SAN FRANCISCO USD

RFP NO. ED-FI 2018 IMPLEMENT AND SUPPORT AN ED-FI UNIFIED DATA SYSTEM INFRASTRUCTURE IN AWS

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Dear Mr. Sarmiento,

Hoonuit is pleased to present our data management solution in response to RFP No. ED-FI 2018 Implement and Support an Ed-Fi Unified Data System Infrastructure in AWS. At Hoonuit, we are committed to promoting education leaders, principals, and teachers’ efforts in leveraging data to improve the quality of education provided in every school. Specifically, our solution will support San Francisco USD’s mission to advance system and data governance that increases cross-department cooperation and equity with timely, unified, and high-quality data.

Hoonuit—formerly known separately as Atomic Learning and Versifit Technologies—empowers educators with knowledge and insights to improve student outcomes. With Hoonuit’s data management solution, you can access extensive amounts of SFUSD data in one location. This means that your staff does not have to manually compile data from multiple systems in order to make informed decisions.

With deployments of our data management and analytics solution in 38 districts across California, Hoonuit’s extensive experience in the state positively impacts the outcomes of over 350,000 California students. Furthermore, we have over 17 years of experience with data specific to K-12 educators throughout the United States.

We are looking forward to the opportunity to continue to support SFUSD’s goal to implement an Ed-Fi Unified Data System and increase application interoperability that improves data use for better operational, teaching, and learning outcomes. If you have any questions or wish to discuss specific parts of this response, please contact our VP of Strategic Partnerships, Liz Walbrun, at 303-638-0101 or Liz.Walbrun@hoonuit.com.

Sincerely,

Paul Hesser, CEO
Hoonuit I, LLC
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EXECUTIVE SUMMARY

San Francisco Unified School District Achieving More Through Data Based Decisions

San Francisco Unified School District has a reputation of courageous innovation to ensure that each student’s needs are met and their individual potential is reached. The inspiring strategic plan outlined by your district leadership and embraced by district staff and educators has made incredible progress in installing systems and processes that will break down the data silos throughout the district.

We believe Hoonuit can help SFUSD continue this momentum and take your initiatives to the next level by unlocking the insights available with district data. Specifically, this is done through the comprehensive integration, transformation, and visualization of data in order to use timely, accurate, and relevant information to monitor and predict outcomes that drive decision making at all levels of the organization in the most efficient ways possible.

Our ongoing data warehouse and analytics effectiveness is drawn from the successful implementation of Hoonuit in four state-level education agencies, along with regional and independent school districts, for a total of over 800 school districts who are now analyzing and utilizing their data through Hoonuit. Hoonuit has extensive experience in California, providing comprehensive reporting to school districts and regional agencies—including helping these districts report on LCAP and LCFF requirements. As of May 2018, Hoonuit has been selected to provide data management, analytics, and reporting to San Diego Unified School District, as well as Santa Ana Unified School District.

Proposed SFUSD Solution

To support SFUSD in achieving your key data management goals, Hoonuit recommends the following Data Management and Analytics solution. We have summarized your initiatives and requirements below and mapped them to how Hoonuit’s solution can help address those concerns. We elaborate further on these points throughout the response document.

Driving SFUSD Outcomes

Beginning as early as preschool to prepare all students for success in college and their career, SFUSD is seeking an educational technology partner with proven experience, expertise, and extensibility to make the college dream accessible to all students.

Hoonuit commits to empowering SFUSD educators and administrators with knowledge and insights to help each and every student receive quality instruction and equitable support required to thrive in the 21st century.
Addressing SFUSD Current and Future Initiatives
With a focus on nurturing and cultivating the whole child, SFUSD requires a flexible and scalable solution to unlock the power of data for initiatives now and into the future—including Program Evaluation, School Improvement, Intervention Effectiveness, Department Progress Monitoring (KPIs), Progress Monitoring of student data at the class, school, and district level, Early Warning System, MTSS/RTI, College and Career Readiness and Success, and more.

Hoonuit’s comprehensive analytics solution suite is designed to tailor and support SFUSD initiatives to drive positive change for schools, staff, and students.

Aligning Hoonuit Data Analytics Suite to SFUSD
To drive connectedness of data and decision-making, SFUSD requires a descriptive and predictive workflow with embedded insights available to all levels in the organization as well as up-to-date public dashboards available to parents and the community in a secure manner, compliant with all federal, state, and SFUSD policies, laws, and regulations. Interoperability between different source systems and BI tools is key to allowing seamless access of information while preserving data quality and data integrity. The combination of our out of the box, research-based dashboards with the flexibility for end users and developers alike to easily create reports with drill downs and aggregated roll ups is foundational to unleashing the power of SFUSD data.

Hoonuit’s intuitive, system-agnostic platform with a suite of domain-focused modules surfaces role-specific visualizations that enable SFUSD’s stakeholders to interact with analytics and take action in relation to specific focus areas.

Leveraging Hoonuit’s Robust Data Model for SFUSD Success
With SFUSD’s goal of increasing capacity to use timely, accurate, and relevant data to monitor and drive decision making at all levels of the organization in an efficient manner that breaks down data silos, performs high cardinality analysis, relies on predictive data analysis, and able to support continuous improvement through data driven workflows is imperative for success. Hoonuit’s cloud-based platform and longitudinal data warehouse provides an elastically scalable and sustainable infrastructure, thus empowering data use across the district that will strategically support SFUSD’s focus on equity.
By tapping into the most complete K-12 data model in the education industry, SFUSD can support any metric, conduct deep cross-domain analysis, and blend multiple-source data to gain comprehensive insight for making the most informed decisions—all in one single location without requiring users to log into multiple different systems.

Understanding how important it is for schools and districts to cultivate a data-driven culture in maximizing student outcomes, Hoonuit’s solution provides data-driven, sustained, job-embedded, intensive, and collaborative online professional development at all levels of an organization to help influence usage and adoption of analytics.

Hoonuit and SFUSD will establish a foundation for all decision-making through this data-driven culture to create a data environment that is intuitive, comprehensive, and seamlessly fits into workflows of key stakeholders—from district leadership to classroom teachers to the community. We are committed to supporting SFUSD’s mission to provide students with well-rounded learning experiences that prepare them for college and career. We are confident Hoonuit is the data analytics solution and partner to help SFUSD realize your primary goal: prepare students with 21st century skills to graduate from high school and to become productive contributors to our society.
Partnering with Hoonuit
Hoonuit emphasizes the combined strengths of comprehensive data management and educator-centric support to better meet the needs of everyone involved in improving PK-12 education. By partnering with Hoonuit, SFUSD will join a network of over 800 school districts and education agencies across the United States who have implemented successful solutions and experienced Hoonuit’s ongoing quality services, and collectively lead the industry in actionable use of data analytics.

**Complete Commitment to the Education Industry**
The Hoonuit team has 100+ years of combined expertise in the education industry. As a result, the intelligence and KPIs that SFUSD can deliver through our solutions and teams are in context of what educators expect, while taking into consideration your specific regulatory, compliance, and security needs.

**Paramount Analytics for Educators**
As a result of serving hundreds of districts, the competencies Hoonuit has developed over nearly two decades include the collective intelligence across the education industry. SFUSD will benefit from these learnings through continuous refinements to our cutting-edge technology to bring the best tools and insight to your educators.

**Unprecedented Data Model and Data Integration to Answer Every Question**
SFUSD will take advantage of the only solution in the market that provides the level of granularity in data analysis and seamless summarizations to answer every question regarding education data as well as agency-specific reporting needs. This platform integrates with any SIS, financial, HR, assessment, and other relevant systems along with universal data loaders to ensure the most-effective, streamlined workflows.

**Intuitive Technology Platform**
Our robust, scalable, secure technology platform has ongoing monitoring that can provide SFUSD proactive visibility into anomalies in data processing, failures, and alerts based on changes made within your systems and/or data to address issues right away and provide your team an on-the-go approach.

**Unparalleled Service Approach—100% Customer Retention**
Through a customer-centric approach, Hoonuit will regularly share industry best practices with the SFUSD team to stay abreast of new requirements, establish and foster a productive data culture, and maintain the highest expectations to best serve your students. There is no better testament to our partnership with our customers than a 100% customer retention rate.

**Experienced California Solution Provider**
SFUSD will join 100+ California districts taking advantage of state-specific reporting that includes California Assessment of Student Performance (CAASPP), California English Language Development Test (CELDT), and Local Control and Accountability Plan (LCAP). Through these experiences, Hoonuit has become the leader at providing California educators and leaders access to the data critical to their unique situations.

We are committed to building a strong partnership with SFUSD with our end-to-end data management and analytics solution that integrates across your existing educational technology and operational systems to deliver the actionable information to best achieve your goals. See Appendix E for an overview of Hoonuit’s entire solution.
WRITTEN PROPOSAL

The following sections are based on the suggested content from the RFP (page 21)

STRATEGY

A detailed description of the Proposer’s strategy to structure each element of the work as outlined in this RFP.

Every school, district, consortium, state, and educational agency runs various disparate systems including student information, assessment, surveys, food management, transportation, human resources, finance, learning management, classroom management, instruction, health, program services, as well as numerous other tools. In order to maximize student achievement, it is essential to connect as many disconnected sources of data as possible, thus unearthing insights that drive holistic, accurate, efficient, and effective decision making. This fundamental need of data connectedness is the foundation of data interoperability of Hoonuit’s analytics platform.

Considerations for a successful deployment:

<table>
<thead>
<tr>
<th>REQUIREMENTS</th>
<th>QUESTIONS AND CONSIDERATIONS</th>
<th>HOONUIT ENTERPRISE DEPLOYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disparate Data Sources</td>
<td>What happens to data sources that are not Ed-fi certified / compliant? How do you expect data from non-Ed-fi compliant sources to be pulled in, especially since Ed-fi discourages using extensions? How do you address needs of educators, administrators, and the community in a timely fashion if you are dependent on the timeline of these source systems to become Ed-fi compliant? And, what if they choose NOT to become compliant? What happens to the integration when these data sources do become Ed-fi compliant? There will be time, effort, and cost required to redo these integrations</td>
<td>Hoonuit provides a system agnostic platform with pre-built connectors and universal data loaders to load data from ANY data source. These connectors and loaders are maintained by Hoonuit—providing our customers the best possible integration to meet all their reporting needs now and into the future. We will work with you—on your timelines—to make sure the data you need is at your fingertips when you need it—regardless of source.</td>
</tr>
<tr>
<td>Data Model Conformation</td>
<td>Ed-fi data model is limited in attributes required to support comprehensive reporting needs such as missing attributes for health and immunizations, assessment scores like percentiles, z-scores, writ_scores, growth percentiles, absence reasons, tardy reasons, aggregate tables for attendance, survey questions,</td>
<td>Working with PK-12 customers over the last 19 years, Hoonuit has built the single most comprehensive data model, taking into account every data domain and attribute our customers would need to support all their reporting requirements. We support over 3,000 data elements</td>
</tr>
<tr>
<td>REQUIREMENTS</td>
<td>QUESTIONS AND CONSIDERATIONS</td>
<td>HOONUIT ENTERPRISE DEPLOYMENT</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>answers, and correlation to academic outcomes—to name a few.</td>
<td>and every data domains required to report on.</td>
</tr>
<tr>
<td></td>
<td>Ed-fi highly discourages use of extensions as it defeats the purpose of a standard data model. This severely limits a district’s reporting capability.</td>
<td>Our extensible and flexible data model allows for a sustainable solution, thus providing the most cost-effective and maintainable solution for our customers— supporting their needs, now and into the future.</td>
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<tr>
<td></td>
<td>Moreover, adding extensions becomes unavoidable to meet reporting needs.</td>
<td></td>
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<tr>
<td></td>
<td>What happens to the extensions when these attributes become a part of the Ed-fi data model? There will be time, effort and cost required to redo these integrations and cost-prohibitive to maintain overtime.</td>
<td></td>
</tr>
<tr>
<td><strong>Frequency and Cost of Upgrades dictated by Ed-fi</strong></td>
<td>Since backwards compatibility is NOT maintained between major version releases, there will be time, effort, and cost required to redo breaking changes and cost-prohibitive to maintain overtime.</td>
<td>Hoonuit’s releases are backwards compatible. Upgrades to the standard data model are maintained by the Hoonuit team, which provides clients with the most cost-effective and maintainable solution.</td>
</tr>
<tr>
<td><strong>Community Based Implementation</strong></td>
<td>How do you address needs specific to your implementation that do not align with Ed-fi? Do you not address reporting needs of your educators, administration and leadership until Ed-fi adds those attributes and vendors certify their solution or do you incur unnecessary expense maintaining extensions?</td>
<td>Hoonuit works with our customers, sharing best practices and ideas from our customer community while designing solutions to meet our customers’ specific reporting requirements. We understand there will always be a subset of requirements that are customer / state / district specific, therefore, Hoonuit solution accounts for it.</td>
</tr>
<tr>
<td></td>
<td><em>Is this cost-effective and sustainable in the long run?</em></td>
<td></td>
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<tr>
<td><strong>Proven expertise in California (LCAP, LCFF)</strong></td>
<td>Are there examples of proven success of using the Ed-fi model?</td>
<td>Hoonuit has successful deployments across over 500+ schools in California while providing 100+ pre-built reports addressing LCAP, ESSA, and all other reporting requirements.</td>
</tr>
<tr>
<td></td>
<td>Is the solution adding value to the end users, teachers, educators, parents, community?</td>
<td></td>
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</tbody>
</table>
Given the above considerations, Hoonuit would like to propose 3 options to satisfy SFUSD’s RFP Requirements.

1. Implement Hoonuit’s recommended comprehensive Data Management and Analytics Solution.
2. Implement Hoonuit’s Ed-fi Solution.
3. Implement Hoonuit’s data warehouse and analytical solution once the Ed-fi solution has been implemented.

Detailed Overview of the Three Options

Option 1: Implement Hoonuit’s recommended comprehensive Data Management and Analytics Solution.

This proven solution across several hundreds of successful implementations in California and across the nation will allow SFUSD to meet every reporting requirement of their educators, staff, administration, leadership, and community, as well as state and federal compliance—now and into the future as their needs evolve. Our solution includes not only the necessary data acquisition, integration, transformation, cleansing, and blending to provide the right analytics, but also provides 100+ out of the box dashboards including those specific to LCAP, CAASPP, ELPAC, A-G, and other California requirements.
The Hoonuit enterprise data model aligns with standards such as CEDS and ED-FI to enable seamless integration and flow of education data between various disparate education systems. That said, our data model includes thousands of additional data elements beyond these standards to fulfill a broader and more advanced set of analytical capabilities and data driven processes, such as:

- LCAP reporting, including closing the achievement gap with high expectations for all, access to a broad and challenging curriculum, reporting on suspensions, ELL, graduation indicators, ELA and Math state test scores, and more
- ESSA reporting, including school / district report cards, assessment analysis, post-secondary, ELL progression, chronic absenteeism, finance and allocation mechanisms, and more
- Early warning at-risk identification using predictive algorithms
- Intervention management
- Machine learning and statistical modeling to predict college and career readiness
- Early childhood education and longitudinal analysis
- Social and emotional correlations to academic outcomes
- Human capital management including staff credentials, qualifications, retention, absences, and more
- Prebuilt school / district performance improvement planning workflows for continuous improvement—including Title 1 plans, Safe and Healthy Plans, Sped, Technology Training, and more
- Per pupil spending, budget monitoring, expenditures, revenue, and other financial reporting
- District / school KPIs
- Surveys, such as school climate, social and emotional learning, and any others for students, staff, parents, and community
- Student health and wellness, including conditions, immunizations, and wellness screenings
- Geospatial analysis, including serviced-students analysis, boundary analysis for enrollment zones, chronic absences, program areas, and more.

The extensibility of our data model allows customer-specific entities to further support one source of truth across all their data—all in one central data warehouse. Our data model is relational in structure with clear key fields. Metadata is added to each table to track breadcrumbs / audit information, change log, processing dates, and source system lineage. As part of our application, we include our data model explorer that graphically represents the data model, connecting it to the visualizations within the dashboards and communicates all the fields and descriptions, while allowing you to profile the data without having to write SQL.
Hoonuit Data Model Alignment with Ed-Fi

<table>
<thead>
<tr>
<th>Ed-fi Data Domain</th>
<th>Hoonuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative/Supplemental Services</td>
<td>Supported</td>
</tr>
<tr>
<td>Assessment</td>
<td>Supported</td>
</tr>
<tr>
<td>Bell Schedule</td>
<td>Supported</td>
</tr>
<tr>
<td>Discipline</td>
<td>Supported</td>
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<tr>
<td>Education Organization</td>
<td>Supported</td>
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<tr>
<td>Enrollment</td>
<td>Supported</td>
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<tr>
<td>Finance</td>
<td>Supported</td>
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<tr>
<td>Graduation</td>
<td>Supported</td>
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<tr>
<td>Intervention</td>
<td>Supported</td>
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<tr>
<td>School Calendar</td>
<td>Supported</td>
</tr>
<tr>
<td>Staff</td>
<td>Supported</td>
</tr>
<tr>
<td>Student Academic Record</td>
<td>Supported</td>
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<tr>
<td>Student Attendance</td>
<td>Supported</td>
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<tr>
<td>Student Cohort</td>
<td>Supported</td>
</tr>
<tr>
<td>Student Identification and Demographics</td>
<td>Supported</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Hoonuit data model supports numerous additional data domains represented in the table above and beyond the Ed-Fi standard including at-risk indicators, graduation on-track and A-G classification, intervention practices, program membership, student growth, program attendance, student health and medical conditions, early childhood, social emotional, gifted and talented, post-secondary, high school graduation, diploma requirements, graduate outcomes, credit attainment, entrance exam readiness, college pathways, college readiness, college persistence, college completion, surveys, school climate, bussing and transportation, staff recruitment and evaluation, staff absence, staff qualifications and development, staff effectiveness, highly qualified, school / department metrics, purchasing, accounts payable, inventory, budgets and expenditures, spending and every other aspect of PK-12.
Hoonuit will support SFUSD in breaking down data silos and connecting disparate data from across the district to generate actionable, holistic student views that promote impactful decision making. Administrators, teachers, staff, and other authorized users can rely on Hoonuit to quickly compile reports reflecting data that shows trends from high levels, such as the entire district, down to groups or individual students.

The Hoonuit data management solution imports data from any structured, as well as unstructured data source, including student information systems (e.g., PowerSchool, Synergy, Infinite Campus, and more), financial systems, HR systems, food management systems, transportation management systems, assessments, as well as one-off auxiliary classroom files and data from other tools. Hoonuit can also scale to meet changing needs, whether it is a new Student Information System (SIS) or an assessment that needs to be represented for state requirements and visualized through comprehensive dashboards and reports (see Appendix E).
Hoonuit’s Fully Managed Cloud Solution

- Single-tenant, dedicated hosting infrastructure
- 24x7x365 hands-on-keyboard systems monitoring with 99.99% up-time goal
- Operating and database management system updates, patches, and configuration changes
- Routine audits of systems and software, backups, and restores
- Installing and configuring new hardware and software
- Administering setup of active directory authentication
- Troubleshooting any reported problems and initiating and coordinating corrective actions
- Monitoring system performance and tuning the system
- Maintaining disaster recovery and business continuity plans and executing such plans in the unlikely event of a disaster

ETL & Source Systems

Hoonuit’s ability to bring together data from various systems is a complex process, as described in this section, but the results are seamless and reliable for users who rely on dashboards daily.

Hoonuit’s ETL and assessment frameworks have been built from the ground up to scale to any platform, on-premise or cloud-based. To support scaling to any platform, Hoonuit has built ETL and Assessment frameworks that both operate independently of the database. This independence from the database allows Hoonuit’s ETL and Assessments frameworks to leverage the database for what the database is best at—storing and retrieving data. Below is a list of some of the key features these frameworks were designed for.

- Source agnostic
  - Load data from any source
  - Student and school matching of source data (Assessments)
  - Source connectors extract source data into standard format
Moving to or from a new source does not affect the data warehouse or ETL

- **Database agnostic**
  - ETL and Assessment process outside of database
  - ANSI standard SQL used to support different database providers
  - Database provider specific features still leveraged
    - Proprietary database features are accessed via a wrapper (i.e., support for optional table partitioning)
- **Platform agnostic**
  - Deploy to on-premise or cloud
  - Cloud-based scalability allows for ramping up/down resources for both Database and ETL

To link the ETL and assessment frameworks together, Hoonuit has also developed an ETL engine called the Jesse ETL engine. This engine will allow both the ETL and assessment frameworks to access commonly shared components and separate the business rules and mappings from low-level file and database access API's.

**Jesse ETL Engine.** Jesse is Hoonuit's proprietary, Java-based ETL engine that is designed to support both ETL and assessment processing outside of the database. The Jesse ETL engine consists of core Java classes and some JavaScript utility modules that provide the ETL and assessment frameworks with methods to common low-level tasks such as:

- Reading and writing files to disk or the cloud
- Reading and writing data to and from a database
- Provides the batching and queueing required to
  - Chunk work up into smaller workloads
  - Prevent bottlenecks at the source and target

Higher-level processes, like the Jesse ETL Framework and Jesse Assessment frameworks (as described below), leverage this single common ETL engine to handle core low-level tasks, including those listed above, which means both the ETL and assessment processes do not have to repeat that same code and logic to perform similar tasks.
The visual below represents Hoonuit's Jesse ETL process, how the Jesse ETL and Assessment Frameworks layer upon the Jesse ETL Engine, and how client customizations are stored separately to help increase the speed at which new Hoonuit product features and enhancements are deployed.

A key piece to supporting Hoonuit's ETL and assessment design of source-database-platform agnostic is to create a framework that can both scale and still be flexible for clients to customize and augment to fit their unique needs. To do this, the ETL and assessment frameworks support defining business rules in JavaScript modules (files), which means no compiling of code, etc., so it is easier and faster to customize while still supporting the separation of low-level ETL operations (handled in Java by Jesse ETL Engine) from high-level business rules (handled in JavaScript by ETL and Assessment frameworks).

At the core, Jesse is a Java scripting engine that leverages Java’s next-generation JavaScript Engine for the JVM called Nashorn. Java’s Nashorn compiles JavaScript code (i.e., the ETL and Assessment framework) into Java byte code for performance, and it is a key piece to unifying the Jesse ETL and Assessment frameworks.

**Jesse ETL Framework.** The Jesse ETL Framework consists mainly of JavaScript modules that perform the application specific tasks of loading a data warehouse (i.e., an implementation of the business rules and mappings defined to load a data warehouse table). The Jesse ETL Framework runs on-top of the Jesse ETL Engine and leverages the core components in the Jesse ETL Engine for pulling and pushing data to and from a source and target.

The Jesse ETL Framework can be thought of like a database stored procedure, where the ETL process for building and loading a data warehouse table is defined at a table and column level. Because the low-level Jesse ETL Engine can take care of reading and writing data to a database or file, only the business rules and mappings for defining how to set a tables column values are required. This simplifies the ETL process because only the business rules to define the column are stored in the framework, while the low-level table/file maintenance (e.g., inserts, updates, deletes, etc.) is handled automatically by the ETL framework and the Jesse ETL Engine.
ETL Data Loading. The following diagram provides a high-level workflow showing how the Jesse ETL Engine interacts with the Jesse ETL Framework to load a standard student file into the data warehouse.

Referring to the numbers in the ETL Data Loading diagram above:

1. A standard student file is ready for processing
2. The Jesse ETL Engine handles reading the file into a dataflow
3. The dataflow is passed to the Jesse ETL Framework where each column’s business rules define what each record for the students table should be
4. A client provided an override to set the students school column to use their own business rules, so the Jesse ETL Framework does not use the standard mapping for student schools and instead uses the client provided mapping; this is an optional step and provided as an example of client customization
5. The Jesse ETL Framework passes the completed students table back to the Jesse ETL Engine (as a dataflow)
6. The Jesse ETL Engine handles loading the student table dataflow into the data warehouse (batching and queueing, inserting and updating where required)

Jesse Assessment Framework. The Jesse Assessment Framework consists mainly of JavaScript modules that perform the assessment specific tasks of loading an assessment file into the data warehouse. The Jesse Assessment Framework runs on-top of the Jesse ETL Engine and leverages the core components in the Jesse ETL Engine for pulling and pushing data to and from a source and target.

In the new Jesse Assessment Framework, there are additions to support our matching engine for every assessment. The matching engine verifies the student and school defined in the assessment record and matches it to the student and school from your SIS. This new matching process helps make sure that 1) all the student and school information is accurate, 2) the assessment is attached to the correct student and school, and 3) missing student and school information can be identified.
Our new approach to loading assessments also includes file matching (via an assessment signature) to quickly communicate whether the file format from the vendor has changed correctly or incorrectly from what was supplied in the past.

**Assessment Data Loading.** The following diagram provides a high-level workflow showing how the Jesse ETL Engine interacts with the Jesse Assessment Framework to load an assessment file into the data warehouse.

![Assessment Data Loading Diagram](image)

Referring to the numbers in the Assessment Data Loading diagram above:

1. An assessment file is ready for processing
2. The Jesse ETL Engine handles reading the file into a dataflow
3. The dataflow is passed to the Jesse Assessment Framework
4. From the dataflow, an assessment signature is detected so the Jesse Assessment Framework knows how to process the assessment (e.g., ACT, Star, etc.); additionally, it communicates whether the file format from the vendor has changed correctly or incorrectly (audits this case)
5. Any duplicate assessments, either from the currently processing assessment file or from previously loaded records for the same assessment, are removed and audited
6. A student’s school is detected based on supplied information in assessment file—else school information will be parsed from student matching process
7. The student is matched and identified before being approved for loading to the data warehouse—else record is audited and parked for further review
8. The Jesse Assessment Framework passes the completed assessment records back to the Jesse ETL Engine (as a dataflow)
9. The Jesse ETL Engine handles loading the assessment dataflow into the data warehouse (batching and queueing, inserting and updating where required)
### Advanced Data Quality Monitoring

Along with the functionality described above, Hoonuit’s solution provides SFUSD with an advanced data quality monitoring system that can be configured to your business rules and requirements. Listed below are a few highlights of this feature:

- Summary and stoplight display of all data quality items
- Pre-built data quality measures to choose from or define your own business rules to add to the Advanced Data Quality dashboard
- Click on any of the data quality measures to get the error definition, where to locate the errors in the source application, and exactly which records are causing the errors
- The dashboard can be viewed at the district level or down to the school, principal or teacher level showing their specific data quality issues
- The dashboard will update with every source data refresh to show progress towards fixing data quality issues

**Sample Data Quality Business Rules**

<table>
<thead>
<tr>
<th>Business Rule</th>
<th>Example Data Quality Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate Student Records</td>
<td>Identify based on State Student ID Number</td>
</tr>
<tr>
<td>Active CY Enrollment - No CY Enrollment</td>
<td>Identify students with active CY enrollments but missing a NY Enrollment Records</td>
</tr>
<tr>
<td>Non-Sequential Grade Level in NY Enrollment vs CY enrollment</td>
<td>Identify students with a NY enrollment record with a non-sequential grade level as compared to CY enrollment</td>
</tr>
<tr>
<td>Invalid Grade Level for School of Enrollment</td>
<td>Identify NY enrollment records where the student has a grade level identified that is invalid for the school of enrollment</td>
</tr>
<tr>
<td>OSS Disposition vs attendance totals</td>
<td>OSS Disposition Days total vs attendance record days total</td>
</tr>
<tr>
<td>Student grade level not within class grade range</td>
<td>Identify student class enrollments where the student’s grade is not within the grade range of the section</td>
</tr>
<tr>
<td>Kinder half day absences</td>
<td>All KG grade level absences should total 1.0 for the day. Identify any KG student attendance days where they have absences that are less than 1.0ltte</td>
</tr>
<tr>
<td>Attendance class start dates need to match enrollment date</td>
<td>Attendance class start dates need to match enrollment date</td>
</tr>
<tr>
<td>Grade vs Age</td>
<td>Check grade level against predefined age range for grade level</td>
</tr>
<tr>
<td>Homebound</td>
<td>Check for homebound section included in attendance. All homebound sections should be set to “Include In attendance”.</td>
</tr>
<tr>
<td>Students enrolled in inactive courses</td>
<td>Identify student class enrollments where the course being used by the section is no longer active</td>
</tr>
<tr>
<td>Proof of identity - Birth Verification Audit 30 day/10 day letters</td>
<td>Identify students without birth verification (30 day letter flag): check against enrollment date - they get 30 calendar days. If nothing after 30 days then they get a 10 day letter, which adds 10 more days. If no response after 10 day notice letter then a letter to law enforcement is submitted and the verification type is changed to “Law Enforcement Notified”.</td>
</tr>
<tr>
<td>Chronic attendance vs Chronic Health Form Health Condition</td>
<td>Check for students with chronic absence reasons (CHR) in current year but no chronic health form health condition code</td>
</tr>
<tr>
<td>Students with no scheduled sections</td>
<td>Identify all active students that do not have any section enrollments</td>
</tr>
<tr>
<td>Enrollment Activity - only a single enrollment activity record and that activity record has a previous grade exit code</td>
<td>This is caused by staff using the wrong process to correct a students grade level or incorrectly promote a student</td>
</tr>
<tr>
<td>Courses in use without a state course code</td>
<td>Identify all district courses that do not have state course codes assigned</td>
</tr>
<tr>
<td>Instructional setting doesn’t match relating courses</td>
<td>Blueprint/hsa instructional setting should have blueprint/hsa courses</td>
</tr>
<tr>
<td>Gifted instructional setting compared to gifted service code</td>
<td>Ensure any student with a gifted instructional setting has a gifted service/need assigned</td>
</tr>
<tr>
<td>Incident Date doesn’t fall within Fiscal Year</td>
<td>Date of incident should be within the date range of the school year it is recorded in.</td>
</tr>
<tr>
<td>Incident Date is greater than referral date</td>
<td>Incident can't happen after a referral</td>
</tr>
<tr>
<td>Discipline incident missing location</td>
<td>All discipline incidents must have a location</td>
</tr>
<tr>
<td>Incident contains no offender</td>
<td>All discipline incidents must have an associated offender</td>
</tr>
<tr>
<td>Person can only be entered once per incident</td>
<td>The same student/individual cannot be listed more than one time on an incident</td>
</tr>
</tbody>
</table>
Hoonuit’s Advanced Performance Monitoring

- 24x7x365 hands-on-keyboard system monitoring including resource utilization, performance, availability and up-time
- Detailed analytics and reporting on usage by user, dashboards, metrics
- Detailed change log history by object modified timestamp, user etc.
- ETL build audits by source and location
- Metric and dashboard performance analytics including time taken to execute queries and load times

See Appendix E for details on Hoonuit’s entire solution.

“Implementing a data warehouse and the resulting access to comprehensive data involves changing how districts make decisions, and then grounding decisions in data,” Lauck said. For Lauck, that all starts with training educators to see things differently using data.

While teachers and administrators can be intimidated at first, that dissipates pretty quickly once teachers see the way SCCOE has set up the Hoonuit platform. “The dashboard and the [Hoonuit] DataZone are easy for people to navigate,” Lauck said. To prove it, she typically starts with a quick treasure hunt—giving staff a list of things to do in 30 minutes: explore filters for different subgroups of students, create a cohort of at-risk students, and find an individual student’s history.

“When they see how easy it is, it always ignites a desire to know more and to engage colleagues in discussions about how they might develop action plans based on data.”

Marcy Lauck
Director of Data Governance
Santa Clara County Office of Education
Option 2: Implement Hoonuit’s Ed-fi Solution.
This solution will allow SFUSD to meet requirements assuming the various source systems required to pull data from and become Ed-fi compliant per timeline proposed by SFUSD. Hoonuit will deploy the Ed-fi ODS along with a pre-built connector to the ODS to load Ed-fi data in the Hoonuit data warehouse. As a result, Hoonuit will be able to provide comprehensive reporting per attributes supported by the Ed-fi data model.
Option 3: Implement Hoonuit’s data warehouse and analytical solution once the Ed-fi solution has been implemented.
This solution will provide SFUSD the necessary denormalized data warehouse and reporting layer required to do comprehensive, high cardinality analytics including predictive modeling and machine learning as well as any data driven workflows on top of the Ed-fi ODS once it is implemented. Hoonuit has extensive experience with California’s LCAP and LCFF reporting requirements, supporting over 500+ schools and 500,000+ students including the Silicon Valley.

![Diagram showing data integration and analytics](image)

Our out of the box reports and flexible and extensible self-service platform has successfully allowed educators, administrators, leadership, and community to consume and build reports while taking advantage of our predictive modeling, machine learning, statistical analysis and data driven processes.
PROJECT MANAGEMENT & IMPLEMENTATION

The Proposer’s project management approach and the solution implementation methodology the Proposer will use to manage the development process.

Hoonuit and district team members will work collaboratively and closely to ensure all of your objectives are met and your implementation of the Hoonuit solution is successful. The assigned project manager will work closely with district stakeholders and will coordinate the implementation. The project manager will work with you to create guiding project documents, such as a project charter and a comprehensive project management plan.

Hoonuit recognizes the practices identified in the Guide to the Project Management Body of Knowledge—utilizing the knowledge, processes, skills, tools, and techniques as appropriate for each individual project. The major phases of Hoonuit’s methodology are described below.

1. **Initiation**: Launch the project, create a project charter and high-level statement of work, identify business needs, identify stakeholders, and align Hoonuit’s process with the district’s goal
2. **Planning**: Assemble detailed requirements, plan architecture and design, develop project schedule and plan, identify risks and create risk response plan, gather data connectivity and data source information, create test and validation strategy
3. **Executing**: Complete work activities to include deploy technology, conduct gap analysis, set up security, deploy and modify content, training and rollout activities
4. **Monitoring and Controlling**: Validation to ensure accuracy, including testing and validating data, debugging ETL, DW, data marts, and dashboards, security testing, user acceptance testing, and measurement against requirements
5. **Closing**: Ensure all deliverables are complete against the requirements, sign off by customer, close contract

We actively keep both Hoonuit and district team members apprised of the project status by way of clear and concise communications. Communications typically take the form of electronic documents for easy distribution among team members and stakeholders. The type and frequency of communication can be tailored to meet district needs and the deliverables of the project. The table below is a representation of the typical forms of communication that are provided during implementation of our solution.

<table>
<thead>
<tr>
<th>Communication Type</th>
<th>Purpose</th>
<th>Recipients</th>
<th>Author</th>
<th>Update Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Report</td>
<td>Update stakeholders of progress</td>
<td>Project Team</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Sponsors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Management Document</td>
<td>Update project stakeholders on obstacles and methods for mitigating or eliminating risks</td>
<td>Project Team</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Sponsors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Hoonuit team will provide comprehensive and timely communication throughout the process so that key district personnel are kept well-informed during deployment. Included below is a sample report, which reflects the clear and concise communication method we strive for on a weekly basis. The information included in the reports can be altered to reflect the needs of key district contacts who will review the reports.

<table>
<thead>
<tr>
<th>Communication Type</th>
<th>Purpose</th>
<th>Recipients</th>
<th>Author</th>
<th>Update Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue Management</td>
<td>Record project issues for resolution</td>
<td>Project Team</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>As needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Sponsors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Control Document</td>
<td>Describe project scope changes; estimate impact, cost, and disposition</td>
<td>Project Sponsors</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>As needed</td>
</tr>
<tr>
<td>Project Team Meetings</td>
<td>Coordinate scheduled tasks for following week; typically, done in conjunction with Project Status Report Review</td>
<td>Project Team</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>Weekly, or as needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project Sponsors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UI, Dashboard, Report Demonstrations</td>
<td>Obtain approval on design and content</td>
<td>Project Sponsors</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>As needed</td>
</tr>
<tr>
<td>Notice of Milestone or Deliverable Completion</td>
<td>Communicate successful completion of milestone tasks or deliverables</td>
<td>Project Sponsors</td>
<td>Hoonuit Project Manager with input from SFUSD</td>
<td>As needed</td>
</tr>
</tbody>
</table>

**Weekly Status Report**

**HCP1: Edvantage Implementation (HCP1)**

Date: June 11, 2015

Reporting Period: May 4 to June 11, 2015

Percentage Complete: 24%

**Progress Statement for Period**

1. Progress marks are working, elementary marks are working. Final marks need one last change, which should be early next week.
2. Enrollment changes today and tomorrow.
3. Dashboard fitting being worked on as data is available.
4. SAT is on the server waiting to be loaded.
5. Confirming historical data conversion strategy, particularly around marks and attendance.
6. Discuss training plan options.

**Activities Scheduled for Next Period**

- Seed updated list of dashboards as completed
- MAP changes to dashboard
- Work through ETL changes - marks/scales
- Shailer to start saving to the server attendance, period grades and student schedule reports for validation. Planning to start validation week of 6/25.
- Review领土s for uTIL mapping: KIRA, SCAT, and MMSR

**Open Items/Issues**

1. Hardware will be installed by Dell. Order was placed April 29th. Approximately 4-6 weeks for hardware to come in.
2. Any other changes by subject? Needs to be re-evaluated and any changes planned. Shailer will inquire next week.
**PROJECT WORKPLAN & SCHEDULE**

Detailed project workplan and Project Schedule that outlines the major phases, workstreams and deliverables. Proposers shall include with their Proposals a tentative deliverable schedule based on the Project Schedule in conformity with the expectations detailed in the Scope of Work above. Proposals must include the Proposer’s rationale for the proposed tentative deliverable schedule, as needed.

As described earlier in our response, we are proposing three solution options. Included below are project plans for each option.

**Option 1: Hoonuit’s Comprehensive Data Management and Analytics Solution**

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SFUSD Option 1 Implementation Project</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Initiation</td>
<td>Mon 7/2/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Sign Contract</td>
<td>Mon 7/2/18</td>
<td>Wed 7/4/18</td>
</tr>
<tr>
<td>Setup of Project in the Project Site (JIRA)</td>
<td>Thu 7/5/18</td>
<td>Thu 7/12/18</td>
</tr>
<tr>
<td>Deliver Questionnaire to Client</td>
<td>Thu 7/12/18</td>
<td>Thu 7/12/18</td>
</tr>
<tr>
<td>Conduct Project Kick-off Meeting (incl prep)</td>
<td>Thu 7/12/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Get Access to Data Sources</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td>Discuss Hardware and Security</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td>Establish AWS Access Privileges</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td><strong>Deploy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environment Setup and Core Deployment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoonuit Performance Analysis (Standard)</td>
<td>Thu 7/5/18</td>
<td>Thu 7/12/18</td>
</tr>
<tr>
<td>Create Hoonuit DW Environment</td>
<td>Thu 7/5/18</td>
<td>Mon 7/9/18</td>
</tr>
<tr>
<td>Load Hoonuit Database and Deploy Synergy Connectors</td>
<td>Mon 7/9/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Deploy Dashboard</td>
<td>Mon 7/9/18</td>
<td>Tue 7/10/18</td>
</tr>
<tr>
<td>Deploy Standard Content</td>
<td>Tue 7/10/18</td>
<td>Wed 7/11/18</td>
</tr>
<tr>
<td>Deploy Universal Data Loader</td>
<td>Fri 7/13/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Deploy Generic Assessment Loader</td>
<td>Fri 7/13/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Deploy Data Profiler</td>
<td>Fri 7/13/18</td>
<td>Mon 7/16/18</td>
</tr>
<tr>
<td>Run Data through Development</td>
<td>Fri 7/13/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Perform Reasonableness Checks</td>
<td>Fri 7/13/18</td>
<td>Mon 7/16/18</td>
</tr>
<tr>
<td>Check Important Values from Client Questionnaire</td>
<td>Mon 7/16/18</td>
<td>Tue 7/17/18</td>
</tr>
<tr>
<td>Review Audits for Issues</td>
<td>Tue 7/17/18</td>
<td>Mon 7/23/18</td>
</tr>
<tr>
<td>Review Domains/Data with Client</td>
<td>Mon 7/23/18</td>
<td>Wed 8/1/18</td>
</tr>
<tr>
<td><strong>Configure Data Domains Develop, and Validate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>Wed 8/1/18</td>
<td>Mon 8/6/18</td>
</tr>
<tr>
<td>Schools</td>
<td>Mon 8/6/18</td>
<td>Wed 8/8/18</td>
</tr>
<tr>
<td>Staff</td>
<td>Wed 8/8/18</td>
<td>Thu 8/9/18</td>
</tr>
<tr>
<td>Staff Assignments</td>
<td>Thu 8/9/18</td>
<td>Fri 8/10/18</td>
</tr>
<tr>
<td>School Dates</td>
<td>Fri 8/10/18</td>
<td>Mon 8/13/18</td>
</tr>
<tr>
<td>Facilities</td>
<td>Mon 8/13/18</td>
<td>Tue 8/14/18</td>
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<tr>
<td>Courses</td>
<td>Tue 8/14/18</td>
<td>Wed 8/15/18</td>
</tr>
<tr>
<td>Course Offerings</td>
<td>Wed 8/15/18</td>
<td>Thu 8/16/18</td>
</tr>
<tr>
<td>Scales</td>
<td>Thu 8/16/18</td>
<td>Fri 8/17/18</td>
</tr>
<tr>
<td>Enrollments</td>
<td>Fri 8/17/18</td>
<td>Mon 8/20/18</td>
</tr>
<tr>
<td>Attendance</td>
<td>Mon 8/20/18</td>
<td>Tue 8/21/18</td>
</tr>
<tr>
<td>Discipline</td>
<td>Tue 8/21/18</td>
<td>Wed 8/22/18</td>
</tr>
<tr>
<td>Programs &amp; Program Membership</td>
<td>Wed 8/22/18</td>
<td>Thu 8/23/18</td>
</tr>
<tr>
<td>Marks-Final, Period</td>
<td>Thu 8/23/18</td>
<td>Fri 8/24/18</td>
</tr>
<tr>
<td>Marks-Curriculum</td>
<td>Fri 8/24/18</td>
<td>Mon 8/27/18</td>
</tr>
<tr>
<td>Student Schedules</td>
<td>Mon 8/27/18</td>
<td>Tue 8/28/18</td>
</tr>
<tr>
<td><strong>Configure Additional Modules</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Data Quality</td>
<td>Tue 8/28/18</td>
<td>Wed 9/5/18</td>
</tr>
<tr>
<td>Task Name</td>
<td>Start</td>
<td>Finish</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Assessments &amp; Surveys</td>
<td>Tue 8/28/18</td>
<td>Fri 9/21/18</td>
</tr>
<tr>
<td>Custom Integrations</td>
<td>Fri 9/21/18</td>
<td>Thu 10/18/18</td>
</tr>
<tr>
<td><strong>Configure Dashboard Content</strong></td>
<td>Thu 10/18/18</td>
<td>Wed 11/28/18</td>
</tr>
<tr>
<td>Dashboard Fitting &amp; Security</td>
<td>Thu 10/18/18</td>
<td>Fri 10/19/18</td>
</tr>
<tr>
<td>Administration</td>
<td>Thu 10/18/18</td>
<td>Fri 10/19/18</td>
</tr>
<tr>
<td>Principals</td>
<td>Fri 10/19/18</td>
<td>Fri 10/26/18</td>
</tr>
<tr>
<td>Teachers</td>
<td>Fri 10/26/18</td>
<td>Fri 11/2/18</td>
</tr>
<tr>
<td>Assessments</td>
<td>Fri 11/2/18</td>
<td>Fri 11/9/18</td>
</tr>
<tr>
<td>District / Department KPIs</td>
<td>Fri 11/9/18</td>
<td>Wed 11/28/18</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DW System Administration</td>
<td>Wed 11/28/18</td>
<td>Fri 11/30/18</td>
</tr>
<tr>
<td>Dashboard Admin Knowledge Transfer</td>
<td>Wed 11/28/18</td>
<td>Mon 12/3/18</td>
</tr>
<tr>
<td><strong>Go-Live</strong></td>
<td>Mon 12/3/18</td>
<td>Tue 12/18/18</td>
</tr>
<tr>
<td>Verify Production Environments</td>
<td>Mon 12/3/18</td>
<td>Tue 12/4/18</td>
</tr>
<tr>
<td>Prepare an Implementation &amp; Communication Plans</td>
<td>Tue 12/4/18</td>
<td>Wed 12/5/18</td>
</tr>
<tr>
<td>Run Production Migration</td>
<td>Wed 12/5/18</td>
<td>Fri 12/14/18</td>
</tr>
<tr>
<td>Test Full Hoonuit Daily Load</td>
<td>Fri 12/14/18</td>
<td>Tue 12/18/18</td>
</tr>
<tr>
<td>Go Live</td>
<td>Fri 12/14/18</td>
<td>Fri 12/14/18</td>
</tr>
</tbody>
</table>

**Option 2: Hoonuit’s Ed-Fi Solution**

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SFUSD Option 2 Implementation Project</strong></td>
<td>Mon 7/2/18</td>
<td>Fri 11/2/18</td>
</tr>
<tr>
<td>Project Initiation</td>
<td>Mon 7/2/18</td>
<td>Fri 7/13/18</td>
</tr>
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<tr>
<td>Conduct Project Kick-off Meeting (incl prep)</td>
<td>Thu 7/12/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Get Access to ODS</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td>Discuss Hardware and Security</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td>Establish AWS Access Privileges</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
</tr>
<tr>
<td><strong>Deploy</strong></td>
<td>Thu 7/5/18</td>
<td>Fri 8/3/18</td>
</tr>
<tr>
<td>Environment Setup and Core Deployment</td>
<td>Thu 7/5/18</td>
<td>Fri 8/3/18</td>
</tr>
<tr>
<td>Hoonuit Performance Analysis (Standard)</td>
<td>Thu 7/5/18</td>
<td>Thu 7/12/18</td>
</tr>
<tr>
<td>Create Hoonuit DW Environment</td>
<td>Thu 7/5/18</td>
<td>Mon 7/9/18</td>
</tr>
<tr>
<td>Load Hoonuit Database and ODS Connector</td>
<td>Mon 7/9/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Deploy Dashboard</td>
<td>Mon 7/9/18</td>
<td>Tue 7/10/18</td>
</tr>
<tr>
<td>Deploy Standard Content</td>
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<tr>
<td>Deploy Data Profiler</td>
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<td>Fri 8/3/18</td>
</tr>
<tr>
<td>Advanced Data Quality</td>
<td>Fri 7/13/16</td>
<td>Mon 7/16/18</td>
</tr>
<tr>
<td><strong>Configure Data Domains Develop, and Validate</strong></td>
<td>Fri 8/3/18</td>
<td>Mon 10/15/18</td>
</tr>
<tr>
<td>Students</td>
<td>Fri 8/3/18</td>
<td>Mon 8/6/18</td>
</tr>
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<td>Wed 8/8/18</td>
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<td>Staff</td>
<td>Wed 8/8/18</td>
<td>Thu 8/9/18</td>
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<tr>
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<td>Facilities</td>
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<td>Courses</td>
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<td>Tue 8/14/18</td>
<td>Wed 8/15/18</td>
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<td>Scales</td>
<td>Wed 8/15/18</td>
<td>Thu 8/16/18</td>
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<td>Enrollments</td>
<td>Thu 8/16/18</td>
<td>Fri 8/17/18</td>
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<tr>
<td>Task Name</td>
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</tr>
<tr>
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<td>Attendance</td>
<td>Fri 8/17/18</td>
<td>Mon 8/20/18</td>
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<td>Discipline</td>
<td>Mon 8/20/18</td>
<td>Tue 8/21/18</td>
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<td>Programs &amp; Program Membership</td>
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<td>Wed 8/22/18</td>
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<td>Marks-Final, Period</td>
<td>Wed 8/22/18</td>
<td>Thu 8/23/18</td>
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<tr>
<td>Marks-Curriculum</td>
<td>Thu 8/23/18</td>
<td>Fri 8/24/18</td>
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<tr>
<td>Student Schedules</td>
<td>Fri 8/24/18</td>
<td>Mon 8/27/18</td>
</tr>
<tr>
<td>Advanced Data Quality</td>
<td>Mon 8/27/18</td>
<td>Mon 9/3/18</td>
</tr>
<tr>
<td><strong>Configure Dashboard Content</strong></td>
<td>Mon 9/3/18</td>
<td>Mon 10/15/18</td>
</tr>
<tr>
<td>Dashboard Fitting &amp; Security</td>
<td>Mon 9/3/18</td>
<td>Tue 9/4/18</td>
</tr>
<tr>
<td>Administration</td>
<td>Tue 9/4/18</td>
<td>Wed 9/5/18</td>
</tr>
<tr>
<td>Principals</td>
<td>Wed 9/5/18</td>
<td>Wed 9/12/18</td>
</tr>
<tr>
<td>Teachers</td>
<td>Wed 9/12/18</td>
<td>Wed 9/19/18</td>
</tr>
<tr>
<td>Assessments</td>
<td>Wed 9/19/18</td>
<td>Wed 9/26/18</td>
</tr>
<tr>
<td>District / Department KPIs</td>
<td>Wed 9/26/18</td>
<td>Mon 10/15/18</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>Mon 10/15/18</td>
<td>Thu 10/18/18</td>
</tr>
<tr>
<td>DW System Administration</td>
<td>Mon 10/15/18</td>
<td>Wed 10/17/18</td>
</tr>
<tr>
<td>Dashboard Admin Knowledge Transfer</td>
<td>Mon 10/15/18</td>
<td>Thu 10/18/18</td>
</tr>
<tr>
<td><strong>Go-Live</strong></td>
<td>Thu 10/18/18</td>
<td>Fri 11/2/18</td>
</tr>
<tr>
<td>Verify Production Environments</td>
<td>Thu 10/18/18</td>
<td>Fri 10/19/18</td>
</tr>
<tr>
<td>Prepare an Implementation &amp; Communication Plans</td>
<td>Fri 10/19/18</td>
<td>Mon 10/22/18</td>
</tr>
<tr>
<td>Run Production Migration</td>
<td>Mon 10/22/18</td>
<td>Wed 10/31/18</td>
</tr>
<tr>
<td>Test Full Hoonuit Daily Load</td>
<td>Wed 10/31/18</td>
<td>Fri 11/2/18</td>
</tr>
<tr>
<td>Go Live</td>
<td>Wed 10/31/18</td>
<td>Wed 10/31/18</td>
</tr>
</tbody>
</table>

Option 3: Hoonuit’s Data Management and Analytics Solution, after implementation of Ed-Fi solution

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
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<tbody>
<tr>
<td>SFUSD Dashboard Implementation Project</td>
<td>Mon 7/2/18</td>
<td>Wed 9/5/18</td>
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<tr>
<td><strong>Project Initiation</strong></td>
<td>Mon 7/2/18</td>
<td>Fri 7/13/18</td>
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<tr>
<td>Sign Contract</td>
<td>Mon 7/2/18</td>
<td>Wed 7/4/18</td>
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<td>Setup of Project in the Project Site (JIRA)</td>
<td>Thu 7/5/18</td>
<td>Thu 7/12/18</td>
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<tr>
<td>Deliver Questionnaire to Client</td>
<td>Thu 7/12/18</td>
<td>Thu 7/12/18</td>
</tr>
<tr>
<td>Conduct Project Kick-off Meeting (incl prep)</td>
<td>Thu 7/12/18</td>
<td>Fri 7/13/18</td>
</tr>
<tr>
<td>Get Access to ODS</td>
<td>Thu 7/5/18</td>
<td>Thu 7/5/18</td>
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<tr>
<td>Discuss Hardware and Security</td>
<td>Thu 7/5/18</td>
<td>Fri 7/6/18</td>
</tr>
<tr>
<td>Establish AWS Access Privileges</td>
<td>Fri 7/6/18</td>
<td>Fri 7/6/18</td>
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<tr>
<td><strong>Deploy</strong></td>
<td>Fri 7/6/18</td>
<td>Tue 7/10/18</td>
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<tr>
<td>Environment Setup and Core Deployment</td>
<td>Fri 7/6/18</td>
<td>Tue 7/10/18</td>
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<tr>
<td>Deploy Dashboard</td>
<td>Fri 7/6/18</td>
<td>Mon 7/9/18</td>
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<tr>
<td>Deploy Standard Content</td>
<td>Mon 7/9/18</td>
<td>Tue 7/10/18</td>
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<tr>
<td>Deploy Data Profiler</td>
<td>Tue 7/10/18</td>
<td>Tue 7/10/18</td>
</tr>
<tr>
<td><strong>Configure Data Domains Develop, and Validate</strong></td>
<td>Wed 7/11/18</td>
<td>Tue 8/28/18</td>
</tr>
<tr>
<td><strong>Configure Dashboard Content</strong></td>
<td>Wed 7/11/18</td>
<td>Tue 8/28/18</td>
</tr>
<tr>
<td>Dashboard Fitting &amp; Security</td>
<td>Wed 7/11/18</td>
<td>Fri 7/13/18</td>
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<tr>
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<td>Fri 7/13/18</td>
<td>Tue 7/24/18</td>
</tr>
<tr>
<td>Principals</td>
<td>Tue 7/24/18</td>
<td>Wed 8/1/18</td>
</tr>
<tr>
<td>Teachers</td>
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</tr>
<tr>
<td>Go Live</td>
<td>Wed 9/5/18</td>
<td>Wed 9/5/18</td>
</tr>
</tbody>
</table>
**Total Project Budget**

Total Project Budget presented as an itemized list and breakdown of charges based on services and deliverables, in conformity with Scope of Work. Any expenses and travel must be included and separately detailed in the Proposer’s Total Project Budget.

The following pricing represents the solution options described in this response. For each option, we can provide hosting through Microsoft Azure, along with hosting support on that platform. Our solution can be deployed onto your existing Amazon Web Services or onsite (SFUSD is responsible for obtaining and maintaining the necessary hardware for onsite deployments).

**Option 1: Hoonuit’s Comprehensive Data Management and Analytics Solution**

<table>
<thead>
<tr>
<th>Proposed Solution</th>
<th>Annual Subscription</th>
<th>One Time Implementation / Training Fee</th>
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</thead>
<tbody>
<tr>
<td>Implementation Services &amp; Initial Training</td>
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<td>$180,000</td>
</tr>
<tr>
<td>Hoonuit District Essentials</td>
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<tr>
<td>• Maintenance &amp; support</td>
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<td></td>
</tr>
<tr>
<td>Azure Hosting (optional)</td>
<td>$57,393.38</td>
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</tr>
<tr>
<td>Hosting Support</td>
<td>$21,191.40</td>
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**Option 2: Hoonuit’s Ed-Fi Solution**

<table>
<thead>
<tr>
<th>Proposed Solution</th>
<th>Annual Subscription</th>
<th>One Time Implementation / Training Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Services &amp; Initial Training</td>
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<td>$120,000</td>
</tr>
<tr>
<td>Hoonuit District Essentials</td>
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<tr>
<td>• Maintenance &amp; support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ed-Fi updates &amp; upgrades</td>
<td></td>
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</tr>
<tr>
<td>Azure Hosting (optional)</td>
<td>$57,393.38</td>
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</tr>
<tr>
<td>Hosting Support</td>
<td>$21,191.40</td>
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**Option 3: Hoonuit’s Data Management and Analytics Solution, after implementation of Ed-Fi solution**

<table>
<thead>
<tr>
<th>Proposed Solution</th>
<th>Annual Subscription</th>
<th>One Time Implementation / Training Fee</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Azure Hosting (optional)</td>
<td>$57,393.38</td>
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<tr>
<td>Hosting Support</td>
<td>$21,191.40</td>
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Optional Modules

<table>
<thead>
<tr>
<th>PROPOSED SOLUTION</th>
<th>ANNUAL SUBSCRIPTION</th>
<th>ONE TIME IMPLEMENTATION / TRAINING FEE</th>
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</thead>
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<tr>
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</tr>
<tr>
<td>Maintenance &amp; support</td>
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<td></td>
</tr>
</tbody>
</table>

Pricing Details

- Proposal, including pricing, is valid for 120 days.
- Implementation services include time for standard configuration; additional customization services can be purchased at $150 per hour
- One Time Implementation / Training fee payment is due upon agreement; subscription thereafter is invoiced annually
- Travel for onsite training will be billed at cost
- Hoonuit has successfully implemented and deployed solutions for customers in the cloud using both Azure Cloud Hosting as well as Amazon Web Services (AWS). The pricing provided assumes Azure Hosting as Hoonuit is a Microsoft Cloud Service Provider. If SFUSD wishes Hoonuit to deploy and host in AWS, we are confidently able to do so.
- Azure Hosting is a subscription service provided by Hoonuit as a cloud-based platform for our solution. With this solution, Hoonuit is responsible for applying all patches and performing daily backups. Azure hosting also includes a 99.99% guaranteed uptime.
- Hoonuit Essentials features include the following:
  - Over 60+ out-of-the-box research-based dashboards and reports created using best practices
  - Longitudinal analysis of attendance, enrollment, behavior, assessments, and marks
  - LCAP Dashboards—identifying strengths, weaknesses, and areas for improvement against annual goals for each student group, for each state priority, and each metric within the priorities
  - School Improvement—a data driven process to help address what changes is the plan intending to address and progress towards that. Enables needs assessment, Title 1 Planning, Special Education Planning, Technical Planning, etc.
  - Data quality tools to assure accurate information and business rule validation
  - Ability to create custom cohorts and grouping of students
  - Ability to create dashboards and metrics
  - Full ad-hoc reporting capability to be able to slice and dice any measures
  - Surveys—allows survey data to be imported to support analysis by question and by respondent types (e.g., student responses versus parent responses, level types like Primary grade responses versus Secondary grade responses)
  - Organization, reporting, and storing of data required for state reporting
Support of research and program evaluation with powerful queries and automated snap-shot extracts to support analysis and reporting of longitudinal district trends.

- Support of root-cause analysis and continuous improvement with KPIs and ad-hoc data analysis.
- Snap-shot technology to measure change over time.
- Facilitation of school improvement with Hoonuit needs assessment, goal setting, and progress monitoring reports.
- Optimization of students’ course selections and pathway to graduation.
- ESSA dashboards and reporting.

**Hoonuit Early Warning + RTI** features of this module include the following:

- Over 30+ out-of-the-box research-based dashboards and reports created using best practices.
- Prediction of students at risk of dropping out or not graduating on time using machine learning algorithms.
- Determination and validation of cross-domain factors that most strongly predict on-time graduation.
- Detection of at risk students sooner and with greater precision than our competitors.
- Allows your district to assign students to specific interventions and with the right level of support.
- Monitoring of intervention progress and long-term impact.
- Management of the MTSS process from identification, classroom trials, and measured tiered interventions.
- Create new interventions, either with original content or provided template.
- See Appendix D for more information on Early Warning research.

**District Operations** features include:

- Over 30+ out-of-the-box research-based dashboards and reports created using best practices.
- Analyze and track actual expenditures at the classroom and school level.
- Accurately measure and compare spending patterns between classrooms and schools.
- More accurately measure actual per pupil spending.
- Identify qualified staff and credentialing requirements.
- Predict faculty retention and educator effectiveness.
- Analyze findings from socio-emotional & perception surveys from teachers, students, and parents.
- Conduct facility analysis and planning.
- Powerful budget, revenue and expenditure analyses.
- Measure the extent to which resources are distributed equitably between schools.

**Student Success** features include:

- Over 30+ out-of-the-box research-based dashboards and reports created using best practices.
- Predicts four discreet student success outcomes using statistical modeling and machine learning algorithms:
  - ACT / SAT Readiness.
  - College Enrollment (Enrollment into a 2 or 4 year program).
- College Persistence (Persistence beyond 2nd year)
- College Completion
- Machine learning and statistical modeling-based predictions using ensemble methods:
  - Logistic Regression
  - Gradient Boosting Machine
  - Glmboost
  - Penalized Linear Regression
  - Multinomial logistic regression
- Administer Social and Emotional Learning Surveys (SEL) and correlate non-academic constructs with academic outcomes
- See post-secondary success in trade, 2-year, and 4-year institutions with NSC data
- Track progression of students from graduate to college graduation
- Compare graduation success between schools
- Quickly identify students falling off track to graduation
- Track FAFSA application status

“Hoonuit Enterprises gave us the tools to create a personalized dashboard built on their solid dashboard foundation much faster than we ever imagined. The role-based security gave us peace of mind that the right people were accessing the right data and that data was in an actionable format. The drill down capabilities provided users in each security group transparency of calculations of key indicators and the underlying data. The visual displays are easy to read. More importantly the dashboards support meaningful understanding of the information critical for decision making and goal setting at the class, school and district levels.”

“I can readily say Hoonuit Enterprises gave us the tools to be informed by data and driven by goals from the boardroom to the classroom.”

Rose-Ann McKernan
Executive Director of Accountability & Reporting (Retired)
Albuquerque Public Schools
SECURITY & CONFIDENTIALITY OF DATA

The Proposal must address how security and confidentiality of data shall be maintained, and reference, as appropriate, the Proposer’s experience in maintaining the security and confidentiality of data in other similar projects that the Proposer has completed (as required under the Section b from the Documentation of Proposer Qualifications section below).

The elevated interest in data governance has refocused data analytics community on the criticality of security and data quality to the data management and analytics solution. In truth, these have always been important elements and particularly so in education where privacy has been mandated not only by local district policies, but also legislated at both the state and federal levels. The Hoonuit solution conforms to the best-practices for security and offers the foremost data quality technology available.

Plan for Reliability and Security. We fully believe that agencies should not have to setup security in multiple places, nor should users have to remember a dozen different passwords. The Hoonuit portal integrates with your existing security architecture. Security has three components: authentication, authorization, and data access. Authentication is done against the agencies preferred method. This is typically ADFS, AzureAD, or another SAML compliant method, and allows for single sign-on (SSO) between all the applications. We can also authenticate against the student management system or other identity management system if AD is not an option. Our goal is that users can use the account they use every day or to not use an account at all and use SSO. Accounts can also be created directly in the Hoonuit platform, if needed.

Authorization is built from a variety of locations, including AD Groups, SIS scheduling, HR systems, and identity management. We assemble all this information to understand what the roles of each of the users are. These roles are imported into the Hoonuit portal and access is assigned. This access determines what each user role can do within Hoonuit—e.g., drill, see health information, see SPED data, etc. Data security is built from the SIS scheduling and HR systems. This security level determines what data a user can see (e.g., teachers can typically only see students that are scheduled in their courses). Authorization can also be customized directly in the Hoonuit platform, if needed.

Security, like the other architectural elements of a data management and analytics solution, is ideally layered to allow for all types of users to access the appropriate data. Layered data access allows one report to service many users, thereby easing the change management burden and rendering a more flexible and lean system. Users may have their data access restricted because the data is inappropriate for them or because they have not been fully trained on use of that data.

The security platform to administer application access should ideally be able to support the following:

- Mixed Mode Authentication (LDAP, Active Directory, Custom, etc.)
- Domain-Level Access (subject area or table)
- Attribute Level Access (columns, dimensions, measures, calculations)
- Row Level Access (list of vendor number, territories, school codes, etc.)
- Document Level Access (reports, spreadsheets, URL, etc.)
- Application Functionality Access (view, refresh, upload)

The Hoonuit solution is secured at two levels: system and application.
System Level—The database and application servers are secured at a system level in the operating system (OS) and in the database engine (DBMS). Following security best-practices, only network and system administrators are granted system level access. The applications themselves have system level logins and via this proxy account, all other users of the applications have access to the resources and data. There may be a desire or requirement for a small group of developers/designers to have direct access to the database. This is possible in the Hoonuit solution if it is managed properly. As a rule, very little security is applied at the database level in data analytics solutions: those who have direct data access have full access to the relevant schemas.

Application Level—Most security definitions and administration will be performed at the application level. The Hoonuit Data Analytical Dashboard has comprehensive security models which allow for user- (or optimally role-) level definition of security at the object level. Security administration can be delegated in the Dashboard so that a district can administer the security for his/her users in a regional or state solution.

User Authentication. All users have unique ID’s and required passwords as their login credentials, regardless of the security repository used. Users cannot access the system without authentication and membership in a defined group. These credentials are required for login with every session a user opens. Anonymous, generic, or default logins are not allowed. Privilege escalation protection is inherent in the security challenges for every session. Users never have access to any underlying security model to be able to make alterations. Users of the Hoonuit solution do not have access to the underlying databases. All data requests for Dashboards and reports are executed by the application server (proxy accounts). Every session has a designated inactivity timeout period that is configurable, but should be set within an upper range of no more than 10 minutes due to the sensitivity of the content.

This security level identifies a user and verifies correct user name and password. The Hoonuit Dashboard supports Security Assertion Markup Language (SAML), Active Directory Federated Services (ADFS), Active Directory (AD), Lightweight Directory Access Protocol (LDAP), and custom security repositories, and is capable of heterogeneous authentication (can use multiple directories in the same instance to authenticate a user). We recommend where feasible that a local AD or LDAP repository be utilized, but this can be difficult in some regional or state deployments. In these cases, we have advocated either the creation of a separate AD or LDAP repository for the region/state, or the use of our application’s security repository for authentication. Single-Sign-On (SSO) is possible with the proposed solution so long as the conditions required by the authentication engine are met.

Encryption. To protect sensitive data (content, passwords, etc.) encryption is employed in three ways within the Hoonuit solution.

- Passwords for local users and database connections are encrypted with a 128-bit key and the private key itself is encrypted with another internal key.
- We recommend that SSL certificates be created or acquired to secure communications among the remote connections to the application servers. All the applications in the Hoonuit solution support SSL.
Finally, transfers of data between the Districts and the State should be encrypted. We recommend transferring this data via a password-protected, compressed data file through an encrypted FTP tunnel (we support either FTPS or SFTP).

**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. Users are thus granted permission to access reports, databases, tables, fields, or even individual records, according to their defined roles and groups.

Dashboard users are classified into groups and each group has a defined level of access to content (i.e., Reports/Analyses, Dashboard Pages, Metrics, etc.). These groups are defined in the Dashboard. If LDAP or AD is used for authentication, the groups are typically defined there as well and then mapped into the corresponding Dashboard groups.

Along with the described access practices, Hoonuit has pre-built processes to scramble student and school data for demo and training purposes. The process automatically renames schools, renames students, removes addresses, scrambles student_IDs. The extents of the scrambling can be configured to meet your specific needs.

**Row Level Data Access.** Based on data that associates Dashboard users to a subset of data (e.g. schools or students), users are presented with data sets specific to their scope of responsibility. The Hoonuit solution provides a comprehensive model for the definition and maintenance of row-level security which will leverage the row-level definitions in the district’s student management system.

The Hoonuit 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 Hoonuit 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); consequently, a teacher only sees the reports and dashboards designated for her role, and then she only sees the data on those reports or dashboards for the students she has in her classes.

The Hoonuit solution leverages the data pertaining to a staff member’s data in the underlying SMS. We link authenticated users to their corresponding logins or teacher/staff records in the SMS and load our own row-level security tables. Our security tables have user interfaces to augment the security definitions of the SMS so that individuals requiring row-level access to the analytical data, but who are not defined in any way in the SMS, can have restricted access. These security tables are joined to the analytical data tables in the semantic metadata of the reporting and analysis software.

**Heterogeneous Security Model.** The heterogeneous security model offers a unique layering of security policies. It is flexible enough to allow for global and regional security policies to be applied to any user because it uses multiple directories in the same instance to authenticate a user. Combined with the role-based or row-based security policies, hierarchical delegation of control can be restricted to specific classes of users, groups, sites, and modules.
**Hardened Security.** The Hoonuit solution is hardened and resistant to internal and external compromise. The security model and application are kept up-to-date with the latest security patches. Any and all vulnerabilities are addressed in an immediate fashion.

**Safe SQL.** The applications in the Hoonuit solution are written to protect against SQL injection attacks and test any values which will be added to the dynamically generated SQL. The Hoonuit Data Dashboard goes further, only allowing for entry of string values in the login screen and in the restricted access administrative/developer interfaces.

**Validation & Auditing.** Trust in the quality of the data in a business intelligence solution is critical. If the users of the system do not believe that it is accurate then they will not use the system and it requires much effort to restore confidence in the solution’s data quality. One of our initial project tasks is to define data quality metrics, as the validity, consistency, and integrity of the data can be measured in different ways. For example, we could compute a student’s GPA in the ETL and be absolutely correct in our calculation, but if the computed value varies from the value in the student management system, it will be considered invalid. Our data validation process gives every user confidence in the data and decisions made with that data in mind.

**Small cell suppression.** Hoonuit has built in tools to implement small cell suppression when implementing public facing dashboards. Small cell suppression follow agency defined cell size rules to limit small data sets that could be used to identify specific students. Hoonuit replaces the suppressed data with helpful text indicating the small cell data was removed. This helps prevent user assumptions that the data is incorrect due to the absence of expected information.

**Logging.** There is extensive logging which is performed by the different applications in the recommended technology stack. Logging plays a vital role in the solution. Logs are generated by the ETL process so that administrators can verify the relative success of each loading procedure and identify any issues which will require attention. Logs are read by the ETL processes to determine how a dependent procedure should behave. Logs of Dashboard processing and user activity are used by administrators to optimize the system performance and debug reported issues.

Educational clients utilize logs to demonstrate and/or verify compliance of the solution with FERPA and other privacy guidelines. A collection of reports is provided with the solution which allow for the analysis of system utilization by user and by report. The logs can retain the actual SQL generated by the solution for each data access request by user and date. This level of transactional detail allows for more detailed analysis in the future.

**Privacy Law Compliance.** Hoonuit understands the critical importance of protecting student data and compliance with PII, FERPA, and HIPAA. We train our new staff on privacy compliance and provide an annual refresher training to current staff. Furthermore, all employee laptops and systems are encrypted so that a 16-digit passcode is required in addition to the username and password. All data communication methods are done via encrypted channels and we remove social security numbers from student data we review. The points below provide further information about specific privacy compliance for student data.

- **Family Educational Rights and Privacy Act (FERPA and Personal Information Act).** The Hoonuit solution takes every measure to protect privacy and private information. Through the encryption, authentication, and access controls described above, the solution supports the FERPA and state-
specific privacy laws, prevents data compromise, and strengthens the system from unauthorized access. Data is secured and confidential with uncompromised data integrity.

- **Health Insurance Portability and Accountability Act (HIPAA).** The Hoonuit solution takes every measure to protect privacy and private information. Through the encryption, authentication, and access controls described above, the solution supports the HIPAA and state-specific health privacy laws, prevents data compromise, and strengthens the system from unauthorized access. Data is secured and confidential with uncompromised data integrity. Special security is implemented on information such as health conditions and special education disability detail. Those with medical need or specific instructional are given access by being assigned to specific agency roles.
DOCUMENTATION OF PROPOSER QUALIFICATIONS

The following responses are based on the requirements described in the RFP (pages 22 – 23).

HOONUIT EXPERIENCE AND CAPABILITIES

Proposer shall provide documentation that the Proposer has experience and capabilities in successfully implementing projects similar to the Project sought under this RFP, including the following areas of experience and capability:

i. Documented Ed-Fi knowledge and experience.

The Hoonuit enterprise data model aligns with the Ed-Fi and CEDS standards to enable seamless integration and flow of education data between various disparate education systems.

<table>
<thead>
<tr>
<th>Ed-fi Data Domain</th>
<th>Hoonuit</th>
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<tr>
<td>Alternative/Supplemental Services</td>
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<td>Assessment</td>
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<td>Bell Schedule</td>
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<td>Student Academic Record</td>
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<td>Student Attendance</td>
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<td>Student Cohort</td>
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<td>Student Identification and Demographics</td>
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<td>Teaching and Learning</td>
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Hoonuit has been an active participant and Ed-Fi community member listed as “Versifit Technologies, LLC” (we were rebranded as Hoonuit in June 2017) on Ed-Fi’s community website: https://www.ed-fi.org/what-is-ed-fi/current-licensees/

ii. Documented experience in collaborating in the development of complex software solutions.

We have nearly two decades of experience with implementing and supporting our longitudinal data system (LDS) solution for PK-12 schools, districts, and states throughout the United States. Based on all of our experiences throughout the years, we are experts on implementing successful web-based portal solutions and providing ongoing quality services for districts like SFUSD. See Appendix A for introductions to our executive and senior management team; see Appendix B for the resumés of team members who will be working on your project.

Hoonuit recognizes that PK-12 educators face significant and future defining challenges for their students and communities, and we are committed to providing solutions that help states, districts, and schools like yours overcome those challenges. Our dedication puts us in an ideal position to recognize how trends and policies influence the needs of our customers so that we can adapt accordingly and provide a stable, long-term solution. Our ongoing data warehouse and analytics effectiveness is drawn from the successful implementation of Hoonuit in four state-level education agencies, along with...
regional and independent school districts, for a total of over 800 school districts who are now analyzing and utilizing their data through Hoonuit. As of May 2018, Hoonuit has been selected to provide data management, analytics, and reporting to San Diego Unified School District, as well as Santa Ana Unified School District.

State agencies reliant on Hoonuit include:

- Hawaii Department of Education
- West Virginia Department of Education
- Wisconsin Department of Public Instruction
- American Samoa Department of Education

Region and district agencies reliant on Hoonuit include:

- Chicago Public Schools
- Santa Clara County Office of Education
- Albuquerque Public Schools
- Milwaukee Public Schools
- Fayette County Public Schools

iii. Documented experience in handling confidential data in a manner that maintains the data’s security and confidentiality in compliance with applicable state and federal laws and regulations.

Hoonuit has never experienced a security breach or mishandling of confidential data for any of our clients. As described earlier in this response, we take extensive precautions to protect sensitive data and restrict access to those users with appropriate levels of clearance.

iv. Documented experience and capacity in providing updates, modifications, maintenance and support to cloud-based products and solutions.

Hoonuit provides ongoing updates, modifications, maintenance, and support to all our clients, whether the solution has been deployed onsite or hosted through a cloud-based system. Not only do we provide this high-level of support, we maintain continued communication with client stakeholders to make sure the solution is always meeting their changing needs and source systems.

We have widespread experience with California PK-12 data, as we not only have implemented and continue to support our solution in Natomas Unified School District and Long Beach Unified School District, Hoonuit is the technology behind Santa Clara County Office of Education’s DataZone data warehouse and dashboard tool. Our partnership with these organizations over the years presents us with key insights about the needs and challenges California districts face with gathering data to make decisions vital to the success of their students and community. See Appendix C for more information about Santa Clara County Office of Education’s success with Hoonuit.

Hoonuit’s experience in California includes providing customizable, flexible templates for LCAP reporting mandates such as Identifying High Needs Students, Smarter Balanced Assessment, CELDT and ELPAC Assessment Performance over Time, CELDT Student Progress, College Readiness Advanced Placement, College Readiness Credits, English Language Learners, School Climate, CTE Courses, Attendance Monitoring, Monitoring Students at Risk, and more. See Appendix E for example dashboards representing these types of data in the Hoonuit solution.
Listed below are the California districts that we provide data management and analytics to through Santa Clara County Office of Education. The project started in 2012, and we continue to add districts to the ongoing solution. Some of the districts include:

- Alum Rock Union Elementary School District
- Campbell Union School District (Elem)
- Fremont Union HS District
- Luther Burbank School District
- Mountain View Whisman School District
- Santa Clara Unified School District
- Jefferson Elementary School District
- Pacifica Elementary School District
- Cambrian School District
- Evergreen Elementary School District
- Milpitas Unified School District
- Campbell Union High School
- Franklin-McKinley Elem
- Los Altos School District
- Mountain View Los Altos High School District
- Palo Alto Unified
- Hillsborough City School District
- Jefferson Union High School District
- Berryessa Union Elem
- East Side Union High School
- Los Gatos-Saratoga Joint Union High
- San Jose Unified School District

Long Beach Unified School District serving over 75,000 students is a Hoonuit customer for data management and reporting. As of May 2018, Hoonuit has been selected to provide comprehensive data management, reporting, and analytics to San Diego Unified School District serving over 105,000 students, as well as Santa Ana Unified School District serving over 50,000 students.

**Trusted Analytics Partner**

Hoonuit is a trusted partner with 800 districts providing a managed BI and Analytics Solution

- **370,000+ Students**  
  Customer since 2008
- **90,000+ Students**  
  Customer since 2015
- **75,000+ Students**  
  Customer since 2017
- **180,000+ Students**  
  Customer since 2009
- **220,000+ Students**  
  Customer since 2012
- **77,000+ Students**  
  Customer since 2000
**REFERENCE PROJECTS**

In order to provide documentation of the requisite Proposer experience and capabilities in each of the areas listed in Section 2(a) immediately above, Proposer’s Proposal shall provide a description of three (3) Reference Projects previously performed by the Proposer that are similar in size and scope to the services sought under this RFP.

<table>
<thead>
<tr>
<th>Contact Information</th>
<th>Project Description</th>
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| **Phillip DiBartolo**  
CIO  
(773) 553-1669  
pbdibartolo@cps.edu  
42 W. Madison Ave  
Chicago IL 60602 | In April of 2008, following an extensive review and evaluation process, Hoonuit was selected by Chicago Public Schools to provide a comprehensive Dashboard, Analysis, and Reporting Solution. Chicago Public Schools recognized the superior design, experience, and successes of our solution as they evaluated nearly a dozen alternative solutions. Because of the scope of the project, the initial implementation was twelve months. During that time, we worked closely with CPS to train the district’s technical resources. With Hoonuit’s help, CPS has expanded and added to the Data Warehouse and Dashboards so that these tools have become the source for delivering information to the district administrators, schools, and district data analysts so that they all use a consistent data.  
Chicago Public Schools relies on Hoonuit solution to load data from eight enterprise transactional systems—SIS Chancery SMS, Special Education TIENET, Discipline Verify, SchoolNet (Curriculum), Gradespeed (Gradebook), PeopleSoft (HR), and Oracle Financials—and dozens of locally developed data sources to support more than 400,000 active students along 16 years of historical data. The implementation project began with loading student, school, student and school performance (e.g., attendance, discipline, scheduling, marks, early childhood, special education, English language learner, surveys, etc.), program and historical assessment data from Chicago’s existing source systems. We took care to profile each data source to accurately adjust our ETL processes to work with the data accurately and efficiently. We also worked closely with the CPS team during implementation to assist with data validation, reengineer their existing dashboards, and provide data analysis consulting services. Additionally, we helped add teacher evaluation, high school selection, financial aid, survey, and post-secondary dashboards to their solution.  
Since the initial implementation, the flexibility of Hoonuit has allowed CPS to revise dashboards to align with district policies and department goals and to support state and federal reporting. We have further helped support CPS’s recent effort to get a total view of student support services by incorporating citywide program data. Also, health data was loaded into Hoonuit to analyze how the lack of immunizations or failed vision tests impact student success. We continue to work closely with CPS to make sure our solution drives their decision-making processes. |
### Contact Information

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<th>Name</th>
<th>Title</th>
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<tr>
<td>Marcy Lauck</td>
<td>Director of Governance,</td>
<td>408.453.4283</td>
<td><a href="mailto:Marcy_Lauck@sccoe.org">Marcy_Lauck@sccoe.org</a></td>
<td>1290 Ridder Park Drive,</td>
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<tr>
<td>Phil Benfield</td>
<td>408.453.6682</td>
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<td><a href="mailto:phil_benfield@sccoe.org">phil_benfield@sccoe.org</a></td>
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### Project Description

In 2012, Santa Clara County Department of Education (SCCOE) chose Hoonuit to provide data and analytical solutions to school districts, schools, and community based educational programs throughout the Silicon Valley region and beyond. Hoonuit and SCCOE have worked closely together to design, develop, and implement a wide range of deliverables to meet the needs of the Silicon Valley community. The initiative is part of the Silicon Valley Regional Data Trust in partnership with SCCOE, University of California Santa Cruz, Santa Cruz County Office of Education, and the San Mateo County Office of Education. SCCOE serves 222,000 students and 450 schools across California. SCCOE users are spread across a wide geographic territory, and, using our tool, we are able to facilitate better data sharing, collaboration, and ultimately better educational outcomes not possible before the robust Hoonuit solution.

“District officials use aggregated data to make planning decisions at the 30,000-foot level, while individual teachers use a more tailored view to organize their students. Right now, we have over 90 dashboards and 350 metrics in the [Hoonuit] DataZone,” Marcy Lauck, Director of Data Governance, said. “Integrated into coordinated district planning, the DataZone metrics have the potential to change the trajectory for our students.”

Additionally, Hoonuit works with multiple Early Childhood (EC) programs to load and report on EC data, which gives their users a whole child, PK-college view of the data. Hoonuit provides SCCOE all of the technology, development, and comprehensive services on a regular and ongoing basis. Our SCCOE deployment processes approximately 100 million records nightly and is growing quickly as we add more data sources. We work closely with SCCOE daily to ensure their needs are met and they are successful, even as more California districts are added to the solution.

| Kurt Kiefer | Assistant State Superintendent | kurt.kiefer@dpi.wi.gov | 608.266.2205 | 125 S. Webster St. Madison, WI 53707 |

In 2011, Hoonuit and the statewide educational agency, Wisconsin Department of Public Instruction, worked together to create a data management and analytics solution (WiseDASH) to meet the needs of districts throughout the state. Hoonuit provided Project Management, Education Analyst support, Data Base Analyst support including data profiling, data model enhancement, and data validation, ETL configuration and customization, dashboard and report customization, and provided education innovation consulting assistance for educator effectiveness. Since then, we have maintained a strong relationship with WiseDASH districts in order to continually meet their needs, such as developing a tool to track RtI; this tool is currently being implemented for this client and several other clients with similar needs. Hoonuit’s solution also helps support WI Department of Public Instruction’s public-facing dashboards, as can be seen at: [http://wisedash.dpi.wi.gov/Dashboard/portalHome.jsp](http://wisedash.dpi.wi.gov/Dashboard/portalHome.jsp)
RESUMES & PROJECT TEAM DESCRIPTIONS

Resumes and descriptions of the project team and staffing resources that will support the engagement, including resumes for all principals (including without limitation the Project Manager) and description of support staff. The resumes and descriptions will demonstrate the experience and capabilities of Proposer’s project team staff members in implementing projects similar to that which is sought under this RFP.

Significant experience is represented in Hoonuit team members who will work on this initiative, as they have 10 or more years of experience in modelling data for education analytics and several have five to 10 years of experience with the source data. Members of our team have been part of establishing extensive data warehouse and analytic systems throughout the United States. See Appendix B for our team members’ resumés.

Team members will include:

- Matt Riese—Project Manager
- Josh Meyer—Developer
- Erich Brungraber—Dashboards
- Kevin Bosman—Developer
- Tina Lanfranki—Analyst

“Hoonuit continues to be an excellent thought and implementation partner as our district embarks on our second year of implementation and deployment of their data warehouse and dashboard platform. Our educators and leaders have unprecedented access to analytics that previously were unavailable to them. In addition to providing an intuitive easy to navigate user interface, the flexibility and partnership that Hoonuit provides also helped us to push more staff development and communications resources to our staff and connect it directly with the content they are viewing. Using the cohort tool, our staff also have increased visibility of our most vulnerable students to ensure they receive the support they need to succeed.”

“Overall, our users have had extremely positive feedback and it would not have been possible without a partner like Hoonuit.”

Billy Buchanan, Director of Data, Research & Accountability
Fayette County Public Schools
FINANCIAL STATEMENT

Proposer’s Proposal shall include a copy of the Proposer’s latest reviewed or audited financial statement with accompanying notes and supplemental information. This documentation is mandatory.

The following pages include the most recent audited financial statement. The audit for 2017 has not yet been made available. Please note that Hoonuit was rebranded in 2017; we were formerly known as Versifit Technologies and Atomic Learning.
**RELEASE AND WAIVER OF LIABILITY FORM**

Proposer’s Proposal shall include a Release and Waiver of Liability Form (Exhibit B) as detailed in the Release and Waiver of Liability Form section of this RFP.

The following page is our signed Exhibit B, per the requirement.
Exhibit B

RELEASE AND WAIVER OF LIABILITY FORM

Implement and Support an Ed-Fi Unified Data System Infrastructure in Amazon Web Services (AWS) (the “Project”)
RFP #ED-FI12018 (the “RFP”)

This Release and Waiver of Liability Form (hereinafter the “Release”) is executed by and on behalf of
Hoonuit 1, LLC [insert the full legal name of the proposing firm], a Proposer
under the RFP (hereinafter the “Proposer”), located at 15088 22nd Ave. NE, Little Falls, MN 56345 [insert the full business address of the Proposer].

RECITALS

1. The San Francisco Unified School District through its Purchasing department has issued a Request for Proposals for the Project, with a requirement that Proposers submit certain information to demonstrate their experience and qualifications to perform the Project.
2. The Proposer has submitted information pertaining to its experience and qualifications, including a list of example projects and project representatives as references for its experience and qualifications.
3. The San Francisco Unified School District seeks candid comments on the Proposer’s performance on the listed example projects from the project representatives.

RELEASE AND WAIVER OF LIABILITY
The Proposer hereby fully and forever releases, exonerates, discharges, and covenants not to sue, the San Francisco Unified School District, its Boards of Education, officers and employees, and all individuals and entities furnishing comments on Proposer’s performance, from and for, and does hereby waive, any and all claims, causes of action, demands, damages and any and all other liabilities of any kind or description, in law, equity, or otherwise, arising out of information furnished about Proposer’s performance on the projects that Proposer has identified pursuant to Recital number 2, above.

INTENDED BENEFICIARIES
The San Francisco Unified School District, its Boards of Education, officers and employees, and all individuals and entities furnishing comments on Proposer’s experience and qualifications are intended beneficiaries of this Release and are entitled to enforce its terms.

PROPOSER SIGNATURE
With my signature below, on behalf of the Proposer identified above, I represent and warrant that I am an authorized representative of the Proposer with the authority to sign this Release on Proposer’s behalf, and, on behalf of Proposer, I agree to all of the provisions of this Release.

Signature of Proposer’s Authorized Representative

Date

Paul Hess
Name of Proposer’s Authorized Representative

Implement and Support an Ed-Fi Unified Data System Infrastructure in AWS RFP
SCOPE OF WORK / TECHNICAL SOLUTION

The following information is in response to the requirements listed in the RFP (pages 13 - 17).

Ed-Fi API & ODS
Hoonuit commits to maintaining currency with the Ed-Fi Alliance assets in order to remain consistent in support of compatibility, interoperability, and data use. This commitment specifically includes the specific requirements that will be met through our annual maintenance program:

- **Major System Version Upgrades**—We will plan to upgrade to the most recent Ed-Fi data model version and the API-ODS code base version recommended by the Ed-Fi Alliance on an annual basis. Any upgrades impacting performance or use of the system will be scheduled with SFUSD prior to beginning work.

- **Bug Fixes & Minor Version Upgrades**—Through our ongoing support program, we will monitor for any software bug fixes and minor version upgrades released by Ed-Fi Alliance. These issues will be addressed during a timeframe scheduled with SFUSD so as to minimize impact on users.

- **Data Model Changes, Minor Release Updates, or Extensions**—As with any work we perform on the SFUSD solution, we will schedule downtime with stakeholders in order to minimize impact. We commit to the responsibility of addressing data model changes, minor release updates, and extensions as they are made available.

Additionally, Hoonuit accepts the responsibility of maintaining expected compatibility and functionality when applying upgrades and other changes to the solution.

Ed-Fi Data Vault
The Hoonuit data warehouse is based primarily upon star schema dimensional models with conformed/shared dimensional tables that are federated for an enterprise data warehouse. No Snowflakes are used or recommended. Entities are atomic as possible in granularity to support a fully denormalized schema for the most efficient reporting possible. “Slowly changing” dimensions are stored in separate tables. Inner joins are recommended per best practice implementations and we typically avoid degenerate dimensions. We also avoid splitting dimensions to different grains. We create metrics and aggregate tables for cross-domain analysis. Snapshots for set-based analysis, metrics computations, and specialized reporting are used.

The Hoonuit solution will provide longitudinal, time-based database supporting data warehousing in concert with SFUSD’s requirements. Our solution is designed to capture and organize changes to historical, longitudinal data over time. A change data capture process is used for capturing changes in the data. This process is designed to be quick and efficient.
Hoonuit’s approach to aggregating, storing, querying, and accessing longitudinal data simplifies the data ingestion and data integration process, provides easy auditability, allows addition of new data sources without any disruptions and enables seamless adaptability and agility to meet existing and new reporting requirements. It also reduces the load on source systems, reduces network bandwidth, and preserves historical records.

Best practices include only staging required tables and fields. Tables with large volumes of data should follow this approach. It is typically faster to implement all fields per table. Table and field names should match the source as closely as possible. Each table should be defined in appropriate staging schema and naming collisions should be avoided. Optionally, partition switch large/historical staging tables.

There are two types of staging—Standard and Net Change. Standard staging includes truncating or deleting staging table, copying the source data, and loading all the data fields for each table. Net change staging includes truncating temp staging table, copying current data to a temporary staging table, implementing the CDC Process (Change Data Capture), defining hard and soft delete records based on requirement, and setting temporal staging fields (Linage & Temporal Data).

Within the ETL metadata you can dynamically determine whether the ETL processes will run in a full-refresh or a change data capture (CDC) mode. Typically, we will initially configure the ETL processes to run in a full-refresh mode on the weekend and in CDC mode during week day builds.
Data Quality Rules Engine

Data accuracy is provided by Hoonuit through both implementation, when we initially migrate data into our data warehouse, and ongoing as the Extract, Transfer, and Load (ETL) process updates the data warehouse from the identified sources. We recognize how vital it is that data integrity be maintained throughout the process for consistent and accurate dashboard experiences.

Hoonuit has a well-established user acceptance testing process that is completed during implementation to validate high level of performance throughout the project. This process would be relied on for new implementations of our solution and the migration of content from other data warehouses, as needed. Listed below is an overview of the steps in the QA process that Hoonuit is responsible for during any implementation project.

1. **Initial Reports/Questionnaire**—the client provides the project manager with initial information through reports and a questionnaire to begin validation from the very first data load. These reports include Attendance, Discipline, Enrollments, Student Marks, and Student Schedules.

2. **Data Presentation**—this step focuses on querying the tables and verifying that the list of required fields is populated as documented in the data mapping worksheets or other requirements. Individual tests are used to breakdown the verification process.

3. **Data Accuracy**—test cases are used to ensure accurate data portrayal for the list of required fields. The test cases correlate with the client’s requirements, as represented in the mapping and requirements documents. Test cases include Enrollments (e.g., current, active students...
check; non-active students check; and inactive students check) and Programs (e.g., special education program check; active special education membership check; and active membership, inactive student check).

4. **Report Comparisons**—comparison of the list of required fields’ data to actual reports so that more specific data sets can be validated to ensure accuracy. The goal is to find any specific records that may be causing discrepancies in the reports.

5. **Dashboard Content**—this is one of the final steps in validation to best capture the data as the client will see it upon release. In this step, the following aspects are tested: functionality, required fields, security, and reports/charts.

Along with Hoonuit’s data acceptance process we provide during implementation, as described above, district developers and administrators have access to tools that support data validation. The Hoonuit solution includes 24x7x365 monitoring for proactive visibility into anomalies in data processing and failures on changes made within your systems and/or data so that you can address issues quickly and accurately. Dashboards exist in the Hoonuit solution to indicate where data issues are occurring in source systems (e.g., student management system). Data corrections are made in the source systems to improve overall data quality and consistency.

Hoonuit’s Advanced Data Quality consists of two primary components:

- **The Data Quality Engine** is an overnight process that measures business rules violations along with denominator data, so users can create data quality metrics and relative measures. The process is configurable, and Hoonuit will help SFUSD configure your Data Quality Engine.
- **The Data Quality Dashboard** provides visualization of summary statistics, trends, and drill downs to specific errors. Administrators and school staff use the dashboard to view the big picture of data quality problems across schools or to drill down to the source problems in order to resolve data issues.

States and Districts use Advanced Data Quality to fix issues affecting compliance, reporting, and operations. Additionally, this solution supports tasks such as fixing inconsistencies between HR systems and the SIS, correcting scheduling issues, or measuring cleanup of data problems over time. Data Quality reports that are not possible in existing transactional systems become accessible with Hoonuit and our Advanced Data Quality feature. Advanced Data Quality highlights include:

- Summary and spotlight display of all data quality items
- A wide array of pre-built data quality measures to choose from, or the ability to define your own business rules to add to the Advanced Data Quality dashboard
- Error definition, where to locate the errors in the source application, and exactly which records are causing the errors within one click on any of the data quality measures
- Dashboard data can be viewed at the state/district level or down to the school, principal, or teacher level and show their specific data quality issues
- Dashboard will update with every source data refresh to show progress towards fixing data quality issues

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<tr>
<th>DATA QUALITY ERROR DETECTION</th>
<th>DATA MATCHING</th>
<th>TRACK YOUR SCHOOLS’ EFFECTIVENESS</th>
<th>REVIEW IMPROVEMENT EFFORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoonuit’s web-based Data Quality Monitor lets schools see data errors so they can be corrected in the student information and the human resources systems’ record.</td>
<td>Multiple data systems mean multiple data fields that are not always consistent. The Hoonuit Data Matching process ensures records from all your data sources connect regardless of field setup.</td>
<td>Data Quality KPI’s track schools’ effectiveness by making data quality corrections. Our Data Mart stores individual data element errors for future problem resolution.</td>
<td>Receive scheduled data quality reports to track improvement efforts—ensuring consistent review of your data quality.</td>
</tr>
</tbody>
</table>

**INSIDER VIEW: CHICAGO PUBLIC SCHOOLS**

**USE CASE: DATA VALIDATION**

Chicago Public Schools was experiencing an issue with teachers submitting daily attendance and submitting attendance on time. They set up a data quality rule to monitor whether teachers have submitted their attendance every day, identify missing submissions, and measure how many days submissions are late. The results are easily viewed on Hoonuit’s data quality dashboards and has resulted in more timely and accurate attendance data. Attendance is the earliest warning for risk, which is why Chicago PS recognized the need for accurate and timely attendance reporting. Hoonuit helped administrators see a fuller picture of their data and make changes to their reporting process to more accurately identify at-risk students.
The following table provides a sample of business rules that a district has applied to their data to improve the level of quality for the data accessed through Hoonuit's dashboards.

<table>
<thead>
<tr>
<th>BUSINESS RULE</th>
<th>EXAMPLE DATA QUALITY MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate Student Records</td>
<td>Identify based on State Student ID Number</td>
</tr>
<tr>
<td>Active CY Enrollment - No NY Enrollment</td>
<td>Identify students with active CY enrollments but missing a NY Enrollment Records</td>
</tr>
<tr>
<td>Non-Sequential Grade Level in NY Enrollment vs CY enrollment</td>
<td>Identify students with a NY enrollment record with a non-sequential grade level as compared to CY</td>
</tr>
<tr>
<td>Invalid Grade Level for School of Enrollment</td>
<td>Identify NY enrollment records where the student has a grade level identified that is invalid for the school of enrollment</td>
</tr>
<tr>
<td>OSS Disposition vs attendance totals</td>
<td>OSS Disposition Days total vs attendance record days total</td>
</tr>
<tr>
<td>Student grade level not within class grade range</td>
<td>Identify student class enrollments where the student’s grade is not within the grade range of the section</td>
</tr>
<tr>
<td>Kinder half day absences</td>
<td>All KG grade level absences should total 1.0 for the day. Identify any KG student attendance days where they have absence records that are less than 1.0</td>
</tr>
<tr>
<td>Attendance</td>
<td>Attendance class start dates need to match enrollment date</td>
</tr>
<tr>
<td>Grade vs Age</td>
<td>Check grade level against predefined age range for grade level</td>
</tr>
<tr>
<td>Homebound</td>
<td>Check for homebound section included in attendance. All homebound sections should be set to &quot;include in attendance&quot;.</td>
</tr>
<tr>
<td>Students enrolled in inactive courses</td>
<td>Identify student class enrollments where the course being used by the section is no longer active</td>
</tr>
<tr>
<td>Proof of identity - Birth Verification Audit 30-day/10-day letters</td>
<td>Identify students without birth verification (30-day letter flag) - check against enrollment date - they get 30 calendar days - if nothing after 30 days, then they get a 10-day letter, which adds 10 more days. If no response after 10-day notice letter, then a letter to law enforcement is submitted and the verification type is changed to &quot;Law Enforcement Notified&quot;.</td>
</tr>
<tr>
<td>Chronic attendance vs Chronic Health Form Health Condition</td>
<td>Check for students with chronic absence reasons (CHR) in current year but no chronic health form health condition code</td>
</tr>
<tr>
<td>Students with no scheduled sections</td>
<td>Identify all active students who do not have any section enrollments</td>
</tr>
<tr>
<td>Enrollment Activity - only a single enrollment activity record and that activity record has a previous grade exit code</td>
<td>This is caused by staff using the wrong process to correct a student’s grade level or incorrectly promote a student</td>
</tr>
<tr>
<td>Courses in use without a state course code</td>
<td>Identify all district courses that do not have state course codes assigned</td>
</tr>
<tr>
<td>Instructional setting doesn’t match relating courses</td>
<td>Blueprint/nba instructional setting should have blueprint/nba courses</td>
</tr>
<tr>
<td>Gifted instructional setting compared to gifted service code</td>
<td>Ensure any student with a gifted instructional setting has a gifted service/need assigned</td>
</tr>
<tr>
<td>Incident Date doesn’t fall within Fiscal Year</td>
<td>Date of incident should be within the date range of the school year it is recorded in.</td>
</tr>
<tr>
<td>Incident Date is greater than referral date</td>
<td>Incident can’t happen after a referral</td>
</tr>
<tr>
<td>Discipline incident missing location</td>
<td>All discipline incidents must have a location</td>
</tr>
<tr>
<td>Incident contains no offender</td>
<td>All discipline incidents must have an associated offender</td>
</tr>
<tr>
<td>Person can only be entered once per incident</td>
<td>The same student/individual cannot be listed more than one time on an incident</td>
</tr>
</tbody>
</table>
Hoonuit provides district administrators and developers access to dashboards that help quickly identify and prioritize data errors. The Hoonuit user interface is currently undergoing updating, which is not represented by these screens. The functionality and main features will be the same in the updated version, though the overall look may change.

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Weight</th>
<th>Errors</th>
<th>% Error</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsubmitted Attendance</td>
<td>100%</td>
<td>81451</td>
<td>1.08%</td>
<td>B</td>
</tr>
<tr>
<td>Next Year Scheduling</td>
<td>50%</td>
<td>132</td>
<td>7.12%</td>
<td>F</td>
</tr>
<tr>
<td>HI Planning Schedule Not Selected</td>
<td>50%</td>
<td>59106</td>
<td>33.40%</td>
<td>F</td>
</tr>
<tr>
<td>Parent Engagement</td>
<td>100%</td>
<td>593</td>
<td>0.20%</td>
<td>B</td>
</tr>
<tr>
<td>Pending Parent Portal Applications</td>
<td>100%</td>
<td>593</td>
<td>0.20%</td>
<td>B</td>
</tr>
<tr>
<td>Invalid Enrollment Code</td>
<td>15%</td>
<td>41</td>
<td>0.61%</td>
<td>B</td>
</tr>
<tr>
<td>Invalid Leave Code</td>
<td>15%</td>
<td>959</td>
<td>1.28%</td>
<td>B</td>
</tr>
<tr>
<td>Missing Federal Race of Ethnicity</td>
<td>15%</td>
<td>382</td>
<td>0.10%</td>
<td>B</td>
</tr>
<tr>
<td>No Future Enrollment</td>
<td>15%</td>
<td>4492</td>
<td>1.20%</td>
<td>B</td>
</tr>
<tr>
<td>Potential Drop Out</td>
<td>20%</td>
<td>680</td>
<td>1.26%</td>
<td>B</td>
</tr>
<tr>
<td>Students Enrolled After Pledge</td>
<td>10%</td>
<td>91</td>
<td>0.42%</td>
<td>B</td>
</tr>
<tr>
<td>Students with Grade Level Changes After Pledge</td>
<td>10%</td>
<td>381</td>
<td>0.10%</td>
<td>B</td>
</tr>
<tr>
<td>Unenrolled Out of District Transfers</td>
<td>20%</td>
<td>1159</td>
<td>4.43%</td>
<td>B</td>
</tr>
</tbody>
</table>

**Clicking on any of the data quality measures will give access to the error definition, where to locate the errors in the source application, and exactly which records are causing the errors.**

**Dashboards can be viewed at the state/district level or down to the school, principal, or teacher level.**

**Step-by-step instructions on how to fix the specific data quality measure is provided by clicking one of the errors.**
Supporting Infrastructure

Hoonuit can deliver the required infrastructure to support the capabilities listed in the RFP, including:

- Automated integration and testing supporting continuous integration.
- Automated deployment of version upgrades, patches, or releases into a staging environment, with promotion into test and into production, supporting a continuous delivery model.
  - As described earlier, Hoonuit is committed to providing SFUSD ongoing support of the solution, including relying on a staging environment when deploying version upgrades, patches, and releases.
- Deployment of Ed-Fi API/ODS sandboxes that allow individual application vendors to develop and verify integrations with test data.
- Automated update of the API-ODS-DV based upon Ed-Fi data model updates or SFUSD extensions.
As described earlier, Hoonuit’s maintenance program includes scheduling and implementing updates as needed.

- Configuring high availability, including fail-over and fail-soft mechanisms.
- Operational monitoring and logging.
  - The Hoonuit solution includes developer tools and dashboards that allow SFUSD staff to monitor the data processing procedures.
- Appropriate monitoring and scaling in the cloud based upon workload.
  - The Hoonuit solution works seamlessly in a cloud-based environment, such as AWS.
- Backup and recovery of the ODS and DV databases.
  - Nightly differential and weekly full backups are recommended while keeping a weeks’ worth of differentials and two full verified weekly backups. With Hoonuit, in the event of a catastrophic failure, we can restore the last full back up and run the full data refresh that will re-sync the data to assure accuracy.
- Ability to fine tune for performance and cost.
- Implementing processes and software mechanisms for security and privacy appropriate for student data and compliant with all applicable regulations.

### 2018 Activities

Hoonuit will complete the required activities to provide the deliverables and milestones scoped out for 2018.

**Project Management.** Hoonuit will assign our project manager—Matt Riese—to oversee the entire implementation project. This includes acting a single-point of contact and created a project plan within five days of the project kickoff. Weekly status meetings will be conducted, and other communications will be coordinated by the project manager to make sure stakeholders are kept informed of the implementation’s progress.

**Foundational Data Acquisition and Loading.** Hoonuit will collaborate with SFUSD stakeholders to obtain the set of foundational data and facilitate its formatting loading into the solution.

**Technical Implementation and Integration.** Hoonuit agrees to conduct the necessary development, implementation, DevOps, configuration, and integration that is required in order to deliver the Ed-Fi infrastructure solution defined in the SFUSD RFP. Additionally, we bring our extensive experience with developing successful data management systems throughout California to the project.

**Training and Knowledge Transfer.** Training is provided through two-day, onsite train-the-trainer model during the implementation of the solution. Hoonuit’s standard technical training sessions include administration of the Hoonuit solution and customizing dashboards. A train-the-trainer approach is provided for an identified group of administrators and developers. The result of the training is a team of users who are able to confidently train larger groups of users, including staff, administrators, and teachers throughout the state.

**Vendor Integration Support.** Hoonuit recognizes the extensive work detailed in the SFUSD three-year roadmap and we are prepared to provide the ongoing support, services, and solutions needed to achieve your identified goals. Ultimately, our partnership with SFUSD will result in a solution that
effectively and efficiently brings all your data together for easy access and analysis appropriate for users of all levels of the district.

**Schema Management Services.** Hoonuit’s maintenance program will include any necessary coordination and technical services for updates and upgrades as they are made available by Ed-Fi Alliance.

**Maintenance and Support Services.** Our maintenance program for SFUSD will include providing phone and email help desk support during business hours for five identified SFUSD developers. Additionally, we will be responsible for upgrades, maintenance, and bug fixes.

**Optional Services.** We recognize that SFUSD needs and goals may change throughout the project, and we can flexibly accommodate the changes through further services.

**2019-2020 Activities**
Hoonuit will continually provide our services to not only help maintain the solution, but we will also be there to manage any changes you may need to help the solution better meet your needs.

**ADDITIONAL REQUIREMENTS**
Many of the requirements listed in this section have been responded to in previous sections of this document, including Security, Project Schedule, Project Manager, Budget, Financial Report, and Liability Form.

**Data Storage and Management.** As described in the Security section of our response, we have explicit protocols and policies for security student, employee, financial, and other confidential district data. District users will have access to the data at any time; any scheduled downtime will be coordinated with SFUSD stakeholders ahead of time. Hoonuit complies with the district’s requirement to determine data access.

**Location of Work to be Performed.** We are able to demonstrate our solution in-person upon request. Upon award, Hoonuit will coordinate with stakeholders to determine the best means of communication throughout implementation and thereafter, including conference calls and other video/teleconferencing systems.

**Contractual Agreement.** We have reviewed the provided agreement and accept the terms and conditions. We can also provide a copy of our standard agreements for SFUSD to review upon request.

**Third Party Materials/Open Source Software.** Third Party Materials are not required for the Hoonuit solution. Users access the system through any common internet browser, and the solution is device and operating system agnostic.
APPENDICES
APPENDIX A: HOONUIT LEADERSHIP TEAM

Paul Hesser
Chief Executive Officer
Mr. Hesser is a transformation and change leader with a strong track record in market and product development, turnaround, and strategy development and execution. He is adept at assessing market and industry trends and developing and executing product strategies that create differentiation and capture market share.

Clay Anderson
Chief Financial Officer
Finance professional with diverse international experience in M&A, strategic finance, business unit management, corporate FP&A and forecasting, and implementation of financial information systems within both multi-national public and private equity-held companies.

Shivani Stumpf
Chief Technology Officer
Ms. Stumpf’s extensive background in shaping product strategies and her expertise in product engineering uniquely positions her to drive innovation while achieving business outcomes. At Hoonuit, Ms. Stumpf is responsible for leading product management, content development, engineering, and IT operations across product portfolio to help accelerate company growth.

Liz Walbrun
VP Strategic Partnerships
Ms. Walbrun has more than 30 years’ experience in K-12 education sales, with her primary focus being large school districts and state departments of education opportunities in SIS and ERP software and professional services space.

Kevin Benson
Director of Services
Mr. Benson is a senior technology professional at Hoonuit with over 15 years of experience in the areas of data warehousing, technology infrastructure, project management, technology training, and change management.
APPENDIX B: RESUMÉS

The following resumes are for team members who will be assigned your project. The team members include:

- Matt Riese—Project Manager
- Kevin Bosman—Solution Developer
- Erich Brungraber—Senior Solution Developer
- Tina Lanfranki—Data Analyst
- Josh Meyer—Senior Solution Architect
MATTHEW RIESE
Project Manager at Hoonuit, LLC

www.linkedin.com/in/matthew-riese-0ba18b80/

EXPERIENCE

- Matthew coordinates and manages multiple projects that align to district and state requirements
- He maintains strategic alignment with clients during and after project implementation
- Integrates Data Warehouse Solution with clients’ internal applications and end users

HOONUIT ACCOMPLISHMENTS

- California Office to Reform Education
  - Managed the implementation of 1.8+ million student deployment
    - Created custom measures and ETL to meet needs of client and end users
    - Created school improvement report card displaying accountability measures at the school, district and collaborative levels to identify strengths and challenges
- Linked Learning Alliance
  - Managed the implementation of custom data warehouse solutions combining post-secondary data with student data from state and custom levels
  - Discovered the breakdown of persistence in pathways from a high school to a workforce level
- Howard County Public Schools – Lead Data Analyst
  - Implemented Harvard SDP business rules and metrics that reflect persistence in 2-year versus 4-year colleges
  - Collaborated on rolling dashboards and metrics to end users

EDUCATION

- University of Wisconsin - Oshkosh
  - Bachelor of Business Administration in Information Systems

Languages:
- SQL
- Postgres
- HTML
- SSRS Reports
KEVIN BOSMAN
Solution Developer at Hoonuit, LLC
www.linkedin.com/in/kevin-bosman-18517343/

Core Competencies: ETL Procedures, Java Applications, Client Training, Database Management Systems: MSSQL, Oracle PL/SQL, PostgreSQL, Programming Languages: Java, JavaScript, C#

EXPERIENCE

- Kevin’s six years of experience with Hoonuit has given him skill in designing and developing ETL procedures, assessment loaders, and stand-alone Java applications
  - These assisted District and State level clients in maintaining data warehouse metadata
  - Kevin has supported districts and states in analyzing, mapping, validating and documenting various areas of information
- Kevin also has experience in training and assisting clients in using new ETL procedures and Java applications
- Provides client support in resolving functional and technical issues

HOONUIT ACCOMPLISHMENTS

- **Hawaii Department of Education – ETL and Test Loader Developer**
  - Developed, maintained, and validated uTTL test loaders and ETL procedures.
  - Developed and tested ETL procedures that measure Student-At-Risk factors
  - Support any ETL or test loading issue
- **Hillsboro School District – Developer**
  - Developed and tested ETL procedures to load and manage test data from Synergy source system
- **Elgin School District – ETL Developer**
  - Managed the Data Warehouse deployment project involving loading and processing historical assessment data
  - Support any ETL or assessment loading issue
- **California Office to Reform Education – Solution Developer**
  - Responsible for the design and implementation of new product modules
    - Accommodates assessment scores and survey responses for 1.8+ million CORE data Collaboration students
    - Assisted in conversion of existing product modules

EDUCATION

- University of Wisconsin - Oshkosh
  - Bachelor of Science in Computer Science --- Software Engineering emphasis
ERICH BRUNGRABER
Senior Solution Developer at Hoonuit, LLC
• www.linkedin.com/in/erich-brungraber-342a7b50/ -

With 5 years of experience at Hoonuit, Erich specializes in SQL and creating and modifying dashboards and metrics within Hoonuit’s reporting tool.

EXPERIENCE

• At Hoonuit, Erich is well-recognized for his knowledge of the data model and dashboard code, allowing for extensibility and out-of-the-box solutions for complicated problems.
• Computer skills that Erich encompasses include:
  • Web development (HTML, CSS, & JavaScript)
  • Databases (SQL Server, Oracle, PostgreSQL)
  • Programming Languages (C++, Java, & Python)
• Possesses extensive experience with Hoonuit’s data warehouse data model and dashboard, and has worked implementing large-scale customized dashboards and metrics.
• Prior to becoming a Hoonuit employee, Erich provided technical support for corporate and chain store employees, on-site computer maintenance services in a corporate environment, and developed and tested efficiency tools using Visual Basic.
• Erich also has experience in academia as a tutor, lab assistant, and teaching assistant.

HOONUIT ACCOMPLISHMENTS

• Erich has worked for numerous Hoonuit clients, such as the Wisconsin Department of Public Instruction, West Virginia’s Department of Education, Chicago Public Schools, Milwaukee Public Schools, California Office to Reform Education (CORE), Santa Clara County, CA Office of Education, etc., performing the following duties:
  • Customized performance tuning of databases for better end-user response times.
  • Creating federal/public reporting sites (e.g., ZoomWV).
  • Dashboard portal deployment and configuration and maintenance.
  • Conducted on-site trainings of clients in Hoonuit’s product usage.
  • Created parsing classes to transform HTML with images into MS Word (.docx) files.

EDUCATION

• University of Wisconsin – Oshkosh
  • Bachelor of Science in Computer Science
    • Computer Science Professional emphasis
TINA LANFRANKI
Lead Data Analyst at Hoonuit, LLC
• www.linkedin.com/in/tina-lanfranki-a6475348/

EXPERIENCE

• Tina serves as the Lead Data Analyst for Hoonuit, with 4+ years of experience working with school districts and state departments of education
  ○ She has implemented longitudinal data systems and advanced analytical applications
• Tina has assisted districts and states in analyzing, mapping, validating and documenting various data areas that include assessments, special education and advanced financial solutions
• She has monitored and addressed user questions concerning data integrity and communicated functional and technical issues
• She has created and implemented various preventative measures to ensure data quality

HOONUIT ACCOMPLISHMENTS

• California Office to Reform Education – Lead Data Analyst & Solution Developer
  ○ Responsible for data mapping, validation and analysis of state and local files
  ○ Assisted in the requirement collection and design of brand new product to accommodate 1.8+ million CORE Data Collaborative students
• Linked Learning Alliance – Lead Data Analyst & Solution Developer
  ○ Utilized student and Career Technical Education pathways
  ○ Created and managed front end dashboards and metrics
  ○ Liaison between Hoonuit developers and Linked Learning Alliance stakeholders
• West Virginia Department of Education – Lead Data Analyst & Solution Developer
  ○ Managed the 3-year, state-wide data mapping, validation process plan and documentation of ZOOMWV [public facing] and ZOOMWVe
  ○ Created and implemented numerous Career Technical Education and Financial measures
  ○ Identified and resolved underlying data issues
• Howard County Public Schools – Lead Data Analyst
  ○ Responsible for data mapping, validation, documentation and timely issue tracking
  ○ Implemented Health and Truancy modules
  ○ Liaison between Hoonuit developers and Howard County’s project manager in order to implement custom Assessment measures

EDUCATION

• University of Wisconsin - Oshkosh
  ○ Bachelor of Business Administration in Information Systems
• University of Northwestern Ohio
  ○ Associate of Applied Business in Accounting
JOSH MEYER
ETL Product Manager at Hoonuit, LLC
www.linkedin.com/in/joshua-meyer-a589572b/

Replace this section with an ‘objective’ statement that includes main job duties, job description, etc.

EXPERIENCE

- Josh is a strong leader, with over 10 years of experience in custom SQL development, database design, Java development, and ETL within stored procedures and SSIS
- Josh’s focus is on the development of ETL for numerous school districts and state education departments

HOONUIT ACCOMPLISHMENTS

- ETL developer for data warehouse for consortium districts with WISEdash Local
- ETL developer for data warehouse for Santa Clara County Office of Education

EDUCATION

- University of Wisconsin – Oshkosh
  - Bachelor of Science in Computer Information Systems

CLIENT REFERENCES

- Oregon Department of Education, Joel Robe, Joel.Robe@state.or.us, 503-947-5709
- Milwaukee Public Schools, Sandra Peterson, psmartsj@milwaukee.k12.wi.us, 414-475-8246
- Chicago Public Schools, John DiCello, jdicello@cps.k12.il.us, 773-553-1669
- Wisconsin Department of Public Instruction, Kurt Kiefer, Kurt.keifer@dpi.wi.gov, 608-266-2205
APPENDIX C: SANTA CLARA UNIFIED SCHOOL DISTRICT CASE STUDY

The following document captures a recent case study of Santa Clara County Office of Education’s (SCCOE) use of Hoonuit to help make data-driven decisions to improve graduation rates at Santa Clara Unified School District. SCCOE uses Hoonuit technology to support DataZone, which provides districts access to key data collected from a variety of sources.
Harnessing the Power of Meaningful Data

Districts transform their response to student needs with timely, actionable insights

Last May, leaders at Santa Clara Unified School District were disappointed to see themselves on a list of Bay Area districts with stagnant high school graduation rates. They resolved to implement solutions that would improve student performance, and began by consulting research which suggested it is nearly impossible for a freshman entering their sophomore year behind in credits to catch up and stay on track to graduate.

To start digging deeper, leadership used a data dashboard to identify ninth-graders who were already off-track. In less than a minute, a member of the district’s research and assessment group had a list of all the students that fit that description and sent it off to the high schools. Teachers and administrators at the school level then worked student by student to assign appropriate credit recovery programs for the upcoming summer.

Santa Clara’s realization came courtesy of a major push across the county to make data more accessible and actionable in order to eliminate achievement gaps and promote continuous improvement practices. As part of a robust plan launched in 2012 by the Santa Clara County Office of Education (SCCOE), educators at every level, in every district and school have access to support from the SCCOE to become proficient in the use of the County’s DataZone, a new data tool powered by Hoonuit District Enterprise (formerly Versitit) to give teachers and administrators more insight into how their students, schools, and districts are performing.

“It’s no longer about why students are failing, it’s about how teachers are teaching,” explained Marcy Lauck, Director of Data Governance for SCCOE who trains educators and administrators on how to maximize the use of data. “This is a paradigm shift. Good data changes how teachers are thinking about their work with students.”

“Access to actionable data for administrators, counselors, and teachers is making a tremendous difference in the myriad ways students are experiencing school.”

Marcy Lauck,
Director of Data Governance
Santa Clara County Office of Education

LCAP: Where Data Meets Accountability

As part of California’s Local Control Funding Formula that allocates funding for the state’s schools, every district creates a three-year plan for improving outcomes for at-risk students.

Called the Local Control Accountability Plan, or LCAP, this sprawling document is divided into eight priority funding areas, and serves as a roadmap for districts, giving them a chance to outline their vision for the future, as well as how they are providing supports for targeted populations, such as English language learners and students from low-income backgrounds.

As might be expected from a document of this magnitude, districts are required to set goals that outline how DataZone’s LCAP dashboards provide detailed, district-specific metrics enabling each district to monitor their progress in meeting the goals upon which their funding is based, such as the percentage of students meeting or exceeding ELA and math standards on the Smarter Balanced Assessment, the number of suspensions and expulsions compared across subgroups, and the number of students completing CTE pathways.

In addition, DataZone’s LCAP metrics also display a district’s leading indicators: locally-determined interim assessments that are used to measure student progress towards proficiency on the Smarter Balanced assessment. These local assessments vary from district to district, but support rich data conversations among schools’ professional learning communities and are key to helping teachers differentiate instruction.

These metrics are invaluable to districts who may otherwise be challenged to track progress toward improved outcomes for their students – especially their most at-risk students. As Lauck put it, “Having these metrics organized and updated nightly in one place is tremendously helpful for our district partners.”
Powering Decision-Making & Driving Student Achievement

The DataZone, a central data warehouse powered Hoonuit District Enterprise platform, is able to support the county’s 31 districts. The DataZone is also the education repository for the Silicon Valley Regional Data Trust, and supports data sharing between county agencies and school districts, pulling from a number of disparate sources, including foster youth and probation databases, student information systems, state and local assessment platforms, and curricular software.

The Hoonuit District Enterprise data solution, which features a suite of early warning and at-risk monitoring tools, serves as the system’s backbone. The result is a network where every caseworker, probation officer, school administrator, and teacher has access to timely, comprehensive, and role-appropriate information about the students they serve.

District officials use aggregated data to make planning decisions at the 30,000-foot level, while individual teachers use a more tailored view to organize their students. “Right now we have over 90 dashboards and 350 metrics in the DataZone,” stated Lauck.

“Integrated into coordinated district planning, the DataZone metrics have the potential to change the trajectory for our students.”

Education data is at the core of the Silicon Valley Regional Data Trust that includes Santa Clara, San Mateo, and Santa Cruz counties, and is part of an integrated data system to help school districts and agencies determine the efficacy of services supporting at-risk students who may be served by more than one agency. The first application of cross-agency data sharing is FosterVision, which combines data from schools, juvenile probation, and foster youth services.

The application enables authorized personnel to have timely access to the legally allowable education records for children. “Having education data at the core of robust data sets enables districts, agencies, and researchers to study issues, inform policy, and allocate resources toward effective interventions. Data enables a coordinated approach for multi-service teams,” Lauck said.

Changing Big Systems

Although SCOE began building the DataZone four years ago, it was primarily an internal data warehouse for the County Office. In the fall of 2015, the COE decided to create two demonstration districts to build out the dashboards to meet district needs. Seven districts are now core DataZone districts and others are preparing for membership. “Implementing a data warehouse and the resulting access to comprehensive data involves changing how districts make decisions, and then grounding decisions in data,” Lauck said.

For Lauck, that all starts with training educators to see things differently using data. While teachers and administrators can be intimidated at first, that dissipates pretty quickly once teachers see the way SCOE has set up the Hoonuit District Enterprise platform.

“The dashboard and the DataZone are easy for people to navigate,” Lauck said. To prove it, she typically starts with a quick treasure hunt, giving staff a list of things to do in 30 minutes: explore filters for different subgroups of students, create a cohort of at-risk students and find an individual student’s history. “When they see how easy it is, it always ignites a desire to know more and to engage colleagues in discussions about how they might develop action plans based on data.”

Acclimating educators to the idea that data is a powerful tool in transforming student outcomes also requires a lot of listening. When Lauck speaks with teachers, she asks them what kinds of information they need to improve their classrooms. “They want data from local assessments, not state ones, and they like master rosters,” Lauck said. “They need to be able regroup students who are at different levels of skill mastery, and they don’t want to hunt down data from three different sources.”

Since districts typically see the most value from access to early warning data in one central place, Lauck often helps them delve deeply into those data sets. “The Early Warning dashboards support powerful conversations among teachers and administrators,” Lauck explained. “The ease of assigning students who are high risk in several domains—for example, attendance and behavior—to targeted interventions is a high leverage activity.”

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APPENDIX D: EARLY WARNING RESEARCH

The following documents provide insights into how data can help educators, administrators, and parents identify common signs that students are at-risk of dropping out of school or not graduating on time. Hoonuit’s ability to bring data from a variety of systems together to support efficient and consistent monitoring of specific-risk factors, along with our precise proprietary algorithm, support educators’ efforts to quickly recognize when students need interventions or further support.
FACILITATING EFFECTIVE INTERVENTIONS

USING AN EARLY WARNING APPROACH TO PREVENT DROPOUTS
EARLY WARNING

What unites educators is a desire to see every student excel in both academic and social settings.

It’s by all accounts a lofty goal — one toward which teachers and administrators work tirelessly every day. But the reality is that every student progresses at a different pace, and limited time and resources make it challenging to identify and address the unique needs of every child. Often by the time parents, teachers, and districts can see tangible evidence of a student’s academic or behavioral challenges, the point at which intervention would have been most effective has already passed.

Below, we’ll take a look at why exactly students are dropping out, how to use data and proactive analytics tools to identify these key indicators, and how educators can intervene effectively.
THE NEED FOR EARLY WARNING TOOLS
While dropout rates have generally been declining across all groups of students, there are still significant numbers of students who either drop out of school or fail to graduate on time (McFarland, Stark, & Cui, 2016). Indicators for dropping out vary across districts, states, and student subgroups, but there are consistent trends. For example, the Chicago Consortium for School Research has produced several studies that show that focusing on credits, attendance, and core course outcomes is the key to getting students back on track to graduation (Allensworth and Easton, 2007). Likewise, the Johns Hopkins ABC model shows that additional factors such as behavior can help improve the accuracy of dropout predictions (Balfanz, 2007). While there is some variation in the predictive strength of specific risk variables, there is a large body of evidence that shows a student’s overall risk level increases greatly when multiple factors come into play (Hammond, Linton, Smink, Drew, 2007; Gleason & Dynarski, 2002; Ingels, Curtin, Kaufman, Chen, 2002).

This means is that — as most educators already know — underperformance, falling behind, and dropping out doesn’t have to be a sudden or surprising result — if you have a valid and holistic view of the student. The challenge comes in strategically monitoring specific risk factors efficiently and consistently, and assigning at-risk students to effective interventions that can be assessed over time.

“Underperformance, falling behind, and dropping out doesn’t have to be a sudden or surprising result — if you have a valid and holistic view of the student."
UNDERSTANDING THE PATHS TO DROPPING OUT OF SCHOOL

Every child is unique and every dropout is equally unique.

A well-behaved student who is navigating a family crisis, for example, would likely require a different type of intervention than, say, a student that has had poor attendance for several years and is slowly falling behind. Likewise, educators bring different perspectives, experiences, and biases to their work environment. In order to adequately address an at-risk student, teachers need to not only know that the student is at risk, but also know to what degree and why they’re at risk. Schools and districts need to ensure that a consistent framework for detecting and measuring risk is implemented. Only then can educators consistently identify and administer the specific support that’s needed, and track whether the intervention is making a difference in a student’s success.

Several resources exist that help us understand the types of factors that are associated with dropping out of school. According to a report from the National Dropout Prevention Center, patterns and events that motivate dropout include (but are not limited to):

- **School Performance**
  - Low academic achievement
  - Retention/Overage for grade

- **School Engagement**
  - Poor attendance
  - Low educational expectations

- **School Behavior**
  - Misbehavior
  - Early aggression

- **Family Background**
  - High family mobility
  - Family disruption

- **Early Adult Responsibilities**
  - High number of work hours
  - Parenthood
Furthermore, educators should view risk factors for an individual student as well as for groups of students. Generally, risk factors can be aggregated at the individual, classroom, grade, and school level. Additionally, grouping students into ad hoc cohorts can be very useful for long-term tracking groups of students who share similar needs.

By identifying different groups and risk factor sources, proactive early warning systems supported educators in implementing and running a scalable intervention program with fidelity. Teachers can match students to effective intervention and efficiently administer the specific support students need using evidence-based, sound practices that are administered consistently and accurately.

It is important to keep in mind that students may have very different trajectories to dropping out of school (Hammond et al., 2007). The traditional pathway is a feedback loop where disengagement and negative outcomes create a negative cycle over multiple years.

In comparison, some children will drop out of school rather suddenly, often because something changes in their lives that pulls them from school (e.g., teen pregnancy, parent unemployment). Many children will not drop out (although they may very well not graduate on time), but will exhibit the same warning signs as their peers who did drop out. A small group of students (e.g., 2-3% of dropout students) will likely drop out from school with no visible risk factors factors (Ingels et al., 2002; Jerald, 2006).

Finally, about 5 percent of students who drop out don’t appear to have any red flags before they stop coming to school.
LEVERAGING DATA TO DETECT AND REDUCE RISK

School districts don’t suffer from a lack of data — rather, a lack of consolidated and actionable data. And while most early warning models are designed to give educators a sense of who is at risk, they’re often time consuming to implement and prone to inaccuracies. The most effective early warning systems not only automate the risk identification and scaffold intervention processes, but they leverage predictive analytics to more precisely anticipate and identify risk before it becomes a larger issue. Predictive capabilities fueled by longitudinal data allow for more meaningful intervention, earlier.

Proactive early warning tools are not only less resource intensive for educators, schools, and districts, but they are also more likely to produce positive outcomes for students. Using sophisticated algorithms, these cutting-edge early warning tools improve the precision of at-risk decision making. This means fewer students are overlooked and interventions are more likely to be delivered to the right students. In addition, measuring risk over time facilitates an understanding of the changes that may occur in a student’s overall and individual risk factors. This enables educators to view their intervention efficacy and determine if students are getting back on track or need additional intervention.

Predictive capabilities fueled by longitudinal data allow for more meaningful intervention, earlier.

“
EQUIPPING EDUCATORS FOR MEANINGFUL INTERVENTIONS

No matter how sophisticated an early warning system may be, it can’t automate the engagement between teachers, students, families, and/or social workers. In order for any data-driven platform to work most effectively, it must be utilized by qualified and motivated professionals who can capitalize on the tools they’re given to inform their interpersonal work. Data dashboards and early warning reporting systems are merely the foundation for the work of making a difference — they can’t accomplish it on their own.

At Hoonuit, we strive to ensure that all teachers are equipped with a valid and research-based view of risk factors, have tools that streamline the work of gathering and analyzing data, and are supported in identifying and assigning appropriate interventions. When talented, empathetic educators have the context and tools they need to address and work through a student’s individual needs, positive outcomes are not only trackable — they’re achievable.

TIERED SUPPORT MODEL

- **Tertiary Interventions**: Intense targeted skills interventions; high intensity; student-centered planning; individualized intensive interventions.
- **Secondary Interventions**: Some students (at risk); supplemental targeted skill interventions; small groups.
- **Universal Interventions**: All students/all settings; evidence-based curriculum and instruction; assessment system & data-based decision-making.

**Academic: RTI**
- Evidence-based curriculum and instruction
- Assessment system & data-based decision-making

**Behavior: PBIS**
- Positive behavioral expectations taught and reinforced in class
- Assessment system & data-based decision-making
HOW HOONUIT EARLY WARNING IMPACTS EDUCATION

Hoonuit Early Warning is an easy-to-use web-based platform based on a complex proprietary algorithm. Designed for teachers and administrators, the system automates the data-based component of early warning and intervention work so that educators can focus on taking action. It combines risk factor data with detailed student profiles and historical data, which helps educators understand the whole child, identify an issue’s root causes, and see the impacts of their intervention actions. Despite the system’s complex back-end and machine learning technology, we make this plug-and-play solution easy for educators to effectively implement.

This helps districts and schools more efficiently allocate resources: only those who need interventions receive interventions. Hoonuit Early Warning also enables educators to set up and track cohorts of students, measuring risk over time. This gives visibility into risk trends, as well as progress made by students, classrooms, schools, and the degree to which interventions are correlated with outcomes.

The extremely precise algorithm reduces common errors, such as assigning students to unneeded interventions, or even worse, failing to assign an at-risk student to an intervention altogether.

Request a demo today!

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RESEARCH SYNOPSIS:

"KEEPING MIDDLE GRADES STUDENTS ON TRACK TO GRADUATION"
This frequently cited early identification and effective intervention study examines how early at-risk middle grade students can be identified. We break down the authors’ findings here.

There is no shortage of available research about how educators can best identify students who may be at risk of failing to graduate, and what types of corresponding interventions are most effective to keep them on track for success. One of the most frequently cited studies on this topic is entitled: "Preventing Student Disengagement and Keeping Students on the Graduation Path in Urban Middle-Grades Schools: Early Identification and Effective Interventions" by Robert Balfanz, Lisa Herzog, and Douglas J. MacIver. In this 2007 study, the authors investigate how early in the middle grades teachers can identify students at risk of falling off the graduation track, the thinking being that by identifying risk factors as early as possible — before they become a serious problem — educators, administrators, and parents can intervene sooner to help students reach their graduation goals.

The study's authors followed almost 13,000 students from 1996 until 2004 — starting in the sixth grade through one year after the standard graduation year — to determine which indicators can be used to predict which students will not graduate from high school. The study was narrowed to focus on schools in low-income areas, and while the number results may fluctuate across social and economic lines, the general trends revealed can apply to middle grade students across the board. Ultimately, the researchers uncovered four major indicators that can be identified as early as the sixth grade to identify 60 percent of the students who will not graduate from high school.

Below, we'll summarize the study's key findings as they apply to educators.
WHY SIXTH GRADERS?

At most public schools, sixth grade is typically the start of the middle grades, and can be a major time of transition for students. Students have to adapt to changes like new schools and teachers, larger class sizes, different forms of testing and coursework, and new social demands and pressures like bullying. This study specifically focused on schools in low income areas, and found that this can be a time when students living in poverty might have to start helping out their families with after school duties like jobs or caretaking. Studies have shown that the combination of adolescence and living in neighborhoods with concentrated poverty can negatively impact student attendance, behavior, and effort. The researchers found that this period of extreme transition was a turning point for young students, and a time when many predictive risk behaviors begin to emerge.
THE 4 RED FLAGS

The goal of this study was to uncover which, if any, variables could be used to identify at-risk students as early as the student’s sixth grade year. Starting with a preliminary screen of about 20 variables (like standardized test scores, course failures, attendance, behavior marks) the researchers correlated student data to see which, if any of these variables, had a high yield—meaning 75 percent or more of the students who demonstrated a particular characteristic did not make it to the 12th grade on time.

Using this method, the researchers uncovered four sixth grade warning signs that could sufficiently predict a student’s risk of dropping out:

- **Failing Math**
- **Attending School Less Than 80% of the Required Days**
- **Failing English**
- **Receiving a Poor End-Of-Year Behavior Grade**

Suspension was also a top warning sign, but was folded into the poor behavior category, since almost all students who were suspended also received a poor final behavior grade.

The researchers found that these four red flags could accurately identify 60 percent of the students who did not graduate from the school system within one year of expected graduation date. What’s more, students exhibiting these flags had no more than a 10 percent chance of graduating on time, and a 20 percent chance of graduating one year late.
Fast Facts

- 4 flags enable researchers to identify 60% of the students who are unlikely to graduate within one year of expected graduation date.
- Students exhibiting one or more of these 4 flags have only a 10% chance of graduating on time, and a 20% chance of graduating one year late.
- Students missing 36-54 days had a 14% chance of graduating on time.
- Students with poor behavior marks at the end of sixth grade have a 17% chance of graduating on time.
- Students who failed math had a 21% chance of graduating on time.
- Students who failed English had a 16% chance of graduating on time.

Individually, each of these red flags had its own impact on expected graduation. The study found that students who missed between 36 and 54 days are considered low attending, and had just a 14 percent chance of graduating on time. Students with poor behavior marks at the end of sixth grade had a 17 percent chance of graduating on time, while students who failed math had a 21 percent chance of graduating on time, and students who failed English had a 16 percent chance of graduating on time.

Who Didn’t Graduate? Predictive Power and Yield of Selected Flags

<table>
<thead>
<tr>
<th>Predictive Power: % with This Flag Who...</th>
<th>Flag in Sixth Grade (in 1997)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attended ≤ 80%</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Graduated on time (in 2003)</td>
<td>13</td>
</tr>
<tr>
<td>Graduated 1 year late</td>
<td>4</td>
</tr>
<tr>
<td>Did not graduate by Oct. 2004</td>
<td>83</td>
</tr>
<tr>
<td>Yield: % of nongraduates flagged</td>
<td>23</td>
</tr>
</tbody>
</table>

*1,934. n = 1,801. *2 n = 1,409. *3 n = 845. *4 n = 4,893.

1 Reprinted from Preventing Student Disengagement and Keeping Students on the Graduation Path in Urban Middle-Grades Schools: Early Identification and Effective Interventions by Robert Ballmer, Lisa Heneg, and Douglas J. Mackey.
And while the data demonstrated that these high-risk predictors can be identified as early as the sixth grade, this doesn’t mean that’s when students are dropping out. Many will exhibit years of low test scores, bad behavior, and weak attendance before it becomes obvious they won’t graduate. But if educators, administrators, and parents are better equipped to spot these risk indicators as soon as they appear, they will be able to stage interventions and prevent students from dropping out years down the line.

**WHAT KINDS OF INTERVENTIONS ARE MOST EFFECTIVE?**

Now for some good news: there are research-based intervention approaches that provide both academic and social supports so students will attend school, behave in school, excel in school, and ultimately, graduate from school.

The first step in designing the appropriate intervention for an at-risk student is determining what may be causing that student’s absences, misbehavior, or poor academic performance. Acknowledging the impact of adolescence and how factors like poverty, race, gender, and family situations can come into play with a student’s education is crucial to staging the most effective intervention. Once the root cause has been identified, teachers can work together with administrators, parents, and other stakeholders to establish the path forward. For a student with low attendance due to responsibilities at home, that path might include a credit recovery program. Alternatively, if a student is absent from school because of physical or mental health issues, teachers may want to involve a school nurse or guidance counselor.
HOW DO SCHOOLS IMPLEMENT CHANGE TO ADDRESS THESE VARIABLES?

Intervening to address each of these four variables — failing math, failing English, attending school less than 80 percent of required days, and receiving a poor end-of-year behavior grade — requires integrated school-wide reform designed to address a variety of possible causes. This is no easy task, and requires a coordinated effort between educators, administrators, parents, and other community stakeholders.

The good news is, these variables are already commonly measured. Many districts simply need more efficient, intuitive tools to assist with data collection and analysis, enabling them to more quickly identify which students are not attending school, are misbehaving, or are at risk if failing math and English courses. Early warning and intervention systems are especially needed in urban, high-poverty districts where the transition to adolescence can be a perilous time during which students may rapidly fall off the graduation track.

As this study shows, dropouts are identifiable as early as the sixth grade, and are preventable when proactive strategies are implemented to keep students engaged, attending school, and on track to graduate. Hoonuit is a data management and analysis platform designed to streamline data collection and empower educators with predictive analytics to more easily identify at-risk students at all grade levels, take action quickly, and offer students the support and attention they need to achieve academic success.

Click here to learn more about Hoonuit’s Early Warning solution.
USING SEL, CCR, AND EARLY WARNING DATA TO SUPPORT THE WHOLE CHILD
Imagine that a student in your school (let’s call her Joy) is struggling with issues at home — her parents are absent, she frequently has trouble getting a ride to class, and, unbeknownst to her teachers, she secretly feels like she isn’t smart enough to succeed in high school and thinks college is for people who are smarter than she is.

As a result, she’s often late for school or doesn’t show up at all, which in turn causes her performance to slip. When she is at school, she tends to sell herself short, and she doesn’t feel like she has friends that she can study or discuss content with. Before long, her grades have dropped dangerously low, and she’s well on her way to becoming one of the million or more students who drop out of high school each year. Her teachers knew she was missing a lot of school, but they didn’t know why, and they were completely unaware that she doesn’t have much confidence in her ability to learn.

Imagine what Joy’s teachers are experiencing. They know Joy is struggling; it’s obvious. A few teachers even know that her family situation isn’t ideal and is a causal factor in her attendance. They probably don’t know about her lack of confidence or her belief that she can’t succeed. They’ve tried a few strategies, but none had much of an impact.

Unfortunately, Joy isn’t the only student they are concerned about, and many students appear to be in even deeper crisis than Joy. It’s challenging enough to focus on the near term — daily attendance and weekly homework — and long-term outcomes like the ACT test and Joy’s post-secondary readiness understandably take a back seat. Her teachers care deeply, but sometimes caring isn’t enough. Joy’s situation gives little reason to be hopeful that positive change can still happen.
ADOPTING A SYSTEMS VIEW OF THE WHOLE CHILD

Educators (and the reporting systems they use) need to adopt a systems view of joy, a shift in perspective that requires four types of information:

1. **Current and Past Academic Behavior and Outcomes**

   Educators need to have comprehensive and longitudinal information about joy’s academic behaviors (e.g., attendance and course outcomes). For example, they need to know about her attendance, whether or not she is getting into trouble, and her course outcomes. It would also be beneficial if they also had access to her historical academic practices and her demographic and family factors (e.g., mobility or homelessness).

2. **Long-Term Outcomes**

   They also need to know about joy’s predicted long-term prospects. For example, is she on-track to graduate or is she at-risk of dropping out of school? Will she be able to successfully enroll in and complete a post-secondary degree program? Will she be career ready? Educators need to have some notion of how current and past academic behaviors and outcomes contribute to joy’s long-term prospects, including both K-12 and post-secondary outcomes like college completion and workforce readiness.
Social and Emotional

Educators need to know about Joy’s social and emotional skill sets. These skills are thought to determine Joy’s attitudes towards school and her ability to be successful, and whether or not she believes she can overcome challenges and continue to grow her academic abilities over time. These skills should impact her short-term outcomes which in turn will impact her long-term prospects.

Intervention Participation and Impacts

Educators need information about Joy’s participation in intervention programs. Furthermore, educators would benefit from knowing if her participation was associated with any changes in the other three components. They may also benefit from knowing about interventions in case Joy needs additional support.

In this paper, we will look take a close look at each of these four types of data and identify strategies for improvement.
Most schools are already commonly using student data systems to evaluate academic performance and many have access to early warning and intervention information to better support students like Joy. But these systems can be made even more beneficial by adding context from social and emotional learning (SEL). For example, say you have a student who is missing classes 2-3 times a month and has Ds and Fs in some core classes. That student would be flagged by your school’s early warning system, signaling to educators that an intervention is needed. What SEL can do is offer some perspective on the student’s psychological and emotional capacity and skills, empowering educators to think beyond just academic and behavioral factors when intervening.

What SEL can do is offer some perspective on the student’s psychological and emotional capacity and skills.

This challenge that has prompted schools across the country to implement surveys and track SEL data, is hoping to capture and address the social factors contributing to students’ academic mindsets. Studies like Supporting the Whole Teacher from the Aspen Institute explore the need to train teachers in assessing students’ social and emotional competencies through SEL to tailor educational approaches to fit their needs. What we need is to successfully
integrate these measurements with intervention systems so as to place the development of each student into its social-emotional context. We need to be able to address the learning needs of the whole student—not just the version we see on a transcript.

Other research, like that commissioned by the Everybody Graduates Center and the Wallace Foundation, is demonstrating how these four kinds of student data can be combined into a single, comprehensive system like the one shown above, designed to optimize both graduation and college and career success. By studying the ways that college and career readiness (CCR), early warning and intervention (EWI), and SEL work together, educators can use data not only to flag potential problems, but to uncover all the potential causes of that problem—from academic performance to behavior to social and emotional competencies—and put students on the path to improved performance.

**WHAT IS SOCIAL AND EMOTIONAL LEARNING?**

SEL provides insight into students’ beliefs and attitudes about their own intelligence, interpersonal skills, and academic skills. SEL constructs are thought to contribute to the behaviors that are often measured in early-warning systems. They are thought to mediate short-term outcomes like attendance and behavior, which in turn impact longer-term learning outcomes like grades, assessment performance, graduation and beyond.

The Collaborative for Academic, Social, and Emotional Learning (CASEL) defines SEL as having five core competencies: self-awareness, self-management, responsible decision-making, relationship skills, and social awareness.

**Self-awareness**

refers to the student’s ability to recognize his emotions and respond to them in a healthy way. A student who scores highly on self-awareness has a degree of optimism and self-confidence that is anchored by a strong sense of his own strengths and weaknesses in the classroom.

**Self-management**

is a student’s aptitude at controlling her thoughts, emotions, and behaviors in order to complete assignments and participate in class. Students who are able to self-manage can set and achieve academic goals, not allowing their impulses to get in the way of their performance.
Social awareness

is the ability of a student to recognize and respect the opinions and feelings of others. It encompasses both awareness on an interpersonal level, such as taking interest in and appreciating another student’s differing cultural background, or on a more general level, such as following social behavioral norms.

Relationship skills

enable students to make strong, cooperative friendships and/or teams in the classroom that enable all involved parties to succeed. Students with relationship skills are not only able to create positive relationships, but avoid negative ones, resisting social pressure and negotiating conflicts respectfully.

Responsible decision-making

is a student’s ability to make choices that are beneficial to their lives both in and outside the classroom. Students who are able to consistently base their choices in social norms and ethical standards and realistically evaluate their consequences are responsible decision-makers.

In addition to CASEL’s five competencies, we also commonly see constructs like Duckworth’s grit and Dweck’s mindset. Angela Duckworth, an Associate Professor of Psychology at the University of Pennsylvania, is one of the country’s foremost experts on “grit,” or the “disposition to pursue very long-term goals with passion and perseverance.” According to her research, it’s possible for educators to help their students develop grit and other non-cognitive, “personal quality” measures that lead to an improved likelihood of both academic and non-academic success. Similarly, Stanford psychology professor Carol Dweck has pioneered the concept of a “growth mindset” — as opposed to a “fixed mindset” — or a deeply-held belief that one’s “most basic abilities can be developed through dedication and hard work — brains and talent are just the starting point.” She notes that mindset impacts the development of learning strategies, academic grit/perseverance, and social skills, all of which play a role in determining academic behavior.

Just as academic behavior plays a large role in determining academic performance, the more we can formally understand and foster students’ social and emotional skills, then, the better prepared we are to help them succeed in school and beyond.
THE GROWING IMPORTANCE OF SEL

The role of social and emotional learning in driving success in the classroom has always been tacitly understood by educators, but only recently has there been a research-driven effort to formalize and incorporate it into instructional and teaching strategies. Here are a few takeaways from empirically supported work:

- High social and emotional competence increases high school graduation rates, postsecondary enrollment, postsecondary completion, employment rates, and average wages.

- It also decreases dropout rates, school and classroom behavior issues, drug use, teen pregnancy, and mental health problems.

- 90 percent of teachers believe social and emotional skills can be taught and that they benefit students.

- Social and emotional competency is at least as predictive of academic and career achievement as IQ.

- 80 percent of employers say social and emotional skills are the most critical to professional success, and are also the hardest skills to find.
CONNECTING SEL TO CCR AND EWI

Analyzed alone, SEL can be used to facilitate the development of the whole student — that is, integrate lessons that develop their non-academic skills, including teamwork and collaboration, self-discipline, and respectful treatment of instructors and peers alongside traditional curricula. Analyzed with CCR/EWI, however, SEL can be used to identify factors potentially related to students’ academic problems that other systems might miss, highlighting problems that might be addressed and skills that might be developed through intervention. Because SEL skills are malleable and contribute to academic behaviors and outcomes, they provide an important focal point to educators. Designing interventions around SEL needs promises to be more effective and longer lasting than just focusing interventions at the behavioral level. Thus far, student data systems have largely been used to answer the “when” of intervention — as we’ll see, CCR and EWI track the development of students’ academic behaviors to tell educators when an intervention will be most needed and most effective. SEL’s contribution to these systems is to offer the “how” of intervention, identifying the precise behavioral and emotional issues that are causing a decline in academic performance and suggesting a course of action that is likely to have an impact on the student’s behavior.
WHAT INSIGHTS DO CCR AND EWI DATA PROVIDE?

Identifying factors that predict long-term outcomes is complicated, but — reassuringly — isn’t impossible. Lagging grades, poor behavior, and spotty attendance are all indicators that a student is at risk of not graduating from high school or being unprepared for college. A large body of research shows that attendance, grades, and behavior are all predictive of dropout risk. Additionally, college readiness also depends greatly on academic success and is mediated by many of the same factors. In this sense, early warning and college and career readiness are different sides of the same coin. Overall risk increases when factors coexist and compound one another. Statistical modelling (including machine learning methods) can more precisely estimate risk as well as provide information about the weight of each individual factor and the thresholds for those factors.

Educators commonly struggle to identify dropout risk before the student is in crisis mode. For that reason, dropout risk factors need to be measured in ways that illustrate both long and short-term trends. For example, if a system only measures attendance annually, a student who is averaging 95 percent daily attendance can miss a full 10 days of school before their average drops to 90 percent (the standard definition for chronic absenteeism and a common threshold for attendance risk factors). Alternatively, a system that measures attendance over the previous 30 days will create an indicator that is much more sensitive. With a 30 day attendance factor, the student can only miss 1-2 days before they get flagged for attendance! Earlier notice will facilitate quicker interventions.

College and career readiness benchmarks student performance against a series of standards that the U.S. Department of Education feels are strong enough to “help ensure that students receive coherent preparation aligned with the demands of the real world.” Early warning data is designed to measure factors known to be related to dropping out of high school. Both systems alert educators to the possible need for intervention, but the interventions triggered by each one have slightly different purposes. Thus we see why college and
career readiness and early warning can be said to represent two sides of the same coin. Early warning is most effective in targeting students struggling to graduate high school, while CCR is often used to help those who are likely to graduate on time.

It is very important to note that the statistical models used to predict dropout risk and college readiness should be distinct because the underlying factors correspond differently for the different outcomes being predicted. For example, while attendance, course outcomes, and behavior are all strong indicators for early warning, course outcomes and test performance are stronger indicators for CCR. Interestingly, every large district will have a few students who are considered to be college and career ready but also at risk of not graduating on time. These students are likely to be testing well and have sufficient GPAs but may be missing school and/or getting into trouble.
If CCR/EWIS serve as indicators that a student is not on track for academic success, and if SEL provides some context for what non-academic issues may be holding them back, response to intervention (RTI) strategies guide the instructors’ efforts to address students’ needs. In addition, RTI is a source for information about what programs students have been exposed to, and information about the extent of that exposure. RTI is sometimes a trial-and-error process in which the teacher experiments with different intervention approaches to identify the concepts or skills students struggle with most while also looking for the intervention that will work with a specific child. While the process requires patience, it’s in the best interest of both educator and student if there is an accurate system that can help to pinpoint the problem areas as quickly and accurately as possible.

The need, then, is to create a single view that can reliably indicate both the need for intervention and the extent to which the intervention was enacted. By integrating RTI with SEL, EW and CCR, educators can better understand how well specific intervention programs have performed in the past for students. Disparate views into SEL, CCR, and EWI are not enough — educators need an infrastructure that can support many different functions and views of the problem.
What does a single view need to do? First, we need know which children need additional support and the level of that support. Most frameworks will target about 5 percent of students for the most intensive interventions and about another 15-20 percent for moderately intensive interventions. The remaining students will receive school-wide interventions.

In addition, educators also need to know something about the domain of intervention. With the advent of SEL frameworks and the research behind them, some interventions may be designed to impact social and emotional skills directly. Otherwise, most interventions will target specific aspects of academic behaviors, domain-specific content knowledge, or student engagement. Finally, we need to know about the intervention dose as measured by day-to-day schedules, number of minutes per day, and whether or not the student attended and participated. Often, the lift isn’t about implementing a program per se; it is more about ensuring consistent and sustained student participation.
EMPOWERING EDUCATORS TO MAKE DATA-DRIVEN DECISIONS

For a solution like this to work at scale, schools need to foster a data-driven culture that encourages teachers and administrators to incorporate analytics into their daily routines, using it as a resource in identifying issues in the data before they become noticeable in the classroom. The first step in establishing such a culture is creating a platform that staff can easily access, use, and draw conclusions from.

Data is great for informing decisions, but it’s useless if it can’t be applied through actions that actually influence learning outcomes — and that can only happen if the educators who perform those actions have data that is:

**Centralized**

Again, dealing with many charts or platforms that feature many different data fields from many disparate sources only creates more work for educators, rather than creating solutions. SEL, CCR, EWI, and other student data should all live in one place.

**Easy to Use**

Even if your data is all housed in the same place, that doesn’t mean that drawing actionable conclusions is going to be easy. Educators need to be supported by analytics that present and visualize their data in an engaging way, and arrange it into a clear narrative that makes the decisions they face cleaner and more approachable.
**Alignment with Standards**

Your analytics won’t be helpful if they’re not guiding you toward the standards to which your school is held by state and federal governments. Your school should handle data in a way that is aligned with requirements like those set by ESSA every step of the reporting process.

**Professional Development**

Your teachers don’t just need the right tools, but the skills needed to put them to good use. Make sure your educators have access to professional development materials and on-demand content that empowers them to glean insights from the data and take action based on what they see.

**DATA-DRIVEN DECISION MAKING**

- Teachers can use this data to understand how to help specific students
- Principals can use this data to help understand what tools, resources, or training is needed by their teachers
- District level administrators can use this data to help inform per school resource allocations and investments, as well as opportunities for cross-school training/mentorship/PLNs
- Regional and state level departments can use this data to understand how districts may need to be supported as well as opportunities for cross-district communication and information sharing
CREATING A STRONGER SAFETY NET FOR STUDENTS

Supporting students who are close to falling through the cracks, whether it’s due to trouble at home, a learning disability, or other personal circumstances, can seem impossible at times. Keeping every student engaged and focused on learning can seem overwhelming to an educator. However, through collaboration and collective insight, educators have the resources to help all students.

Districts must not only combine data from disparate systems, but use a strong analytics platform that makes that data easily accessible. That platform must support your teachers and educators by using a blend of analytics that are simultaneously historical, current, and forward-thinking. Additionally, behind-the-scenes statistics and data science can help boil down oceans of data into a few key long-term outcomes. By creating a data-driven culture that can reliably detect and diagnose bad academic outcomes, you create a sort of safety net for your students that ensures you’ll be there when they need you most. There is no way to guarantee that every student will overcome his or her challenges, but with the right data and the right context, you can give yourself the power to intervene in a meaningful way.
HOW Hoonuit CAN HELP

Hoonuit is the only provider of analytics solutions for educators with the experience and expertise to empower your teachers and improve the academic outcomes of your students. Our solutions work with nearly any other software and technology, ensuring that you’ll be able to combine data from disparate sources into single, cohesive visualizations of academic progress at the district, school, or even student level.

Hoonuit has everything districts need to start better leveraging their data. We lead the education industry in precision, accuracy, and performance because we’re able combine any disparate source of data into a single, coherent view. Furthermore, our tools will ensure that educators are working with the most up-to-date data as possible. Using Hoonuit, educators can easily identify students who need additional support, understand what kind of support is needed, manage the delivery of those supports, and understand when students are back on track.

We want to help you create the best possible framework for positive learning environments. To learn more about how Hoonuit can help your district create a productive, data-driven culture, click here.

**Address**

210 West College Avenue
Appleton, WI 54911 USA

**Phone**

+1 920 830 0102
800 610 1313 (Toll-free US)

**Website**

www.hoonuit.com/data-analytics-solutions
APPENDIX E: HOONUIT’S END-TO-END SOLUTION

Along with the described services to support SFUSD’s Ed-Fi solution, the following section describes all that Hoonuit has to offer SFUSD to help you successfully achieve your goals remove department data silos, increase data quality, and provide all district users with a consolidated tool around an integration architecture. This section includes Hoonuit’s dashboards, which are recognized throughout California as providing quality visualizations for key information vital to student success.

Hoonuit’s world class PK-12 data and analytics platform will provide SFUSD a full end-to-end data warehouse solution with reporting, analytics, and data visualization all in one. This complete solution will support the infrastructure that allows your district leaders to access, query, analyze, and use data to inform policies, practice, and decision-making at all levels of the organization. Furthermore, our solution is easy to use so that users can quickly access meaningful data that informs district staff, board members, and the community.

We believe our expertise will save the district time, money, and resources while allowing for impactful student outcomes—all with an agile, comprehensive solution that is able to address reporting requirements for a wide range of reporting needs across a significantly diverse student population. The solution is scalable and customizable, either by district resources or support from Hoonuit.
Supporting All Disparate Data Sources
Hoonuit’s foundation is built on the ability to effectively support all disparate data sources including Student Information Systems, Assessment Systems, Financial Systems, Human Capital Management Systems, Survey Tools, Auxiliary Classroom Files, Transportation Systems, Food Management Systems, etc. to support a complete view of your entire world of data used to make the most informed decisions. We pride ourselves on being system agnostic with interoperability on any system you have in place—either directly through an integration or indirectly through our generic connectors.

Creating Positive Change with Data Acquisition
Through our dynamic integrations, we are confident we will bring together all of SFUSD’s disparate data sources, including source systems and any raw files from assessments and surveys, to truly configure your data in a way that makes it highly usable to answer key education questions driving positive change for SFUSD schools, San Francisco community, and, most of all, your students’ futures.

Driving Dynamic Data Transformation
Ensuring your data is clean, validated, and free of any errors is critical to SFUSD’s success. Multiple data systems mean multiple data fields that are not always guaranteed to be consistent. The Hoonuit matching process ensures records from all your data sources connect, regardless of field setup. We bring your data through a powerful cleansing and validation process—establishing and/or refining business rules based on our extensive experience in education and industry best practices.

Optimizing Insights with a Comprehensive Data Warehouse
Hoonuit’s data warehouse is built with the most comprehensive PK-12 data model in the education industry. This enterprise-level solution leverages all data available to SFUSD with deep cross-domain analysis, multiple-source data blending, and the option to apply sophisticated machine learning based predictive analytics for proactive decision-making.

Fostering Cutting-edge Analysis
Hoonuit will transform SFUSD’s raw data into complete insights to help you drive effective decision-making. Standard self-serve reporting is available on common analysis you need to conduct to run your district. Hoonuit also provides SFUSD with a simple ad-hoc tool to configure specific metrics and create a wide variety of dashboards to support district reporting needs and initiatives.

Advancing Data Visualization
Hoonuit surfaces intuitive, role-specific, context-based analytics, visualized in easy to read on-screen dashboards and/or downloadable reports. Standard visualizations will support SFUSD’s essential data needs like compliance with LCAP requirements, as well as other key educational domains (i.e., early warning and intervention, college and career readiness, social emotional learning, etc.), and the flexibility to create, configure, and customize your own visualizations and reports.
Hoonuit is designed exclusively for PK-12 and post-secondary outcomes data, which means that our dashboards cater to the unique needs of teachers, administrators, community stakeholders, and agencies with vested interests in the success of their schools. As a result of this focus, Hoonuit dashboards have sophisticated analytics behind the scenes, and users interact with easy-to-interpret visuals that provide access to data in ways that best answer questions educators face when making decisions that impact districts, schools, and students. These dashboards can be configured to allow access to data based on roles, such as a teacher having access to only his or her students. Additionally, all Hoonuit dashboards and reports are customizable and configurable by users given the appropriate permissions. Typically, our clients assign a “power user” role to select administrators of the solution who can then access the configuration properties of that page or metric.
Once a user drills down to the individual student level dashboards, all the relevant data for that student is readily accessible on that page—including historical data.

This view of Hoonuit shows a student’s data over the span of several years. Each point is clickable to allow the user to access more specific data for that year.
Educators can confidently rely on student-level dashboards to see all the data available for each student in the system. Along with a photo of the student, the first section of the dashboard has important information such as ID, DOB, enrollment status, race, school, grade, GPA, school changes, whether the student is ELL, primary language, and whether the student is enrolled in special education.

In addition to the information above, each student has graphics that chart history and progress for the following data:

- Student Attendance Trend
- Student GPA Trend
- Student Incident Trend
- Student State Test Summary
- Early Warning Identification
  - Date
  - Risk Type, Risk Name (e.g., Student Attendance)
  - Risk Status (e.g., Active)
  - Risk Level: Low, Moderate, High
- Absence Summary/History: Excused, Illness, Unexcused, Suspended
- Student Detailed Schedule: Year, Semester, Section, Department, Course Name, Staff Name
- Enrollment History: Begin/End, School, Year, Admission Reason, Withdraw Reason
- Behavior
  - Discipline Incident History: Date, School, Offense Group, Type
  - Discipline Action History: Action Date, Action Group, Action, Days, School, Assigner
- Program Membership History
- Academic Marks:
  - Student Academic History: Year, Semester, School, Grade, Course Type, Course Name, Course Subject, Type, Mark, Credits
  - Student Standard Mastery (e.g., Electives, English, Mathematics, Science, etc.)
- Test Score History: Year, Grade, Vendor (e.g., Renaissance Learning), Product (e.g., STAR), Test Class, Test Subject, Test Group, Score, Test Result (e.g., At/Above Benchmark, On Watch), Description (e.g., STAR Math)
- Diploma Requirements
  - Student On-Track Graduation Status
  - Student Diploma Requirement Progress
- Intervention History
- Parent Contact Information
- Immunizations

The following page contains a few sample views of the information described above.
Every student profile page includes easy to interpret graphics for each available data point. Dashboards can be downloaded as Excel, PDF, CSV, or JPG.

**Absence Summary**

**Semester Absence History**

- # of Absences: 3
- Semester and Reason: Excused, Unexcused

**Academic Marks**

**Student Academic History**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TERM</th>
<th>SCHOOL</th>
<th>GRADE</th>
<th>COURSE TYPE</th>
<th>COURSE NAME</th>
<th>COURSE SUBJECT</th>
<th>TYPE</th>
<th>MARK</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>1</td>
<td>Carlson Middle School</td>
<td>08</td>
<td>Gen science with focus on earth science 6 (8th grade)</td>
<td>Science 6</td>
<td>Sciences</td>
<td>Final</td>
<td>B</td>
<td>2.5</td>
</tr>
<tr>
<td>2010-2011</td>
<td>1</td>
<td>Carlson Middle School</td>
<td>08</td>
<td>Gen science with focus on earth science 6 (8th grade)</td>
<td>Science 6</td>
<td>Sciences</td>
<td>Final</td>
<td>B</td>
<td>2.5</td>
</tr>
<tr>
<td>2010-2011</td>
<td>1</td>
<td>Carlson Middle School</td>
<td>05</td>
<td>General math/basics and vocational math</td>
<td>Mathematics 6</td>
<td>Mathematics</td>
<td>Final</td>
<td>A</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Schedule**

**Student Detailed Schedule**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SEMESTER</th>
<th>DEPARTMENT</th>
<th>COURSE NAME</th>
<th>STAFF NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>English</td>
<td>English 10</td>
<td>Vargas, Winenno A.</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>Mathematics</td>
<td>Geometry</td>
<td>Lau, Ning</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>Physical Education</td>
<td>PE</td>
<td>Basvalento, Russell J.</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>History / Social Studies</td>
<td>World History</td>
<td>Chu, Manuela L.</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>Foreign Language</td>
<td>Spanish 2</td>
<td>Cabanis, Shelby S.</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>Science</td>
<td>Human Physiology</td>
<td>Magalanes, Irving B.</td>
</tr>
</tbody>
</table>

**Student Standard Mastery**

- **MATH**
  - Algebra: 3
  - Geometry: 4
- **SCIENCE**
  - Chemistry: 3
  - Physical Science: 4

- **Health**
- **Reading**
- **Writing**
Colored indicators/labels are available for many of the student profile dashboards, which will help educators quickly analyze student data and recognize when action needs to be taken and where. Colors and labels can be customized to state or district standards.
As described earlier, visualizations start at a summary level of information and list for natural grouping of students (e.g., class, school, district, state). This type of summary information is helpful for accountability, such as ESSA requirements. The Every Student Succeeds Act (ESSA) is driving positive change in the way schools, districts, and states report accountability information. It is important to not only transform your data to meet the updated reporting requirements, but also make that same information actionable for positive change in SFUSD schools. Hoonuit allows for detailed analysis, accountability measures, and key tracking of interventions and outcomes—all with transparent communication and actionable presentation to stakeholders. The Report Card view helps users see relevant ESSA data in a single view. Further exploration of the data is available just by clicking and drilling through the report card data.
2015-2016 LOCAL CONTROL AND ACCOUNTABILITY PLAN

1. Closing the Achievement Gap with High Expectations for All

All levels of the organization work to improve student achievement and close the achievement gap for all underperforming student groups.

**EL Reclassification Rate**

**ELs Making Annual Progress in Learning English**

**ELs Attaining English Proficiency on CELDT (<5 years)**
2015-2016 LOCAL CONTROL AND ACCOUNTABILITY PLAN

2. Access to a Broad and Challenging Curriculum

Students have equitable access to rigorous, well-rounded, standards-aligned curriculum and access to and skill in applying technologies to leverage learning, assuring readiness for a full range of post-graduation options.
Additionally, Hoonuit enables busy educators to view content on their phones or tablets, without any plugins or extra software. Our responsive system will adjust the view based on the device’s screen size (e.g., laptop, tablet, mobile device, etc.) We recently interviewed more than 100 teachers in varying iterations to understand new use cases. We found that the newer the teacher, the more likely he or she would be to use a mobile device to quickly look at a student profile or see if any new students are at-risk. We have embraced this preference and continue to help teachers access information they need as fast as possible through intuitive navigation, along with meeting compliance standards with 508 and WCAG and reliable performance.

Hoonuit is designed exclusively for PK-12 and post-secondary outcomes data, which means that our dashboards cater to the unique needs of everyone with vested interests in the success of their schools. As a result of this focus, Hoonuit dashboards have complex analytics behind the scenes, but users interact with easy-to-interpret visuals that provide access to data in ways that best answer questions educators face when making decisions that impact districts, schools, and students. Filters allow users to focus just on the data pertinent to their immediate needs.
Ad-Hoc Reporting

Hoonuit was designed with educators in mind, so we continually work with our PK-12 clients to make sure our interface is easy to navigate and addresses the unique data needs of educators. Content in Hoonuit can be created, altered, and shared with our easy-to-use graphical interface that does not require query language knowledge, though this knowledge will help power-users with advanced analysis. Power users can use Hoonuit to create new content and dashboards that offer multi-query support. Moreover, casual users can rely on the dashboards to consume content in an interactive manner. For non-programmers, the PowerGrid tool allows for flexibility in creating ad-hoc reports from various data, while still maintaining data integrity through built-in protocols that prevent inaccurate data comparisons.
Hoonuit offers connectivity to ad-hoc reporting tools using our integrated data warehouse as the data source. Ad Hoc can be generated and used solely by an individual user or can be shared with other users. Ad hoc reports can be created and deployed as an additional planning and evaluation tool.

**INSIDER VIEW**

**USE CASE: AD HOC ANALYSIS & RESEARCH**

A district in the Silicon Valley region of California wanted a more detailed dive into SBA scores across the district. A custom ad-hoc report was created to accomplish this task and provide the director the level of detail needed to paint a picture of SBA performance across the district and subgroups of students.

Another district uses Hoonuit’s ad-hoc tool to create and share School Profile reports so district level administration and every school principal has a detailed reported of important academic performance indicators and the ability to enter their own planning and performance commentary all in one place.
**Hoonuit Essential Data Management**

The Hoonuit Essentials module is a comprehensive solution that brings together data from student information systems, assessments, and other common sources for longitudinal analysis of attendance, enrollment, behavior, assessments, surveys, special education, grades, and more. Reports and dashboards are appropriate for state reporting and every-day analysis needed by administrators, teachers, staff, and other stakeholders. The Essentials module includes advanced data quality processes to assure accurate information and business rule validation, so users can be confident in the results seen in dashboards and reports.

Additional features of this module include:

- Custom cohorting and grouping of students to allow users to quickly access information about students with common qualities, along with the ability to share those dashboards/reports with other users
- Filtering on dashboards and reports helps users focus in on the level of data they need, such as looking at all high schools within the state or filtering data by student ethnicity.
- Ad-hoc analysis through Hoonuit PowerGrid tool, which is designed to give users the power of ad-hoc analysis, but without all the complexity and deep data knowledge that a true ad-hoc approach requires.
- Geospatial mapping of metrics of any data point, such as mapping chronic absenteeism
- Tools and dashboards to help correlate district distributed survey results to academic outcomes
- ESSA report cards and associated underlying reports/dashboards to provide users with clear accountability status
- Student profile pages that detail data specific to each student throughout their time within the district, which gives users the ability to see trends (e.g., chronic absenteeism, decline in assessment scores, etc.)
Hoonuit’s Essentials module enables clients to pull system-wide data into a comprehensive and longitudinal database. Once there, this data provides your organization with the infrastructure to better support data-informed decision making. The cross-domain nature of our solution allows you to see the “whole” picture of your organization and multiple levels of analysis. We support full range of use cases of data use in education—from teachers doing a deep dive to understand one particular student’s pathway and context to organization-wide data services like compliance and accountability reporting and evaluation and research.
Hoonuit Early Warning and Intervention

Hoonuit’s Early Warning module provides users with advanced data analytics to easily identify at-risk students. Hoonuit’s solution combines the power of early warning with the ability to assign and track interventions. Our Early Warning with Response to Intervention (RTI) module gives users the ability to identify students in need of additional support, along with the tools to allow educators to assign students to interventions and track progress. Furthermore, training for interpreting and using this data will be available through our upcoming “What’s Next” feature to be released later this year for no additional fee.

Hoonuit provides early warning predictions to identify students who are at-risk, which is the first step in helping students succeed. Designed to improve long-term student retention and graduation rates, the Hoonuit solution guides educators in identifying at-risk students earlier on and integrating the intervention workflow to easily and consistently track the progress of each implementation. See Appendix C for more research specific to Early Warning and Intervention.
Features of our solution include:

- Alerts educators of students who are at-risk of not graduating or reaching other district goals
- Identifies longitudinal changes of risk rating for every student (e.g., dashboard alerts user of attendance risk factor yesterday for the first time)
- Provides a full-picture of students’ risk journey over time—immediately when they become at risk, when they drop off, how long they have been at risk, and how many times they have been at risk during their tenure at the district
- Tracks at-risk at a student level, as well as classroom, school, and district level aggregates to help inform instruction decisions in addition to individual student interventions
- Comments can be made on individual students to facilitate communications between all educators working with the student

This module includes a full suite of dashboards that help reduce dropout risk by identifying students who are at risk, as well as why they are at risk, and whether or not their risk is changing over time. We blend behind the scenes machine learning with operational and historical data to measure students’ overall risk as well as show what factors are driving their risk scores. Our goal is to enable educators to take action and intervene as early and effectively as possible. In addition, this module presents early warning data within an application designed to identify and implement specific interventions. Educators can identify, select and assign students to an appropriate intervention and more importantly, monitor the effectiveness of that intervention to ensure the student is moving back on track.
Hoonuit Finance and Operations

While student success is a priority for districts, reaching that success also includes being fiscally responsible, managing staff appropriately, and recognizing perceptions of schools. All of these actions can be informed by data seen through Hoonuit’s Operations module. Specific data analysis in this module includes the following:

- Analysis of expenditures to determine per pupil spending
- Identification of qualified staff and credentialing requirements
- Analysis of findings of perception surveys from teachers, students, and parents
- Comparison of annual spending trends at any budget, expenditure, and revenue level
- Verification that services are being offered equitably across schools based on student needs
With this module, administrators can drive better results with actionable financial and operational data with advanced data tools that effectively manage district operations and conduct school reporting through a standardized structure.
Hoonuit’s Operations module supports human resource planning and analytics needs with cross-domain reporting at the fund, program, school, and student level. Our infrastructure allows you to analyze actual spending patterns at the site level. This, of course, is a significant proportion of ESSA requirements, but it is also a first step in adopting a strategic human capital management system with which to better align HR practices to academic goals. Our student growth measures also provide your organization with a way of understanding how teacher preparation, experience, and professional development impact and contribute to outcomes.

**INSIDER VIEW: ALBUQUERQUE PUBLIC SCHOOLS**

**USE CASE: IMPACT ANALYSIS OF EDUCATIONAL TECH INVESTMENTS**

“The impact of educational technology investments was evident for the Albuquerque district in two ways: the real dollar savings and the time savings for both school staffs and district staff.

Before we invested in Hoonuit Enterprises some individual schools had used their school budget to purchase reporting systems. These purchases didn’t always meet the school staffs’ needs, took away from instructional dollars, and required support and data transfer. Investing in Hoonuit Enterprises for the district, allowed school leaders to release their individual purchases, repurpose those funds for instructional needs, and freed them from the burden of data transfer for their systems. At the district level, the real dollar savings came from the one-product investment because the district no longer needed multiple and even over-lapping systems with recurring maintenance fees.

The greatest impact was found in the time savings. A single, robust system that is production ready at purchase and has the necessary capacity to customize for schools, departments and role groups saves resources for training and for support.

The Hoonuit Enterprise system reduced the amount of training and support needed to help school and district leaders access data and the time required for district staff to create reports for different role groups. The ease of use, coupled with the dashboards, reduced staff’s efforts spent ‘getting data’ and increased the time they had to really study the data and take action. Our district accountability support team documented the shift in their time from supporting data retrieval to engaging school and district staff in true data study. With Hoonuit, the accountability support team introduced a data study protocol district-wide.”

*RoseAnn McKernan, Executive Director of Research, Development, and Accountability (RDA), Albuquerque Public Schools (retired 2017)*
Hoonuit Student Readiness and Success

With the Hoonuit Student Readiness and Success module, district users can predict opportunities to drive student success toward graduation, college, and/or career. These analytics tools help to identify patterns in data, avoid risks, and spot opportunities to prepare students for success in college and/or career. Additionally, these dashboards can be used to improve graduation rates and student readiness with predictive analytics.
Hoonuit provides school districts focused on their students’ continuous success with predictive analytics to prepare students for college and career. We do this through readiness indicators to predict students’ path for success in college and career. Our approach to college and career readiness is to show how students progress through key milestones on their way towards post-secondary and the work force. We combine operational and historical data with predictive analyses to highlight how experiences and intermediate outcomes impact students’ post-secondary experiences and outcomes. Our data science tools predict four key outcomes for students: 1) predicted ACT and SAT scores, 2) enrollment into a 2 or 4 year college, 3) persistence beyond the 2 year, and 4) successful completion of a degree. In addition to our predictive measures, through this module we report key data such as National Student Clearinghouse data along with PK-12 course history and outcomes, AP and Dual credit enrollment, summative and formative assessments, and social emotional learning measures to present a portrait of the whole-student.

“The service and flexibility as we implemented Hoonuit has been outstanding. Their product and experience are taking our district to a new level of data use. The superintendent and principals have been amazed by their ability to easily track cohorts to measure the impact of their efforts and to use the Early Warning Indicators to identify students in need.”

Joseph O’Reilly, Executive Director for Student Achievement Support
Mesa Public Schools