



**KEYS TO BUILDING A  
HIGH-PERFORMING DATA  
MANAGEMENT SYSTEM**

# THE RISE OF DATA MANAGEMENT IN SCHOOLS

As the opportunities that digital technology has created for K-12 school districts continue to grow, so too do the challenges that often accompany them. The more data is available on the inner workings of your district, the more opportunities you'll have to identify trends, spot issues earlier, and help students overcome obstacles and reach their full academic potential. But larger bodies of information are also far more difficult to properly manage and use, and every new and helpful data point introduces another potential source of error and layer of complexity.

It's often challenging to ensure that the many different systems you use reliably communicate with one another, and that processes exist for verifying the accuracy of all manner of inputs responsible for bringing together innumerable data points. If unchecked, a single small error can have a major impact — on thousands of dollars when budgeting or hundreds of students when identifying intervention needs. Without a way of detecting and correcting those errors, outcomes like these are practically inevitable.

This growing complexity — and the high stakes that accompany it — makes effective data management a top priority for districts looking to leverage education technology and effectively foster data-driven decision making. That means mapping out where all your data lives, who's responsible for inputting it, what systems pull it from its source, where it travels, and how it can be validated, then translating that information into a system of rules and infrastructure that your stakeholders can easily use and understand.

How do you go about turning a massively complicated body of information into a well-oiled machine? Here, we'll go over the four main elements of an effective data management system. Along the way, we'll showcase how Hoonuit can help you.



## ELEMENT 1: CONNECTORS

In education, the ability to connect data from disparate sources is essential in order to surface actionable intelligence. Because differences in systems can make the data connection process more difficult, it's important your technology infrastructure is built with data interoperability in mind.

Data interoperability refers to the ability of various systems to communicate with one another. If your student information system is able to understand data from the software you use to store practice SAT scores, for example, then the two systems can inform and check one another, ensuring that individual student profiles in your SIS include accurate SAT-prep information.

It's possible for connectors between various non-interoperable systems to be built, but it's far more preferable to use systems that are built to work together. If you haven't already, take steps to ensure your district's technology is designed so that connection and communication is simple.

When systems don't seamlessly connect (as many don't), the role of a connector within a data management infrastructure is simple: connect the disparate systems used to collect all kinds of data points — pertaining to academic performance, assessments, surveys, finance, HR, or otherwise. Ideally, this prevents you and your team from having to manually pull every piece of information from its respective home and then cross-reference it with other, related data points. While you may have specific individuals that are experts in each system, the nitty-gritty details of exactly where all their data lives within that system are simply too granular to commit to memory.

What's more, the connection process itself requires specific expertise. Many large school districts have entire teams dedicated to the task of collecting data, reformatting it, checking for errors, and loading it into a central warehouse. Automation can give those teams the opportunity to refocus their time on more

important tasks and leave tedious data entry to the APIs.

At Hoonuit, we're experts in the extraction, loading, and transformation (ELT) of education data, so that information can be pulled from source systems and consolidated without an encyclopedic knowledge of where each data point is coming from, what format it lives in, and what the data means (Does a date field mean start date? Completion date? Etc.) By putting connectors in place, any combination of systems can transform individual, meaningless data points into collective insights that education professionals can use to make strategic decisions.

Our connectors communicate between systems on their own and proactively inform administrators of any redundant or inconsistent information, rather than forcing educators to manually cross-reference the databases.

### PARTNERING FOR SUCCESS

**Hoonuit doesn't just owe its success to the powerful analytics tools we offer educators — much of it comes down to our dedication to partnering with districts to ensure those tools work seamlessly with their existing systems.**

- **System Agnostic:** We offer complete interoperability and configurability to ensure we meet any and all of your district's information needs.
- **Project Unicorn Pledge:** We've taken the pledge to create products that improve data interoperability in K-12 education.
- **Ed-Fi Partners:** We've demonstrated our commitment to data integration by becoming fully certified Ed-Fi partners.

## ELEMENT 2: DATA QUALITY

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Administrators need to feel confident that the information in their system is accurate and can be relied upon to make highly impactful decisions — decisions involving everything from staff leadership development to what you're reporting to state and federal governments to identifying at-risk students.

Small errors — whether mistakenly inputted by educators, administrators along the chain of command, or the superintendent, or created through data connection processes and field misalignments — can have a massive impact. For example, most school districts record daily average attendance; if attendance records are missing or improperly entered, the result could be thousands of dollars in lost funding. Alternatively, a change in how students are identified in a system could have a cascading effect on the accuracy of information used to determine which students are on-track for graduation. To avoid these kinds of errors and the consequences that accompany them, you need to establish processes that promote data quality.

Ideally, your team or the systems they use will be able to check for common data quality issues and trace them back to their original source. While that might sound elementary, it's important to remember that practically any data point in a complex system like the one that supports your district touches so many others that the potential sources of a given error quickly become too numerous to track. By informing stakeholders not only when and where, but how an error has occurred, steps can easily be taken to rectify the issue and amend work processes so that similar mistakes aren't made in the future.

Furthermore, you should think about designing your data management processes and data quality rules in such a way that these issues are less likely to occur in the first place. For example, it will limiting the number of values that educators can enter into a given field so that different modes of expressing the same





information (e.g. “4th grade,” “grade 4” and “fourth grade”) are all interpreted the same way. Similarly, if enrollment codes in your districts are always seven digits long, a high quality data management system would only allow seven-digit entries.

Hoonuit’s data management platform performs daily checks for common data quality issues, like invalid enrollment or withdrawal codes. It provides alerts that can help teams address these issues proactively, rather than waiting for someone to realize a mistake has been made. Additionally, our depth of knowledge as data management specialists and our extensive experience working with over 8,000 education institutions uniquely enables us to help you ask the right questions and set-up the right data quality processes.

Strong connectors and data quality go hand-in-hand because they both contribute to a district’s overall interconnected and holistic data infrastructure. Promoting data quality involves properly training your educators so that they know how to correctly record information, but it also entails the use of checks and balances that allow your management system to insulate itself from inevitable human error.

## **ELEMENT 3: SECURITY AND PRIVACY**

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Because you’re dealing with sensitive information belonging to minors, data security is even more important in education than it is in other fields. Anyone and everyone with access to your larger district data management system must be versed in cybersecurity best practices, with permissions carefully granted only to the parties who need them.

Your security system should feature a comprehensive map of everyone who needs some level of access to your data depending on their role — district leaders, administrative staff, principals, and teachers will all require different sets of permissions. Create default security profiles for all common roles that can be assigned to stakeholders. From there you can adjust as needed if further customization is required. This makes the process of setting up permissions easy while still allowing for the flexibility your district might need.

To further enhance security, track any changes to these default permissions with an audit history to quickly determine if and when an anomalous or illegal change has taken place.

When you're working with Hoonuit, you always maintain ownership of your data. Additionally, we have best practices in place for whenever we host your data, including:

- Implementing appropriate administrative, technical, physical, and electronic security safeguards to protect your data
- Restricting access to your data only to uniquely identified and authenticated users
- Using necessary firewall and antivirus software to protect your information

Any information we use to which your district doesn't have immediate access is not only strictly protected, but completely deidentified. That way, in the event student data was accessed, it couldn't be associated with any one person.

## **ELEMENT 4: DATA MODELING**

Data infrastructure alone is not enough to ensure educators extract meaningful insights from the information available to them. Empowering educators to effectively use your district's data requires a robust data model that organizes the information you are pulling together and standardizes how they relate to one another. In order to do this, you need a comprehensive understanding of what data is being used for what purpose and how different data sets are interconnected. Once a data model is in place, it can be used to support reports, dashboards, and visualizations.

In order to get the necessary insight educators need, you'll want to understand the difference between a transactional and analytical data model. The



transactional data model serves the simple purpose of making it easy for educators to enter and save information that can later be easily recalled — student information systems and HR systems are both good examples of such models.

Analytical data models are more complicated. This type of data model is designed not to *write* information rapidly, but to *read* it quickly, making it very easy to relate multiple different sets of information to one another. For example, say you were a teacher trying to understand your at-risk students by looking at their attendance for the last 30 days, their behavioral incidents for the last 30 days, the grades of their assessments for the last four years, and where they've been enrolled the past two years. Pulling all this data from multiple sources and compiling it yourself would take weeks. An analytical data model would allow you to pull it all together in a matter of minutes.

And while these analyses can sometimes be complicated, Hoonuit has the most robust PK-12 data model in education that supports transactional data uses an analytical data models — giving you the ability to offer robust insight to your educators. What's more, we go beyond just the data model itself. Our ad hoc reporting tool and out-of-the-box visualizations set our platform apart from other educational data solutions: no other tool makes it easier to use advanced analytics and drill down through your data to find exactly the information you need. From bar charts to line graphs to heat maps, we recommend the dashboards that will group together the right information at the right time for the right users, and our controls for drilling deeper into these visualizations and filtering different sets of information are highly intuitive. Not only does our entire ecosystem of visualization products offer approximately 3,600 different dashboards, but our team is equipped to work alongside you in developing your own customized dashboards, as well.

Finally, we offer a data model explorer tool that makes understanding our visualizations and what they represent as easy as hovering your cursor. Users can easily move from dashboard to dashboard, view helpful descriptions of what data sets are being represented, and be presented with examples of how they might interpret the results of the analysis.

## WHO KNEW IT?

**We strive to give educators more of those “eureka” moments by arranging the information they already have in novel ways they’d never considered. Our tools make it easy to turn raw data into important decisions.**

- **Catch Critical Errors:** Our system regularly checks for typical data quality issues and reports them to the correct stakeholder for correction.
- **Data Explorer:** Every good map needs a legend. Get simple, straightforward descriptions of what each of our dashboards is trying to tell you.
- **Largest Data Model in the Industry:** Support any metric in PK-12 education to bring disparate data sources together.



# HOW HOONUIT CAN HELP

We understand that providing data insights to your educators require more than the ability to produce charts and graphs. Our expertise saves our partner organizations time, money, and resources while

allowing for impactful outcomes — all with an agile, comprehensive solution able to address requirements for a wide range of reporting needs.



- 01** Intuitively designed for education with context to support industry workflows.
- 02** Pre-built visualizations aligned to common education initiative to get you up and running quickly.  
Robust tools and configuration capabilities to make the visualizations your own.
- 03** Leverages all data available to you with deep cross-domain analysis, multiple-source data blending, and the option to apply sophisticated machine learning based predictive analytics for proactive decision-making.
- 04** Ability to digest and report on every single data element that you would ever need.
- 05** Extensive data matching process to save you time and resources.
- 06** Ensure your data is clean, conformed, and complete.  
Apply transformations to data for consistent for complete reporting.
- 07** Connect data from any data source.  
Provide a complete view of your entire world of data to make the most informed decisions.



Hoonuit offers the services that will set your data management system up for success and the tools you need to start pulling real, actionable insights. We supplement and empower your district's team to focus on what's most important, taking over time-consuming manual processes and offering district staff resources that enable them to work faster and more effectively.

We bring your data into our system and apply transformations to ensure it's in a consistent format that can easily be analyzed.

Our community of cross-disciplinary education technology professionals is ready to help transform your current data system into an organized, secure, and accessible tool for your team of educators.

Turn your disparate data sources into a comprehensive solution for educators throughout your district. To become one of our partner districts, click [here](#).

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