



Case Studies

This document provides case studies from state and local education agencies (SEAs and LEAs) that discuss the specifics of their agencies' data strategy plans, how their overall data strategy was envisioned and developed, and potential challenges and solutions they experienced along the way. These case studies also include SEAs or LEAs that still are within the development process for their data strategy, as the details and nuances of creation and implementation are likely to be useful to readers.

Washington State Office of Superintendent of Public Instruction: The Case for Data Strategy Documentation

Though many SEAs and LEAs have well-considered data strategies, they often have varying levels of documentation of their overall strategy or specific processes. Agencies that have clear documentation are in a much better position to navigate through changes or transitions. For example, during a recent change in administration, the Washington State Office of Superintendent of Public Instruction¹ found how advantageous its existing documentation of the agency's data strategy was for the numerous stakeholders involved in the transition. In the data governance manual,² which was published publicly and created using significant stakeholder input, the data governance team had not only made a clear case for the "why" of the overall data strategy, but also why particular processes were in place and the origin of those processes. This meant that the incoming new administration found a concise, clear document waiting for it that provided rapid comprehension of the agency's existing data processes, as well as the carefully considered reasons for them.

The Washington State Office of Superintendent of Public Instruction's "why" for data strategy is that the **data are only as good as the information behind them**, and what that information represents. Policy decisions require accurate and relevant data.

With this documentation in place, the new Superintendent of Public Instruction quickly understood the agency's intentions for different data, how different offices functioned and worked together in data collection and reporting, and the specific roles of individual staff members and teams. The new administration also made a point of meeting with people across a range of positions and departments, asking them to describe their roles and how they fit into the larger system and contribute to the agency's mission. This approach to the transition allowed the new administration to understand the history and goals of the agency's data strategy, and let it expand beyond the foundation of the strategy documentation.

This view of a data strategy as part of a larger dynamic system is a departure for the agency, which previously had focused on data for compliance with state and federal reporting requirements. A clear data strategy now is a key part of the culture. As new team members come in, there is no need for major changes or fixing processes, because what is in place is defined clearly and working for relevant parties.

Key Insight from the Washington State Office of Superintendent of Public Instruction

A strong data strategy considers all levels of stakeholders and includes all parties in strategizing. When you have a good structure in place to ensure that you get information from all levels, people can ask questions, offer insight, and provide clarity. Supporting and documenting all those voices makes the information that you can provide meaningful at all levels.

The state's clear data strategy also helps the agency to meet the state superintendent's policy and leadership expectations. For example, when the state superintendent and the state legislature were interested in expanding and providing

1 For more information on the Washington State Office of Superintendent of Public Instruction's K-12 Data Governance workgroup, see <https://www.k12.wa.us/about-ospi/workgroups-committees/currently-meeting-workgroups/k-12-data-governance>

2 Washington State Office of Superintendent of Public Instruction. (2015). *Data Governance System for K-12 Data: Policies and Procedures*. <https://www.k12.wa.us/sites/default/files/public/cisl/pubdocs/DataGovernanceManual.pdf>

funding to districts for dual language programs, the agency needed to address the issue that no federal data reporting about these programs existed and therefore no quality information was readily available. The agency worked with its steering committee to determine what data would need to be collected, which led to new conversations with schools and districts about the reporting process. It established a data collection to investigate where such programs exist, how many students are served, how many teachers are involved, what types of certifications these teachers have, and which parts of programs are going well or need further strategies to improve. This allowed the development of a timeline to expand the language immersion programs using a phased-in approach. This timeline gave the superintendent the opportunity to monitor progress toward goals, while also giving schools and districts opportunities to learn what other locations were doing and why different data were collected. In short, they were able to strategically consider various needs and uses for the data, including how they might be used beyond the immediate request. This perspective on data strategy allowed a more thoughtful discussion and plan for the dual language data.

Challenges: Coaching Data Leaders and Aligning Processes

While its perspective on data strategy has offered Washington many advantages, the agency has nonetheless faced some challenges. For example, as new cabinet members have come in from other parts of the agency or other locations, they have needed to be educated about the agency's systems, particularly about the collection, reporting, and use of data. These new cabinet members may have had varying levels of familiarity with or use of data in their prior positions and now need to understand and use data with confidence to lead their teams successfully and have their voices heard. The state's data governance leaders have focused on effective coaching of individuals in their new roles, as well as collaborating with related teams, such as information technology (IT), who can support the same messages.

Data leaders also acknowledge another data strategy priority—the continued alignment of the processes of different teams and content areas to make them more consistent. A history of more siloed data activities meant that groups developed different processes as they were needed over time, but the current need for interoperability and data sharing requires a streamlined process and consistent understanding of data policies. The SEA is continuing to work toward greater alignment. This also will benefit the IT group, which is working to move away from its history of building custom systems to meet the needs of different groups, and instead, identify flexible technology tools that can be used for many purposes. With the data governance and IT teams working together to align data collection and reporting processes to meet the state's larger data strategy, the SEA intends to not only improve the quality of the state's data but to focus on long-term goals for the state's technology.

Pasco County Schools (FL): Using a Data Challenge to Improve District Coordination

Pasco County Schools (FL), in Land O' Lakes, Florida, has turned a data challenge into an opportunity for greater clarity and improved data sharing among districts. Initially, the district experienced a complication—when data were intended for a specific purpose across different district information systems, the meaning of these data was not made adequately clear. However, upon becoming aware of the issue, data officials worked with colleagues in other districts, as well as the Florida Association for Testing Administrators (FATA; <https://www.floridatestadmin.com/>), to correct the confusion and use the situation to guide future decisions.

The Challenge: Non-Reportable SAT and ACT Scores

To meet graduation requirements for the state, students in Florida are allowed to take the SAT or ACT exam under a “non-college reportable” status—meaning that these scores are not intended to be reported to colleges or used for purposes other than high school completion. Students have the option to take these SAT NCR or ACT NCR (NCR meaning non-college reportable) exams in addition to the required state end-of-course (EOC) tests in English Language Arts (ELA) or Algebra

if they have not scored at least at the required Level 3 on these EOCs. Students are entitled to extra time when taking NCR versions of the SAT or ACT, without the requirement of an Individualized Education Program (IEP). With this adjustment, many more students achieved scores high enough to qualify for graduation.

Though this allowance benefitted many students in terms of graduation requirements, Pasco County Schools (FL) confronted a dilemma, in that the student information system (SIS) did not mark these scores as non-college reportable. This created both internal and external problems. Internally, it was sometimes unclear whether a score should be included when SAT or ACT scores were used for reporting. Externally, students would encounter problems when transferring to other districts. These scores traveled with them, and the receiving districts did not recognize their non-reportable status.

Solving the Problem

Because there was no state code for these data at the time, the lack of clarity about these scores caused a great deal of confusion, particularly in the cases of transferring students. Luckily, the problem was discovered quickly in Pasco County. By the following test administration, the county had set up subject codes for non-college-reportable scores and added an “NR” flag. At this point, when IT staff load the test scores, they add a clarification of “transcript=NO” so that the score cannot leave the district on a transcript. The information based on these scores is reported only as “graduation requirement met.”

The Florida Association of Test Administrators (FATA) (<https://www.floridatestadmin.com/>) is a grassroots organization that brings district test coordinators together to share best practices and address concerns. The group is divided into regions and holds regional meetings and an annual state meeting. FATA allows members to problem solve any issues dealing with assessments and also provides an opportunity for those from similarly sized districts to share ideas and solutions.

In addition to other districts making similar adjustments to avoid this confusion, FATA members have discussed these concerns at their meetings, both to mitigate the immediate problem and to consider how this situation can be a learning experience for future data sharing.

Moving Forward

Data leaders in Pasco County Schools (FL) acknowledge that situations such as this one cannot always be foreseen or prevented. Instead, rapid recognition of the issue and quick mitigation allowed the county to keep data confusion from becoming an ongoing problem. This situation did have positive consequences, in that it provided district leaders an opportunity to reflect on questions that need to be asked when adding new data metrics to the system and to think about potential unintended consequences or impacts. Additionally, having worked through this problem, they are better able to anticipate and avoid similar problems in the future. They aim for a collaborative focus. For example, the Director of Accountability, Research, and Measurement works closely with the IT director to coordinate issues such as data sharing and data visualization tools. Similarly, instructional staff members meet with school support staff and the data visualization team, so that the different groups better understand each other’s needs and perspectives.

Vermont Agency of Education: Redefining Structures for Data Strategy

The Vermont Agency of Education’s data strategy development is an example of how a state can rapidly change its approach to data strategy and reorganize to support its new objectives. Until recent years, the state did not have an official data strategy. Some departments had strategies at varying levels, but these were relatively lean and did not transfer from one group to another. Following the entrance of a new education secretary, Vermont’s approach to data strategy has been reworked and redesigned, with a focus on bringing together all mission-critical data teams to work together. A new Data Management and Analysis division was created, aligning what previously had been a loose federation of data teams in different content areas. The state has made strides in recent years and continues to strengthen and implement its data strategy.

Within this new division, the director created a data leadership team with all team leads. This group has created a mission statement and spent significant time identifying issues it felt would be game-changers for the agency to develop a comprehensive charter. The team has had multiple strategic planning sessions, investing time in developing a clear data strategy and documenting all details.

Going forward, each data leader will be responsible for one of the annual objectives. Leaders were able to choose their objectives, which increases the level of ownership. The team is in the process of revisiting what the key performance indicators (KPIs) are for each annual objective, and how they will be measured. For each objective, the team identified strategies and specific tasks.

Key Elements of the Vermont Agency of Education's Data Strategy

A central element of the Vermont Agency of Education's data strategy is its focus on standardization. As the state works to rapidly improve its systems from a technical perspective, staff members are dedicated to documenting everything that occurs within the shared space. The data division has a workflow/shared project management system with the IT department, with tools such as a Kanban board (a project management tool designed to visualize work processes and workflows) to show task dependencies. As the team operationalizes different pieces, it always begins with the business process map, considering what the workflow needs to look like, how to assign tasks and set estimates for time duration and deadlines, and how to best build the collective knowledge base. With these processes, it seeks to build a culture of agile work.

Additionally, the team tries to be methodical about modernization and is focused on making sure things are no longer siloed within different groups. Team members created standards for workflows that allow them to move away from individuals owning processes to more of the team having ownership. The team uses a collaborative notebook software tool that allows team members to work within a data science environment. Each team member has a professional development plan geared toward modernizing skill sets, as well as understanding the best tools and means for executing their tasks.

Related to its efforts to modernize its systems to better allow team members to work collaboratively is the data division's emphasis on working from a data lifecycle perspective. The data division has moved away from seeing tasks as specific to separate teams, and instead, focuses on the lifecycle, such that everyone has an understanding of both upstream and downstream work. It has eliminated the idea of sequestered spaces within a project, aiming instead to have everyone understand how their work affects the other parts of the process. The division has found that it is good for team morale when staff members see how their discrete tasks contribute to the larger project. This perspective also reemphasizes the importance of data quality.

Finally, a central element of Vermont's efforts to move data strategy forward has been the close relationship between the data division and IT. The director of the data division collaborates closely with the head of the IT department, allowing planning and decisions to be collaborative. The two groups have conducted an exercise to determine the roles and responsibilities of each department. In short, who should be doing what? Where does data stop and IT start, and vice versa? Though these are sometimes tough conversations, they have allowed a much greater understanding of roles within the data process and have provided clarity of purpose.

Moving Forward

As Vermont moves beyond various data strategy goals tied to modernization and standardization, the state also is focusing on reducing state reporting burdens. Taking concerns from the districts into consideration, such as their frustration that they are unable to help each other or to share data, the state recently released a request for information (RFI) for a statewide SIS. Although Vermont is a local control state, it is exploring the statewide SIS route due to the extreme burdens LEAs report in simply meeting compliance requirements.

If a statewide SIS were to be implemented, the data division hopes that within 3 to 5 years, state reporting burdens (particularly time burdens) could be reduced by up to 80%, as the state could

draw much of the needed data from the SIS. It also would enable the state to begin cycling through data quality checks throughout the year so they would not be an enormous undertaking a few times a year.

With necessary data reporting efforts reduced, Vermont could turn its focus to using the data to do meaningful things in the field. The data division plans to use the data for strategic purposes such as program evaluation, early warning systems, and process improvement.

West Virginia Department of Education: The Importance of Being Intentional

In the process of moving from an administrative or compliance-based data focus to one that is more strategic and future-focused, the West Virginia Department of Education has centered on being intentional, such that those who work with data are effectively supported, dissemination decisions are made judiciously, and data are recognized as representations of real people. Ultimately, state leaders want to ensure that data are used as strategically as possible to drive the decisions that support the state's children.

Support and Training for Data Collectors

This intentionality begins with the state's focus on support and training for data collectors at all levels. Until recently, West Virginia had a tiered system of support that included a layer of regional education service agencies (RESAs) between the SEA and LEA levels. Under this system, data collectors at the school level directed questions to designated representatives at the LEA, and the LEA would contact the RESA. If the RESA could not answer, RESA representatives then went to the SEA. In the wake of changes in state law that eliminated RESAs, the state has streamlined this process while still keeping a tiered system. Currently, questions from the school level go to the WVEIS (West Virginia Education Information System) County Contact within each LEA. These individuals can contact the SEA when needed, as in the past. However, because the RESAs have been eliminated, the SEA meets more regularly with the WVEIS County Contacts (for example, via virtual meetings and in-person conferences) to keep them updated on important issues. With increased collaboration and improved communication from the SEA, the County Contacts are better able to build the capacity to handle local questions and situations directly.

Though WVEIS has existed for several decades, the state has worked in recent years to more intentionally establish coding standards. Traditionally, LEAs had divergent methods of defining and collecting data elements. For example, for many years LEAs defined the concept of "absence" differently—in some LEAs, a student absent due to a chronic medical condition might be counted as absent because they are not physically in class, while in other counties, the same type of absence might be defined as an "allowable deduction" that would not count as an absence. By standardizing how such concepts could be defined (through changes in policy and practice), the state was able to make the data more consistent and accurate. Also, the SEA framed the issue for LEAs as one of fairness—for all to be treated equally, data definitions and collections need to be consistent.

The focus on intentionality also extends to changing processes or collections. In one prior case, the SEA expected data collectors (school secretaries, in this case) to learn a new process quickly before the start of a new school year. The SEA's expectation was unreasonable because it did not allow requisite time for school secretaries to adjust and learn what was needed. Therefore, the process change had to be eliminated. The state learned from the experience and now uses phased-in plans to allow for effective transitions.

Finally, the West Virginia Department of Education also carefully considers the level of instruction provided to various data collectors. The SEA provides detailed data collection instruction documents on how to use SEA applications, which include an interactive table of contents that users can click through to find the information they need. Detailed instructions for major data collections include contact information for particular content areas, specific instructions, key codes, and screenshots of individual steps. State leaders acknowledge that such a comprehensive document can be daunting, but explain that a decision was made to provide all needed

information in one place rather than attempting to maintain several separate documents for different portions of the same collection. WVEIS County Contacts are available to answer questions and provide support.

Dissemination

The West Virginia Department of Education also has considered its various stakeholders in its data dissemination strategy. Some of this has been dependent on the type of data requested, and some has been in response to stakeholder reactions to changes in dissemination.

For standard dissemination, the state has a public dashboard reporting site, as well as a state report card site. They ensure that there are various downloads available, noting that different stakeholders have different interests in and uses for the public data. State data leaders note that when these options were first available, some users did not want to download the data for each county or school individually, as allowed for by standard dashboard functionality: They wanted the spreadsheets to which they were accustomed. In response, the state created a comprehensive spreadsheet of assessment performance levels and proficiencies, as well as a school composition report. In short, the state remained responsive to the data needs and comfort levels of data users.

When requests for information go beyond what is regularly available, an initial data request process with a brief form allows state data staff to pull the data for the requestor, if possible and in compliance with standard privacy protections. The form clarifies the request and allows the data team to keep track of requests to inform planning for additional public reporting.

Beyond this level of information is a tier for researchers who want access to restricted-use or suppressed data. In these cases, researchers must submit a more official and detailed proposal application. The data team reviews the request to determine if appropriate suppression is possible and to what level the research may benefit the SEA. The latter is always positive, but well-designed studies can be approved even if they do not directly benefit the SEA.

Data Ethics

A third area in which the West Virginia Department of Education has been meaningfully intentional is in communicating with data collectors about ethics. The state emphasizes that data collectors must remember that data represent students, noting that when local staff focus on accountability, they can forget that each number represents a real student. The SEA encourages local staff to think of the data in terms of what they demonstrate about students and the struggles they may be facing. For example, the importance of attendance data is not just that they are compulsory, but that they offer a chance to investigate whether students have appropriate transportation, whether they have unreported illnesses, or whether they are facing unknown struggles at home. The SEA reminds local staff to see the children behind the charts and remember that numbers only tell part of the story.

The SEA has found that it often is reassuring to local staff to see that the SEA is viewing the data in this manner. Because the SEA's official role is monitoring and compliance, LEAs may feel pressure regarding reporting. Knowing that the SEA goes beyond merely caring about compliance to thinking about what the data can tell educators about individual students and how those data can be used to assist students' needs can help to build connections and collaboration between the different agency levels.

Loudoun County Public Schools (VA): Focusing on Interoperability and Increasing Transparency

For Loudoun County Public Schools (VA), the integration of data governance and data strategy has guided the district to a focus on data analytics and data science. As district data leaders recognized the need for more centralized and strategic data governance, they worked to democratize their approach to governance by empowering team members and increasing data transparency.

A Need for Interoperability

Loudoun County Public Schools (VA) initially began its interoperability efforts by developing elements, creating definitions, and working on mapping both strategic and tactical plans and goals. Over time, the team identified key gaps in knowledge and resources, and team members realized that they needed to accelerate their interoperability work and secure additional funding to support their interoperability goals. After considering their options, the team partnered with an outside organization to enhance its interoperability work. Financially, this work was supported by a grant to create data analytics that provided unified student assessment data.

These arrangements and tools provided the acceleration of interoperability that the district needed. Shared code and connectors clarified relationships within the data and allowed the data team to handle technical issues team members had encountered with the use of different systems. A data import tool made data management much easier, allowing the team to quickly integrate data.

The grant funding supported the team's effort to develop a unified student assessment application that provides the basis for data dashboards for teachers. These dashboards offer quick, useful indicators, as well as data visualizations for teachers that connect and demonstrate patterns in the data from all student assessments.

Before these efforts, the team had been focused on the storming stage³ of team development, unable to agree upon definitions and uses of elements. Members now had access to different use cases for elements, allowing teams to move forward from these types of inconsistencies. Therefore the team reduced time spent on data literacy because users are given a clear framework that allows them to see where their needs fit.

Increasing Data Transparency for Stakeholders

Data leaders worked with different educational units to create an effective data governance team.⁴ The team includes individuals identified by their departments as having data science skills, and senior leadership grants them the authority to speak on their behalf. The team meets biweekly to move the district's data analytics forward.

The team also has worked to mitigate the concerns expressed by different departments as they increase the focus on data science. For example, some staff members were concerned about sharing human resources data. Concerns ranged from worries about how data might be perceived by stakeholders to fears that limited time and resources could not be spent on data sharing. However, senior leadership in the district has supported the perspective that there must be data transparency, and the greatest concern should be data accuracy. Also, the district will provide necessary clarification or disclaimers for data that may be confusing to the average stakeholder: for example, explaining that reports may reflect data collected at different times, or that terms may be defined and used differently at different levels or across educational units.

Ultimately, the data team—and district leaders—understand the key role transparency plays in the district's data strategy. Integrating transparency means that difficult questions may be raised, but these questions are part of why the data are made available to the public. The data belong to the community and its stakeholders, and they need to be able to understand what is happening in the district. Therefore, the district's data strategy uses its focus on data analytics to improve transparency.

Moving Forward

As district staff have improved the interoperability of the LEA's data and increased the use of data analytics, they have worked with teachers to ensure that they understand the data and solicit their feedback about ways to improve data dashboards and visualizations. A group of teachers has

³ For more information about the storming stage, see *5 Stages of Team Development: Tuckman's Group Development*, from <https://project-management.com/stages-of-team-development/>

⁴ For more information on data governance in Loudoun County Public Schools (VA), see the case study that begins on page 44 of the *Forum Guide to Data Governance*, available at https://nces.ed.gov/forum/pub_2020083.asp.

reviewed the visualizations, allowing the data team to realize that some needed to be presented more clearly and simply. Moving to analytics and visualizations also has allowed the team to work with teachers to increase their data literacy. A data app for teachers provides five guiding questions, giving them prompts and allowing a new understanding of the data. Making the process inquiry-based has allowed teachers to understand what the data mean within the context of instructional questions. They now are achieving greater levels of data literacy by working with their student's actual data.

Beyond this direct work with teachers, the data team has plans to get students involved in data science, giving them access to real data. In the coming years, they hope to include data science in the district's curriculum.

Data Destruction

Loudoun County Public Schools (VA) requires any parties using its data to follow the Virginia Data Protection Agreement (https://www.lcps.org/cms/lib/VA01000195/Centricity/Domain/111/20_Virginia_School_Data_Privacy_Agreement_DPA_FINAL_7-25-19.pdf) building this agreement into the contracting process. Users must adhere to or exceed the data destruction component. Though the district is not able to actively validate adherence at this point, they address the issue through the non-renewal process.

Data Privacy and Security

Loudoun County Public Schools (VA) received the designation of Consortium for School Networking (CoSN) Trusted Learning Environment (TLE; <https://trustedlearning.org/>). This designation requires a rigorous certification process, and signals that a district has taken strong and measurable steps to help ensure the privacy of student data. The district has built the TLE elements into its policies. Additionally, data leaders have developed a course for teachers on data privacy, which they take each year.

Wisconsin Department of Public Instruction (DPI): Strong Data Quality Measures and Agile Leadership Transform Strategic Data Use

The Wisconsin Information System for Education (WISE) comprises multiple interoperable tools that support data collection to meet all state and federal reporting requirements. The complexity of these interoperable systems drove state data leaders to establish formalized data and project governance, as well as a structured data quality process. While the state's foundational priority is collecting and sharing required data, a specific focus on data quality and transparency has allowed Wisconsin to be more strategic in its coordination, analysis, and use of data.

Agile Leadership and the Scrum Process

From a structural and process perspective, the Wisconsin Department of Public Instruction's (DPI's) data strategy focuses on one major project management philosophy: agile development practices that use the scrum process at the team level, which then is scaled. The agile development methodology is an iterative approach in which large projects are broken down into more manageable tasks tackled in short iterations or "sprints," empowered by small teams. The scrum team framework is a team design with specific roles and teamwork expectations, in which the members work together to deliver required product increments. Wisconsin uses these concepts in tandem to direct its product development and data strategy.

DPI's product development revolves around an agile leadership mindset. The philosophy focuses on satisfying the customer (in this case, program areas or LEAs) through early and continuous delivery of valuable software and data solutions. In the agile approach, team members identify what they are working toward with the customer, and the team begins by building a small initial piece to get feedback from the customer. The team continues to develop new iterations, rolling out small pieces every 2 weeks (the time of the agency's "sprint" cycle). The belief is that constant feedback allows for a better product, as the teams interact regularly with customers throughout the sprints. The state's data leaders find that they have been able to connect better with customers, built a relationship based on trust, and have bridged gaps between program areas and IT. Advisory groups consisting of LEA users for specific products were established to receive continuous

feedback on product developments, which ensures development is prioritized based on the most important needs.

Within the agile mindset, Wisconsin also depends on the scrum team, a structure that encourages high levels of communication among team members and an integrated working environment. Each scrum team is empowered to deliver solutions based on an assigned vision, and each has standard team roles. The product owner's main responsibility is to answer the question, "What is the team doing next?" This person prioritizes key tasks and is responsible for coordinating the product vision and conveying it to the development team. The scrum master is considered the process owner. This person helps remove impediments, facilitates meetings, and works with the product owner to make sure the backlog is in good shape. Finally, the development team consists of the business analyst, the quality assurance analyst, and the developers. Depending on the scrum team, the development team may range from three to seven members.

Before implementing the scrum process as a core element of project and data governance, the state conducted development efforts that were not as streamlined, leading to potential redundancies or unidentified needs. Additionally, these projects used traditional waterfall project management methods, which map out a project into distinct, sequential phases, with each new phase beginning only when the prior phase has been completed. Over time, data leaders have made changes to the entire process to increase productivity, collaboration, and transparency. They now have the timely and accurate data they need to identify and provide needed resources, support students and educators, and continually improve processes.

Wisconsin now uses a scaling framework for its approach to project governance. It comprises multiple scrum teams, the WISE Leadership Team, the WISE Steering Committee, and the IT Project Request and Prioritization Process.

- Scrum teams (application development, data warehouse, and DevOps) use the scaling framework as an agile development methodology, which uses a strategy that allows solutions to be delivered in usable and workable iterations. Each program area, or core product, has an assigned scrum team. Each scrum team has one individual assigned to the role of product owner, a scrum master, and one or more team members assigned to the development team (analysts, developers, and quality assurance).
- The WISE Leadership Team, which meets weekly, is made up of the IT management team, scrum team product owners, and other key team members. This team handles the project request process, which involves a weekly review of any project requests entered by agency staff through a form on the agency's intranet site. The team determines whether the project request can be assigned directly to a scrum team or if it needs review and prioritization by the WISE Steering Committee. The leadership team also communicates across the agency about items that may affect more than one team.
- Although the WISE Steering Committee originally was developed for the WISEdata project, the committee now is a cross-agency group that covers the entire WISE product suite. It includes IT directors and program area directors from any program area that has data at DPI, essentially every division and team in the agency. The steering committee prioritizes project work using a decision protocol it developed itself, which is crucial when program areas are competing for scrum team or staff time. The committee informs the product roadmap, following the group's central goals of transparency and criterion-driven, consensus-based decisionmaking. The steering committee also represents the policy tier of the data governance structure at DPI and can make decisions and set priorities on that level.

The scaling framework allows DPI to coordinate and facilitate work between multiple scrum teams and also to provide accountability and transparency. Each scrum team performs a daily scrum stand-

up. This meeting lasts 15 minutes or less, and all team members share information based on three questions: What did you do yesterday? What are you doing today? What is standing in your way?

Like the daily scrum standups, there also is a daily scrum of scrums, or scaled daily scrum meeting. This meeting consists of one representative from each scrum team. The purpose of the meeting is to discuss how teams can work together efficiently, provide team updates, and identify and resolve any dependencies between teams.

Project Roadmaps

Another key element of DPI's data strategy is the use of product roadmaps, which are used to define targeted deliverable goals, communicate plans to stakeholders, and help keep teams on track from a high-level perspective. Each project—that is, any new request for data, an application, or a new dashboard, graph, report, map, or visualization—is discussed by the leadership committee and assigned to a particular scrum team, unless there is a need to discuss the project at a higher level. The project then is added to a product roadmap associated with the assigned scrum team. If a project is larger or may impact multiple teams, it is brought to the WISE Steering Committee for discussion before being approved to be added to a roadmap and moved forward.

The WISE Leadership Team meets three times a year to review the roadmaps from all teams to make sure they align with agency priorities and goals. The team then presents these roadmaps to the WISE Steering Committee. Sharing this information lets stakeholders in program areas or LEAs understand the status and timing of their projects, as well as how they fit into the larger goals of DPI. This helps agency leadership communicate the reasoning behind certain decisions and allows stakeholders a better understanding of scheduling and priorities. For example, at one point requests came in at the same time to integrate both financial data and career and technical education (CTE) data into the data system. As these were large-scale tasks that could not be accomplished simultaneously, the discussion was brought to the WISE Steering Committee (which includes the program area directors). When the steering committee reviewed the roadmap, using the decisionmaking criteria it had developed itself, it was agreed that prioritizing the CTE data integration was the best choice.

Strong Relationships Support Data Quality

One of the ways DPI maintains its high-quality data is through strong relationships between the IT team and the program areas. When data are submitted to the state's data warehouse, the IT team works with program areas to determine how the information can best be visualized and provided to stakeholders. IT also works through a data quality review process with the program areas before the publishing of any reports. This process uses warnings and error checks within the system to allow both sides to be aware of any discrepancies. In this way, data quality becomes a shared responsibility owned by the program area and IT. The IT team is working continually to reduce redundancies and make the system work better for LEAs.

These relationships and mutual understanding of needs allow both groups to work successfully with WISEdata, the state's multi-vendor, open data collection system that leverages an application programming interface (API) toolset. WISEdata allows school districts, charter schools, and private schools participating in a parental choice program to submit data to DPI from the SIS vendor of their choice. Under a plan approved by the legislature, DPI created the system to achieve multiple goals: to meet all required state and federal reporting mandates; present data through the secure WISEdash data portal to support continuous improvement planning, data quality, and early warning; eliminate duplicate data collection tools and processes; and partner with SIS vendors on data collection standards to make high-quality data available more easily and frequently.

WISEdash: Providing Data to Stakeholders and Informing Early Warning Systems

Data are available via WISEdash on two separate portals that use the same underlying software: a public portal, open to all users, and a secure portal, available to districts and schools to view

their data via a secure, role-based login. DPI shares summarized and redacted data (to protect student privacy) with public stakeholders via the WISEdash Public Portal, a data portal that uses dashboards to provide multi-year education data about Wisconsin schools. Data on the portal are driven mostly by required reporting: for example, enrollment data or achievement data for various student groups. Data are available by school, district, or aggregated at the state level; can be displayed for multiple years; and can be grouped and filtered by a variety of demographics, including grade level, gender, race/ethnicity, economic status, disability, English proficiency, and migrant status. Statewide data download files also are available. Data leaders worked with different stakeholders, such as state legislators, parents, and reporters, to determine which types of data and data visualizations would be most useful. The most requested feature was a comparison tool for schools and LEAs. As a public reporting tool, WISEdash is used by districts, schools, parents, researchers, media, and other community members to view data published by DPI.

WISEdash for Districts, the secure portal, has a carefully designed system of role-based security, allowing different staff varying levels of data access. Some only see summary data, while others can see student profiles and other more sensitive information. WISEdash for Districts provides multiple tools, including supports for data inquiry and continuous improvement planning; data and dashboards for district-wide use of student data to drive school improvement; dashboards to help with district and school data verification and comparisons, such as certified data from one year to the next, for upcoming snapshots; and a secure platform to protect student privacy while viewing student outcomes. Much of what is housed on the secure portal is driven by user requests for items such as new data, dashboards, or visualizations. These requests are sometimes internal (from the SEA program area teams), but often are from LEAs throughout the state. Wisconsin has many small LEAs that have benefitted from having their data consolidated in one data dashboard system for them to use for analysis instead of having to build one.

Because there are such robust data in WISEdash, the state has been able to use it to develop varied early warning systems. An early warning system provides information to help schools identify students who are not on track for desirable outcomes. The Dropout Early Warning System (DEWS) and the College and Career Readiness Early Warning System (CCREWS) are available in WISEdash, as well as Chronic Absenteeism and Free Application for Financial Student Aid (FAFSA) Filing Status. Therefore, instead of needing to create their early warning system (EWS), LEAs can use the statewide EWS options available through WISEdash.⁵

In the Future

DPI's dual focus on data quality and collaborative project governance has allowed the state to streamline and improve its data strategy processes in recent years. Data leaders suggest that a potential next step is to work

on adding additional supports in the WISE tools for educators. The agency has adopted the same toolset, which resides in WISEdash, for continuous improvement planning for all schools and districts identified within the accountability system, providing a common and robust method for conducting such planning. While the state recognizes that district and school administrative staff use WISEdash and other secure tools for continuous improvement planning, data quality, and student support, it plans to also help educators navigate through and use the tools for student and classroom support. The early warning indicators currently in use are a piece of that, but agency leadership seeks to expand the support available to those working directly with DPI's students via local benchmark and classroom assessment data availability and the integration of other data sources.

More information about project management can be found in the Project Management Institute's *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*: <https://www.pmi.org/pmbok-guide-standards>

⁵ For more information on the Wisconsin DPI's early warning systems, see the case study that begins on page 48 of the *Forum Guide to Early Warning Systems*, available at https://nces.ed.gov/forum/pub_2019035.asp.