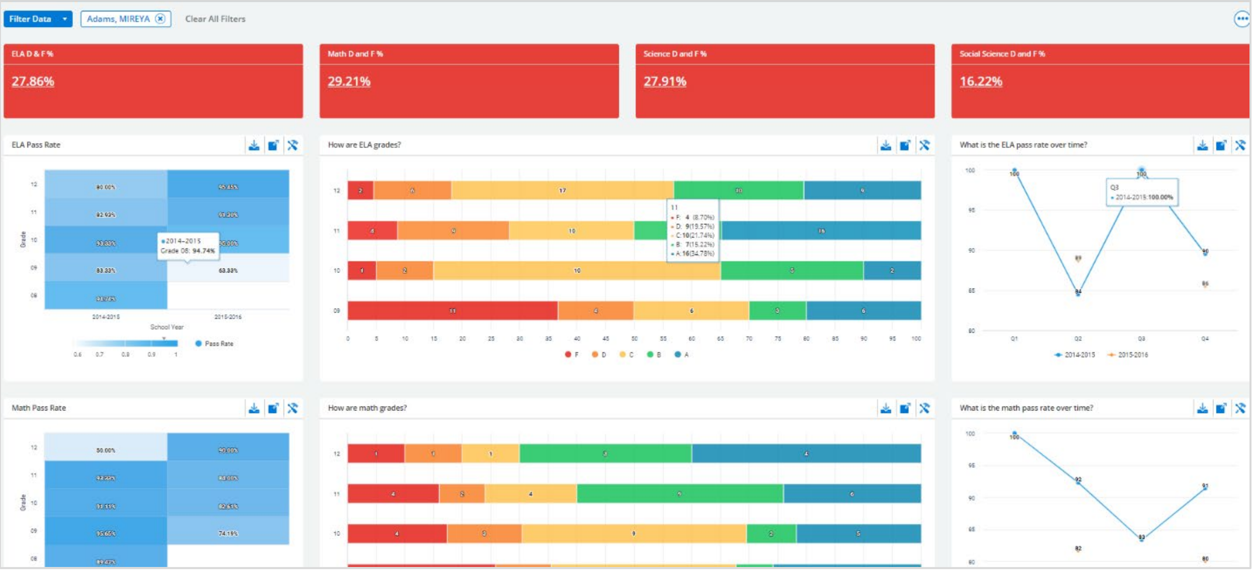


Filter Data ▾ | Adams, MIREYA ⊗ | Clear All Filters

ELA D & F %
27.86%

Math D and F %
29.21%

Science D and F %
27.91%

Social Science D and F %
16.22%

ELA Pass Rate

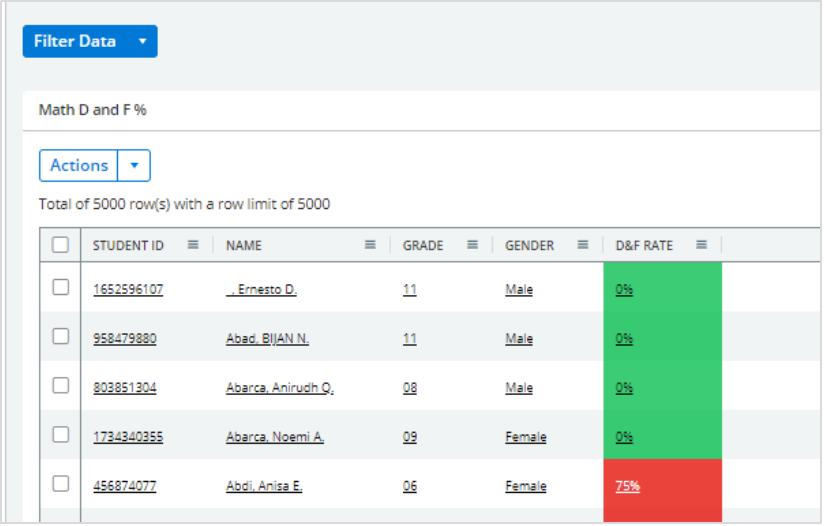
How are ELA grades?

What is the ELA pass rate over time?

Math Pass Rate

How are math grades?

What is the math pass rate over time?



Filter Data ▾

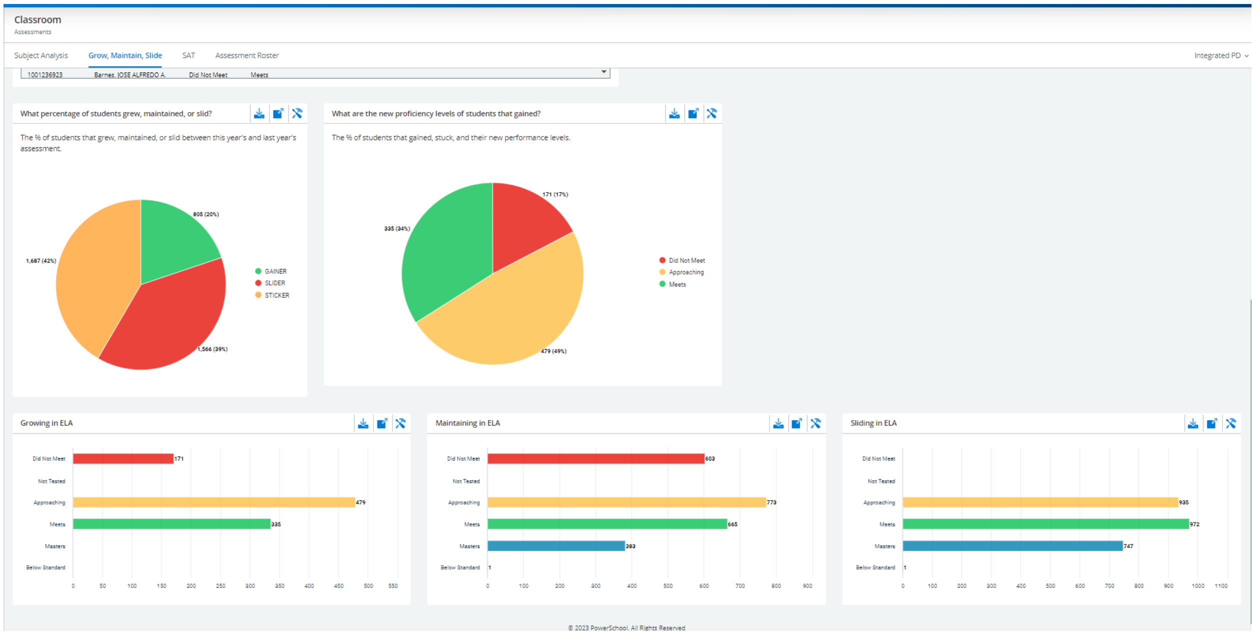
Math D and F %

Actions ▾

Total of 5000 row(s) with a row limit of 5000

☐	STUDENT ID	NAME	GRADE	GENDER	D&F RATE
☐	1652596107	, Ernesto D.	11	Male	0%
☐	958479880	Abad, BIJAN N.	11	Male	0%
☐	803851304	Abarca, Anirudh O.	08	Male	0%
☐	1734340355	Abarca, Noemi A.	09	Female	0%
☐	456874077	Abdi, Anisa E.	06	Female	75%

- Staff /teacher data is also missing. Without this data and the course to link to the student, PowerSchool would not be able to populate Classroom dashboards. This means teachers would not be able to access Unified Insights to inform their daily practice. **See below for sample dashboards that would NOT be available as result**. This dashboard would have displayed to a specific *teacher* which of her/his students were gaining, staying the same or sliding on assessment, such as reading. In another example, providing a teacher or counselor with individual student profiles would also be off-limits. See the student profile as an example.



Classroom
Assessments

1001236923 Barnes, JOSE ALFREDO A. Did Not Meet Meets

What percentage of students grew, maintained, or slid?

The % of students that grew, maintained, or slid between this year's and last year's assessment.

What are the new proficiency levels of students that gained?

The % of students that gained, stuck, and their new performance levels.

Growing in ELA

Maintaining in ELA

Sliding in ELA

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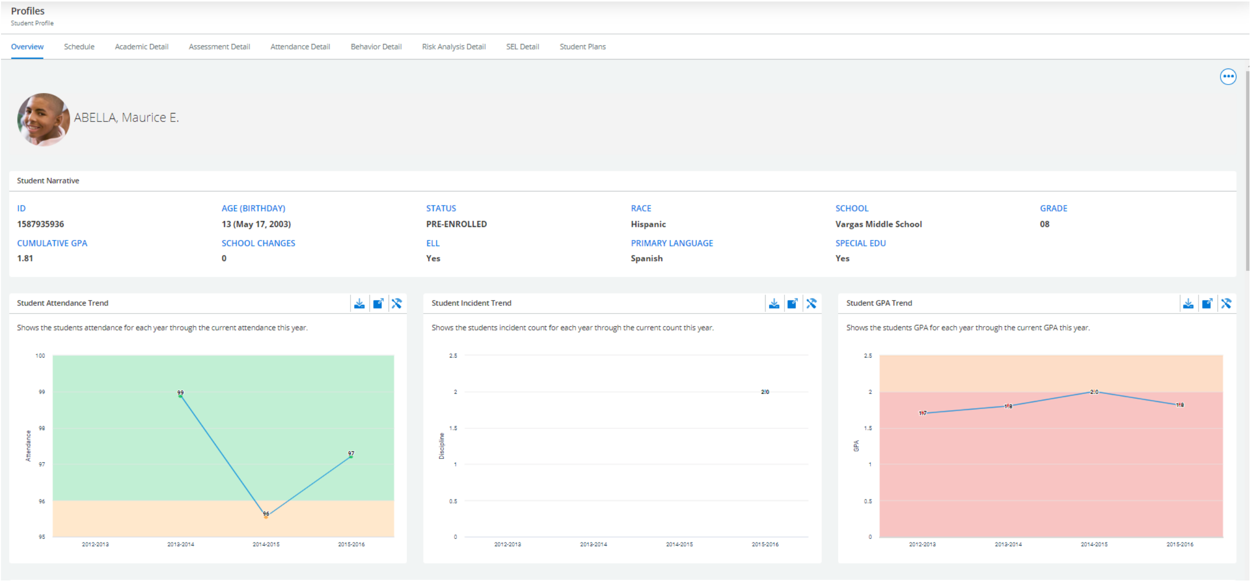


Profiles
Student Profile

ABELLA, Maurice E.

Student Narrative

ID	AGE (BIRTHDAY)	STATUS	RACE	SCHOOL	GRADE
1587935936	13 (May 17, 2003)	PRE-ENROLLED	Hispanic	Vargas Middle School	08
CUMULATIVE GPA	SCHOOL CHANGES	ELL	PRIMARY LANGUAGE	SPECIAL EDU	
1.81	0	Yes	Spanish	Yes	

Student Attendance Trend

Shows the students attendance for each year through the current attendance this year.

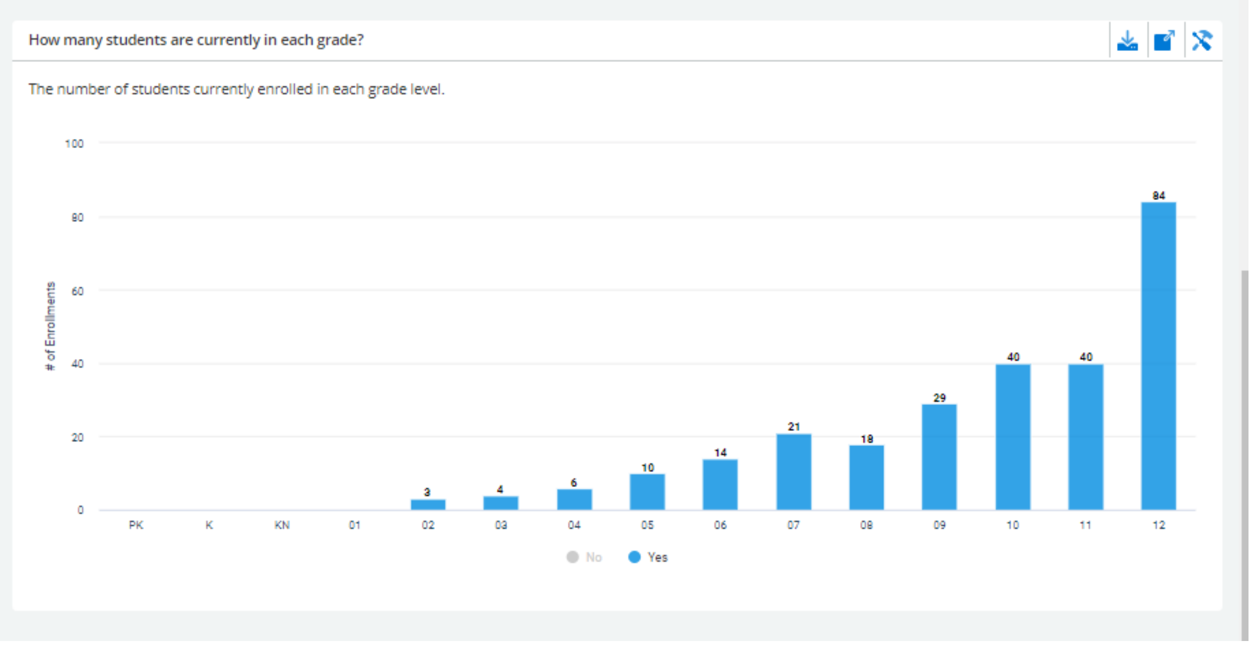
Student Incident Trend

Shows the students incident count for each year through the current count this year.

Student GPA Trend

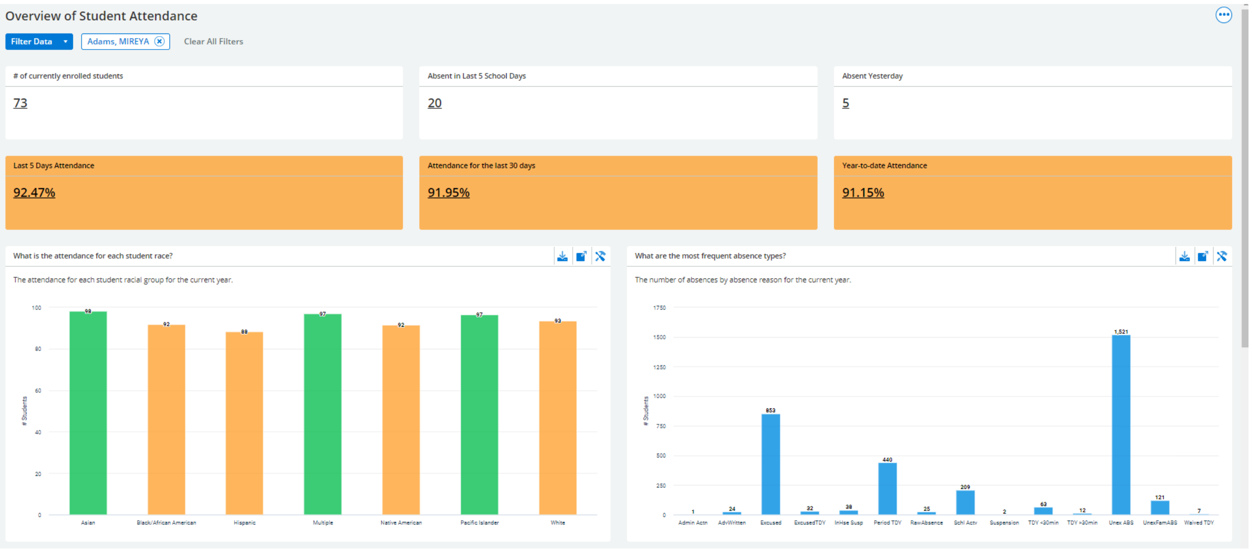
Shows the students GPA for each year through the current GPA this year.

It also appears that enrollment data is updated at a point in time versus frequently. This will limit enrollment/admissions/withdrawal information. **The below dashboard would be based on fall, winter and spring estimates as opposed to real time enrollment as a result.**


How many students are currently in each grade?

The number of students currently enrolled in each grade level.

Similarly, attendance information will likely not be reported daily and certainly period attendance will not be reported. This will make it more difficult to act in the moment to address chronic absenteeism.


Overview of Student Attendance

# of currently enrolled students: 73

Absent in Last 5 School Days: 20

Absent Yesterday: 5

Last 5 Days Attendance: 92.47%

Attendance for the last 30 days: 91.95%

Year-to-date Attendance: 91.15%

What is the attendance for each student race?

The attendance for each student racial group for the current year.

What are the most frequent absence types?

The number of absences by absence reason for the current year.

In addition, deployment of the Risk Analysis Module could be jeopardized or not nearly as useful. The Risk Analysis module is intended to accelerate identification of students at-risk to not graduate. This module depends on up-to-date information to be as accurate as possible. Lagging attendance data and the lack of course grades will adversely affect this module.

Lastly, its critical to note that some of these 197 fields within the data dictionary are not aligned to PowerSchool's data model because OPIs model appears built with a different purpose (not intended to affect day to day action and instead more to meet accountability requirements). PowerSchool can configure its data model to adjust in these circumstances, but districts may find the data less useful. The data will not inform daily, weekly, or even monthly decision-making and will be more "autopsy" based.

PowerSchool, as an IC competitive vendor in the SIS market, does not have access to determine if the limited data in IC State Edition has been driven by limitations in the software or if it has been driven by OPI requirements.

2. **What is the cost of the customized interface that OPI has suggested PowerSchool provide? (The nature of this interface is not clear to me.) If OPI's approach is adopted, how much of PowerSchool's analytic power will be lost?**

   Extensive analysis would be needed to determine the cost differential of the cost of a customized interface versus the COTS (or commercial off the shelf) connecter/interface The COTS connecter or interface would simply replicate data in its current form from the source system into a data lake using PowerSchool's out-of-the-box replication framework. From there, data is transformed into an analytical structure built to enable longitudinal analysis using PowerSchool's pre-built extract-transform-load (ETL) processes. The customized interface requires the creation of a custom interface as well as ongoing maintenance as it would be a solution unique to Montana. A customized interface would need to be developed or built to pull only specific data fields within Infinite Campus State Edition. PowerSchool's COTS interfaces are used by many districts and states around the country and are monitored and maintained by PowerSchool.

   As far as what will be lost, it will be the same answer as provided in question one, since we would only pull the approved data elements from PS SIS which is what is currently within the Infinite Campus State Edition. The other item to note is that there is an opportunity cost with using additional hours to build a customized interface. Within the contract, OPI has built in hours for work that inevitably occurs in any software implementation to meet local requirements and needs, such as helping to build specific dashboards, extra training, bringing in a new data source that was not initially scoped within the contract. etc. PowerSchool's platform is built to accommodate these situations in a way that does not require a software overhaul. But it may require extra hours to re-configure. Using those hours to build a customized interface has an opportunity cost in that it requires hours that could have otherwise been spent elsewhere.

3. **Can you provide an example of a state in which PowerSchool receives student education data directly from school districts without requiring the formal consent of the districts while at the same time complying with FERPA?**

PowerSchool would need to gain permission of the organizations for whom we work with to disclose this information. The formal consent of the districts is typically set up between the SEA and the LEA so we are not aware of who has this in place.

As part of the PowerSchool RFP response to OPI we provided the following data security information.

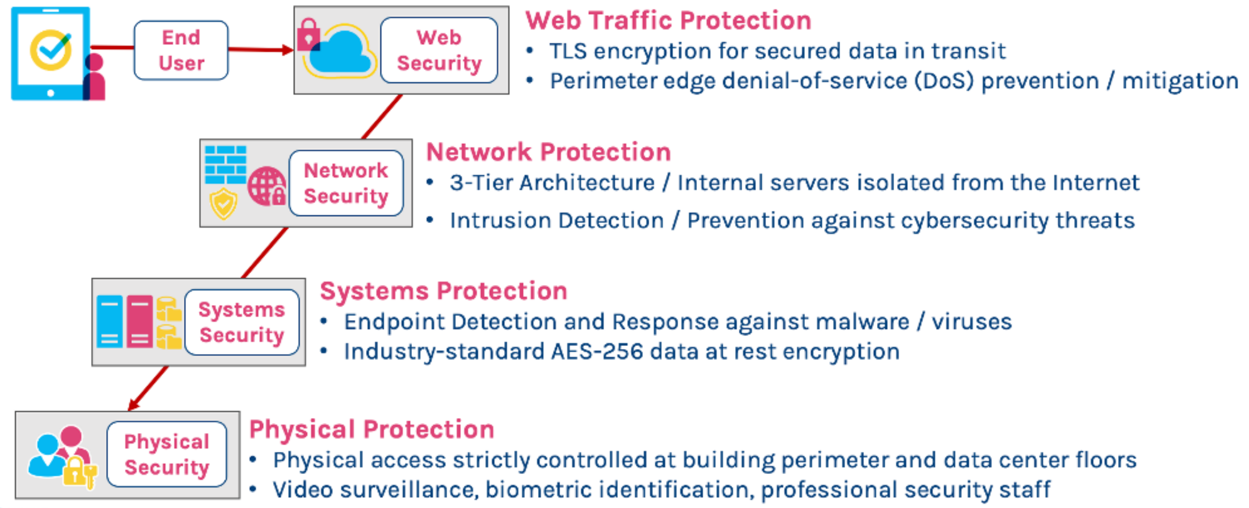
A key aspect of the Data Modernization project will include addressing cybersecurity and privacy issues that the current systems may face. PowerSchool is committed to being a good custodian of student data—taking all reasonable and appropriate countermeasures with our solutions to ensure data confidentiality, integrity, and availability. We believe that the safe collection and management of student data is essential to student success within the 21st Century digital classroom. As such, PowerSchool has signed the national Student Privacy Pledge regarding the collection, maintenance, and use of student personal information. The pledge states: "School service providers take responsibility to both support the effective use of student information and safeguard student privacy and information security." With our solution's security measures in place, educators can communicate with confidence to shareholders that their student data is safe and secure.

PowerSchool compliance initiatives are driven by many regulations, including:

- Family Educational Rights and Privacy Act Regulations (FERPA)
- General Data Protection Regulation (GDPR)
- Children's Online Privacy Protection Act
- Breach Laws, Data Residency Laws
- Digital Millennium Copyright Act (DMCA)
- Sarbanes-Oxley Act
- State contracts for reporting

Along with privacy and security provisions, our solution is specifically designed to support the changing needs of OPI.

Solution Security



Web Traffic Protection
- TLS encryption for secured data in transit
- Perimeter edge denial-of-service (DoS) prevention / mitigation

Network Protection
- 3-Tier Architecture / Internal servers isolated from the Internet
- Intrusion Detection / Prevention against cybersecurity threats

Systems Protection
- Endpoint Detection and Response against malware / viruses
- Industry-standard AES-256 data at rest encryption

Physical Protection
- Physical access strictly controlled at building perimeter and data center floors
- Video surveillance, biometric identification, professional security staff

Graphic representation of hosting security.

Data security and governance is top priority at PowerSchool and we are fully committed to data privacy and security. Robust security measures are built into Snowflake's Data Cloud and PowerSchool Unified Insights, allowing education and government agencies to focus on analyzing data—not responsible for protecting it.

Below is a summary of the included features and services PowerSchool supports:

- Network Control:
  - All communications are secured using TLS 1.2 with HSTS enforced
  - IP allow-and-block listing network policies
  - PrivateLink communications

    - Secure site-to-site virtual private networks
    - Intrusion detection
- Identity and Access:
    - Secure Single Sign On
    - Native credentials policies
    - Succession control through policies
    - Data de-identification
    - Multi-factor authentication
    - Client virtual private networks
- Data Governance:
    - Row, column, and role-based access control and policies
    - Secure UDFs
    - Data tokenization
    - Anonymization
    - Data masking
    - Data tagging and classification
- Data Protection:
    - Data recovery and failover
    - Time travel and fail-safe
    - Business continuity and disaster recovery
    - Data audits captured for query transactions, access history, data exports
- Encryption:
    - End-to-End Encryption (E2EE) Policies
    - Data is always encrypted in-flight
    - Data is always encrypted at rest
    - Strong AES 256-bit encryption
    - Automated key rotation
- Compliance and Legal:
    - SOC Certification
    - ISO 27001
    - FERPA Certification
    - AWS Security Benchmark Scans
    - Mandatory Security Training

PowerSchool has a dedicated security team led by our Chief Information Security Officer who oversees our Security Operations Center. Our software development team also ensures all software code is reviewed and scanned for potential security vulnerabilities that have been identified by the Open Web Application Security Project or (OWASP).

- *End-to-End Encryption (E2EE)*. Data is automatically encrypted during its entire lifecycle, securing data while at-rest and in transit. Always-encrypted client communications, plus integration with cloud provider private networking.

- *Fully Encrypted Storage*. Data at rest is always encrypted while handled by the Snowflake drivers and systems.
- *Strong Authentication*. Built in multi-factor, integration with your federated SSO and easy user management.
- *Full Auditing*. Track every login, every transaction, every data transfer, and export to your security tools.
- *Role-Based Access Control*. All objects, actions, and even compute usage can be controlled with roles.
- *Customer-Controlled Access and Permissions*. Access and permissions are set up based on your security policies.
- *Recovery*. Options to ensure your data can be recovered in case of an accident or worse
- *Single Sign-On (SSO)*. An authentication method allowing users to authenticate once and then access multiple applications or systems without having to log in again. All users require unique logins and passwords.
- *Row and column level security*. Data governance/security features to apply masking policy to a table or a view to protect sensitive data from being accessed by unauthorized users at query run time.
  - *Role-Based-Access-Control*. Restrict access to a particular database, schema, table, data warehouse, or database object
  - *Data Masking*. Logically encrypt the data while returning the query results. Masked, partial-masked and column level security
  - *Row Access Policies*. If the table has a role related column, then a row access policy can be created to restrict the user to only return the rows based on logged in user roles
  - *External Tokenization*. Encrypt PII data and store it in the data lake as part of the Data Ingestion
  - *Data De-identification.* De-identify the required PII or sensitive data using data scrubbing
  - *Anonymization.* Data will be anonymized using a native k-Anonymity algorithm. For example, storing the age range instead of the actual age of the user
- *Dynamic Data Masking*. Column level security feature that uses masking policies to selectively mask plain-text data in table and view columns at query run time.
- *Secure Data Sharing*. Secure data sharing enables inter- and intra-organization data sharing to quickly access live data in a secure manner, control governed access to shared data, and setting access controls to datasets. Data is shared within and across organizations securely without having to copy or move data, and securely provides data for analysis to the right people.
  - Eliminate data redundancy
  - Share WITHOUT exposing PII or sensitive information

  - Process any volume of data efficiently
  - Provide near-real-time data access
  - No ETLs, APIs, or FTPs required, which eliminates security risks
  - No specialized skillsets needed
- *Data Residency*. Your data resides within national borders in secure data centers.

Data Confidentiality, Integrity, and Accessibility

Data Confidentiality

Data confidentiality protects access to data from unauthorized access and disclosure through multi-layered security and confidentiality features. In addition to the security features outlined above:

- **Content Access**. Reports and data are protected through the underlying security model. Administrators create groups with defined roles and then assign users to these groups according to their data needs and confidentiality and security policies. Users are thus granted permission to access reports, databases, tables, fields, and individual records, according to their defined roles and groups.
- **Row Level Data Access**. Users are presented with data sets specific to their scope of responsibility based on data that associates dashboard users to a subset of data (e.g. schools, districts, classrooms, etc.). The proposed solution provides a comprehensive model for the definition and maintenance of row-level security that will leverage the row-level definitions in the customer's SIS data which may be sourced from the state ODS.

The proposed solution has a role-based security model which can restrict access at the object level. The groups (roles) of security repositories such as LDAP or AD are utilized to provide access to the proposed solution and to the content it contains. All of the required layers of security (i.e., Folder, Content [Dashboard or Report], Table, Column, or Row) can be managed by group or role. The roles or groups defined in the Student Management System (SMS/SIS) provide access to the data presented in that content (e.g., reports or dashboards).

Unified Insights leverages the data pertaining to a staff member's data in the underlying SIS or state ODS. We link authenticated users to their corresponding logins or staff records in the SIS and load our own row-level security tables. Our security tables have user interfaces to augment the security definitions so that individuals requiring row-level access to the analytical data, but who are not defined in the SIS data, can have restricted access. These security tables are joined to the analytical data tables in the semantic metadata of the reporting and analysis software.

Data Integrity

Data integrity, defined as the overall accuracy, completeness, and consistency of data over its entire lifecycle, is managed through multiple features.

Data Observability. Connected Intelligence utilizes data observability which enables us to fully understand and act on the health of the data in our systems. Observability tools generate actionable insights of a system's internal state by analyzing various data points such as metrics, events, logs, and traces, which enables us to fully understand and act on the health of the data in our systems.

The Connected Intelligence Platform has stringent data observability, monitoring, and alerting controls in place to ensure reliable data replication. Heartbeat monitors are in place to identify an issue as soon as it happens. An alert is created, and the appropriate teams diagnose and resolve the issue. Additionally, self-healing mechanisms are in place to automate recovery when possible.