

SLDS PROJECT LESSONS LEARNED

A WHITEPAPER ON TECHNICAL DEBT AND STRATEGIC PLANNING FOR A ROBUST DATA PROGRAM

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Executive Summary

The Vermont Agency of Education (AOE) believes that data help us understand the world around us and the work we do to ensure the success of Vermont learners. By using data well, we can properly and transparently guide our leadership, support and oversight of Vermont's education system. Therefore, it is an institutional and statewide strategic priority to collect, steward and leverage data in modern, responsible, secure and scientifically sound ways.

The AOE began to engage with this priority after receiving a federal grant via the FY12 State Longitudinal Data System (SLDS) program.

That grant project was structured with a 3-year timeline to implement a centralized tool that brought previously separate datasets together to give educational stakeholders a unified collection point and reporting platform. However, the project met various challenges, including delays in procurement, staffing and resource constraints (technical and human), challenges with the vendors, the addition of competing largescale data/IT projects during the SLDS project lifecycle and difficulties in executing a robust stakeholder engagement effort. These challenges prevented the project from fully reaching the federal grant program's goals or meeting the state's needs to modernize and leverage data well.

Coupled with these hurdles, the [technical debt](#) that exists at the state level is often mirrored or more severe at the local district (SU/SD) level. Technical debt encompasses the skills, tool sets, and infrastructure deficits that compound when more limited, expedient and otherwise disjointed or outdated approaches are used instead of longer term, more current and thoughtful solutions. This is not unique to AOE, to government in general, nor even to the private sector if data and technical infrastructure have not consistently been a top priority for an organization.¹

Technical debt, like credit card debt, when allowed to accrue to a high level, becomes expensive and painful to pay down. This shared condition at the state and local level presents additional stumbling blocks for statewide efforts such as the SLDS. This is why the AOE is reorganizing its approach to data and technical infrastructure along with Agency of Digital Services (ADS) partners.

This whitepaper examines internal retrospectives from the state project teams and leverages data from the SLDS field stakeholder responses to a project closeout "lessons learned" survey. It then lays out a roadmap for work and adjustments that could be undertaken to improve the IT and data infrastructure at the state and statewide level over the next 5-10 years.

¹ Center for Digital Government, "Data: The New Currency."

Introduction

It is a strategic priority of both the State of Vermont and the Agency of Education (AOE) to collect, steward and leverage data in modern, responsible, secure and scientifically sound ways.

The Vermont Agency of Education (AOE) demonstrated this commitment through its investment in completing the K-12 Statewide Longitudinal Data System (K-12 SLDS) project. The agency later expanded the system with the Early Learning SLDS (ELSLDS). While the K-12 project was troubled by set-backs and significant challenges, the fundamental level of technical debt that had accumulated at the AOE, among local districts and in the “field” remains a serious obstacle to effective education data management across the state.

[Technical debt](#) can be described as the costs (human resources, time, fiscal, etc.) that accrue when quicker, more limited solutions are put in place (often with haste) instead of taking a more robust, durable approach that will require more time to put in place but result in lasting, more useful, solutions that are easier to maintain. It’s somewhat like credit card debt. If technical debt gets high, it is painful and expensive to pay down.²

For example, technical debt refers to things like outdated technology, systems that rely heavily on manual or at least disjointed processes, siloed operational functions and a lack of scalability. These conditions make day-to-day operations burdensome, and the prospect of change daunting. Such a context makes the opportunity for innovation difficult or even impossible because too much time and too many resources must be deployed just to maintain the status quo.

The challenging implementation of the edFusion system as part of the respective SLDS projects (K-12 and Early Learning) highlighted that many districts and partners in the field are suffering from levels of technical debt similar to the AOE.

Statewide, these conditions didn’t arise overnight and we’re not going to pay this debt down overnight. However, for Vermont to move forward together to access and use data well in service to our public education system, we as Vermonters need to start addressing this deficit with determination and discipline.

As the project phase of SLDS came to a close, new Data and IT leadership (the authors) took charge of the project. To take some steps in the direction outlined, we canvassed our partners in the field and our internal project teams to learn from their experience about what went well, what didn’t, and how we can use this information to do better in the future. We also engaged with our internal project teams to learn from their input, reflections and suggestions for improvement.

This white paper discusses, warts and all, what we found and what we learned. It describes the steps AOE and our ADS colleagues have taken to date to improve, as well as lays out several ways we can do and be better in the long term, at both the state and local levels, as partners in education data work statewide. Finally, it sketches out a roadmap for changes we can make at the state and statewide in School Districts and Supervisory Unions to build a strong foundation for a functional education data program in Vermont.

² “Technical Debt”; Center for Digital Government, “Data: The New Currency.”

Methodology

During a period of transition at the Agency of Education and the continued evolution of the Agency of Digital Services, the SLDS project transitioned to new leadership during the spring of 2019. Some of the first steps we took were to ask the internal project team what was going well, what wasn't, and how they thought the project team could capitalize on its strengths to resolve the existing challenges and complete the project.

In-depth interviews were conducted, project management best practices were established, and project team members were encouraged to make suggestions about adjustments that might help the project move to completion. When practicable, those suggestions were implemented immediately as will be discussed below. The project team numbered over two dozen, including employees from both AOE and ADS, as well as external vendors.

After the project was completed, the main vendor's standard "lessons learned" survey was distributed to the project team and to external partners in the field, including data reporting managers and superintendents. While the survey was anonymized, in many cases it is possible to determine from context whether the respondent belonged to the AOE/ADS project team or was a field partner, this is noted below. The survey had a response rate of slightly below 25%; not excellent, but not uncommon in organizational survey research.³

The results were shared with the project team and discussed internally to provoke additional reflection and feedback. The responses were compiled using additional descriptive statistical analyses (e.g. distributions), and a [discourse analysis](#) was conducted to synthesize the open-ended responses. More complex regression analyses were not attempted due to the response rate and the limited respondent information available for exploration. These analyses, and how we can best use them to adjust and improve the statewide education data program are presented throughout the rest of this whitepaper.

General Themes

When the state project teams were interviewed during project leadership transition, the following themes arose as priority areas to address:

- 1. Communication and Leadership:** We need to quickly improve stakeholder engagement. Improved quality and quantity of communication, both internally and externally to partners in the field (e.g. additional directions, guidance, training, technical support) is necessary.
- 2. Project Management (PM) Practices:** We need to institute PM best practices to manage such a large-scale project. Attention to scope, schedules and budgets (including time, staff, and technical resources) is necessary to manage the work more effectively.
- 3. Infrastructure:** We need appropriate tools and infrastructure. We need to be able to integrate such large pieces of data infrastructure for actual operational use. Current infrastructure is not up to the task.
- 4. Skills Gaps and Training Needs:** We need targeted, sustained professional development and training to effectively operate systems. Technical documentation as

³ Morton et al., "In the 21st Century, What Is an Acceptable Response Rate?"; Bartlett, II, Kotrlik, and Higgins, "Organizational Research: Determining Appropriate Sample Size in Survey Research."

well as more standardized approach to operations is necessary. Very high variation across districts made accomplishing this work extremely difficult for both the field and state project team. Inability to scale approaches hobbled the field and state project team alike.

These same areas were identified through the Lessons Learned Survey as priorities for improvement both from the perspective of respondents who appeared to be internal project team members as well as respondents whose reflections suggested they were partners in the field. This indicates a shared experience between the AOE/ADS project team and the field.

The following sections outline respondents' feedback within these themes, cover the state response to-date and offer suggestions about other adjustments that could be made at the state and in the field to move towards a more sustainable and manageable education data program across Vermont.

Theme 1: Communication and Leadership

State project team members consistently reported an immediate need for improved quality and quantity of communication, both internally to the project team and externally to partners in the field to lead the work more effectively. Examples of communication could include directions, guidance, training and technical support.

These sentiments were shared in the responses to the Lessons Learned Survey, with roughly 62% of participants disagreeing with the Lessons Learned Survey question "I knew what was expected and what was important throughout the VT SLDS project" while about 38% indicated agreement (Table 1).

Table 1. Response to Question: I knew what was expected and what was important throughout the VT SLDS project.

Response	Percentage
Strongly Disagree	16.7
Disagree	45.2
Agree	35.7
Strongly Agree	2.4

On the whole, respondents who appeared to be partners in the field reported that communication was one of the most challenging aspects of their experience. Their feedback presented a clear call for stronger leadership and more direction from the state on such projects in the future.

Several respondents advised that they needed more structure from the state, especially for laying out what was expected of all participants in the work for it to be successful:

Clear communication from day one about all timelines, expectations, and issues instead of sharing after being asked.

...not having any contact or any clarity of what was to be expected for the new system that was being implemented...

...provide a training explaining the impact/work load well before the deadline.

I think that most communication was provided in an after-the-fact matter, but nothing has ever really felt pro-active or collaborative.

In the beginning the communication was almost non-existent, but it has gotten better and there is more training being offered.

Over time, the communication is getting timelier and timelier (read that as being not at the last minute but more proactive) and any ongoing efforts to make communication of changes to submissions timelier as well as training about the submissions earlier, is the biggest suggestion and is clearly being worked on by the AOE SLDS team.

This theme develops further through responses to the question “We were led by someone who trusted us to do good work and make good decisions” where roughly 33% disagreed overall while approximately 67% agreed as outlined in Table 2 below.

Table 2. Response to Q: We were led by someone who trusted us to do good work and make good decisions.

Response	Percentage
Strongly Disagree	11.9
Disagree	21.4
Agree	64.3
Strongly Agree	2.4

While this distribution indicates respondents felt there was a sense of trust in them to execute on the work, respondents also reported they struggled with the wording of this question, with several articulating a gap in leadership, whether from the state or local level. The following responses were characteristic of this sentiment:

It doesn't feel like we were led at all. We were told we had to use the new file formats and we had to figure it out on our own.

There was very little leadership.

Irrelevant...we weren't led by anyone.

Not sure who you are referencing. We assume you mean the state. No.

Is this a question about our view of the AOE staff in charge of the project, or our local team who implemented state reports at our site? I do feel like there were high expectations of us as local school staff, a bit above what was really possible.

There wasn't much leadership. Meaning that no one seemingly is looking at the big picture of data integrity and trying to clean up some things across the state. Inadequate [sic] communication between the AOE and the [local SIS] vendor.

However, there also appeared to be a recognition of the shift in the state's approach to field outreach over the last number of months. Several respondents indicated they appreciated the adjustments the state was making to leading and supporting the work.

I answered this and all other questions from the perspective of having been or that we are being led by the SLDS team at the AOE. With this frame of reference, I felt they provided/are providing as much guidance as they can as they learn better ways to address our questions and help us prepare for each upcoming collection.

The support team at AOE is always helpful. There is no complaint about any of them. They are quick to respond and helpful in every way they can be.

I am approaching this question as if it meant that we believe the project was being led at the agency by folks who trusted us to do good work. I think the data team at the AOE has been incredibly helpful and have been somewhat flexible with allowing districts to report the data they believe is best and necessary due to limitations in software. Jen and her team of folks (Glenn, Nicole, Andrew) have been very supportive when calls are made to the Help Desk.

Ultimately, the responses indicate a pressing need for improving communication, increasing frequency of outreach and providing clearer, structured direction of the work. This includes establishing the roles and responsibilities held by state teams and the field partners so all could execute on the effort effectively.

The Lessons Learned Survey results affirm the steps taken since the March/April 2019 transition to prioritize improving outreach, communication and leadership. They also encourage more work ahead in this area, and so this will remain a grounding priority for AOE and ADS partners going forward.

AOE began a concerted deployment of resources to the field to conduct on-the-ground, hands-on regional trainings as well as continued technical assistance using remote support tools in response to both leadership transition as well as internal and external feedback.

Additionally, a 12-18-month communication and stakeholder engagement effort has begun. After the regional hands-on trainings were fully up and running, new AOE and ADS leadership partners began a listening exercise in August to determine the type and targeting of communication and leadership efforts that might provide immediate value.

To date, we have interviewed the project team, deployed and analyzed the Lessons Learned survey results, participated at the annual field-organized "Pizza IT Conference" during August 2019, invited local field data staff to the AOE in October, and attended and participated at VermontFest in November 2019. We also spoke at a regional gathering of IT and data managers in December 2019.

Theme 2: Project Management Practices

During the leadership transition in March/April, state project team members advised that formal implementation of project management best practices and additional support was needed to manage this large-scale project. Providing more structure around roles and responsibilities, as well as clarity surrounding scope, schedules and budgets (specifically time, staff and technical resources) to manage the work more effectively were identified as some of the ways that would help the project be completed successfully.

The same perspective was conveyed in the Lessons Learned Survey responses. Many were particularly thoughtful about how key project management skills, practices and clarity about roles could make a powerful positive impact on work of this magnitude:

...I was not involved in this process at the very beginning so am unclear how everything started, but it seems that clear documentation, expectations, requirements, communications, and facilitation between the State and [vendor] would be necessary for a smooth process to create desired outcomes. The last year of collaborating on this project was much smoother than previous collaboration...

...having a more centralized project management approach from start to finish will be helpful. And making documentation that is concise and easy to understand...

This needed a project manager who was a single person totally committed to and understanding the project and actual inclusion of the field.

[A fundamental issue was] [n]ot having the correct Roles and Responsibilities needed to make the project successful

Mindful of this collective experience and input, AOE has reaffirmed its partnership with ADS, and has engaged the ADS Enterprise Project Management Office (EPMO) to ensure state PM support is readily accessible in the future to support such important projects.

Theme 3: Infrastructure

Both state project team members and field partners identified critical deficits in the data and IT infrastructure needed to be successful and sustainable in work like the SLDS project. This challenge is linked to the technical debt that exists at both the state and local levels. If technical debt loads are high, changes to business processes and technology modernization work become more expensive (in terms of time, human resources, and fiscal investments) and burdensome to implement.

This perspective was reflected in several ways throughout the Lessons Learned Survey:

1. References to disjointed operational practices and/or lacking data program maturity as manifested through challenges in data/IT processes, systems and tools, and
2. descriptions of the lack of adequate staff and needed skill sets for the data work at hand.

This section focuses on the operational practices and technical infrastructure challenges reported by participants while the following section on [Skills Deficits and Training Needs](#) attends to the human resources side of this work.

One respondent that appears to be a partner from the field described that:

...I think the SLDS team over-estimated the capacity and capabilities of the field. Was there ever a needs assessment done to ascertain where each SU was at and what it would need to do to even hope to comply with expectations? From what I gather only a very few select SUs really knew about the SLDS and were prepared for it. This was a project of significant magnitude tied to equalized pupil rates and grant allocations!

Another described how operational difficulties played out:

I feel the SLDS [project team] definitely tried to communicate but, again, there was the assumption that every SU was at a certain point of readiness and knowledge to handle such an endeavor. This was not the case at all, as evidenced by the fact that SUs were literally unable to meet deadlines, direct cert lists were late, FRL percentages were off, etc. etc. Coming from an SU that was not "in the know" at all, the communication made very little sense at the time it was coming, and it was a scramble to catch up. From our perspective there is disconnect and general lack of understanding of daily operations in the field between the AOE and the SUs.

Still another identified a key positive aspect of the experience being an impetus to achieve shared processes and standards so that districts could have unified approaches to the work.

This kind of consistency and those shared standards require fewer resources to maintain and support over time. Such a reduction in complexity matters most for districts with fewer resources:

Although it was a late roll-out, the [vendor] state reporting system is the single biggest driver of everyone using consistent coding and practices. Although expensive, the implementation simply wouldn't succeed for many of our schools without it, especially the smaller districts who do not have dedicated data staff [to maintain separate coding and practices].

This was echoed by another, who reported that:

Again, the AOE's lack of awareness of the infrastructure, capacity and capabilities of SUs contributed to the challenges faced by all this year. I am wondering if input from the field was sought to plan out a roll out. Input from the field might have helped determined just what SUs needed to do, change, and purchase in order to prepare.

Amidst these shared perspectives, one particularly concrete suggestion arose. In response to the survey question "What contributed to the challenges and do you have suggestions on how those challenges could have been avoided?" several participants asserted the need for a single, statewide Student Information System (SIS) to reduce the operational burden on both the districts as well as the state:

[The biggest challenge was] [t]he absence of a single statewide SIS. This will continue into the future as an issue. The SISEs will continue to evolve, and the SLDS will also evolve (as software does), but they will be along different tracks and occasionally we will need to shoe-horn things in. A single integrated system would be leaps and bounds more efficient and easier to support and will enforce the data consistency that is needed to really draw reliable and logical conclusions from the data collected.

Another responded succinctly this way:

Question: *What contributed to the challenges and do you have suggestions on how those challenges could have been avoided?*

Response: *One data system like other states.*

This recommendation surfaced elsewhere in responses to other questions on the survey as well. When asked “If anything was possible what should be done over or differently?” another respondent described tangible steps, ending with the assertion that most districts would have preferred a more unified approach via a statewide SIS, as opposed to the SLDS model as implemented. Listing four action steps to do differently in the future, the respondent provided the following:

1. Early communication and co-planning with districts
2. Factoring in the multiple legislative mandates (consolidation, standards-based grading) and how strained the system already was with those changes.
3. Most districts in the state would have preferred to see a single statewide SIS as opposed to this type of system.
4. In the absence of a single SIS, the complexity of implementation goes up exponentially and more local staff are needed to interpret that complexity and implement it at the local level. That translates into an unfunded mandate to the schools, which are already feeling strained. Therefore, budgetary support for staff (which I know is completely pie-in-the-sky) would have been helpful.

Another reported that they not only recognized the need for improved data alignment, stewardship and support, they recognized this could come from scaling the state’s approach to this work more effectively while reducing burden at the local level, operationally and fiscally:

I think the AOE handled a massive project well. School districts are out straight operationally. We need lots of time to be able to set aside time for such a project. Districts are not standardized in terms of technologies like there [sic] SIS and need to be! State reporting can fall on anyone within a district. I believe only the largest districts have anything close to a Data Base Manager role. It would be great if the state could host/support an SIS for a nominal fee much like the way DII does or used to provide enterprise services to Agencies. Consolidating services would save money!

This viewpoint was shared by another respondent who stated that:

I think the AOE should have a state sponsored SIS. Trying to cram data into an EdFusion from so many different sources is not efficient at all. We have spent 100's maybe 1000's of hours trying to force this to work... This project is unique in that it attempts to allow districts to keep the systems they have but export data that conforms to SLDS. The better project would have been to implement a new state-run SIS. I believe the smaller schools would of rather moved to a new SIS than to suffer through an EdFusion type system.

Ultimately, these responses and specific recommendations about a different approach in the future indicate that the field was mindful of their capacity constraints, that they are looking for the state to lead in this area, and that they are ready to try a new way of doing education data work at large as a collaborative community of practice looking for efficiency and scalability.

AOE is taking this feedback to heart as it plans next steps in its own process of establishing a data program at the state level.

Theme 4: Skill Gaps and Training Needs

State project team members raised that professional development and training was needed to modernize skill sets and effectively operate systems, both at the state and the local levels. They advised that technical documentation was required as well as a more standardized approach to operations to simplify and streamline work.

Once again, responses to the Lessons Learned Survey bore this perspective out. Many participants raised that there was too much variation across districts to make accomplishing this work anything other than extremely difficult for both the field and state project team. The inability to scale and collectively share approaches presented serious barriers to the field and state project team as they tried to troubleshoot and solve problems together.

Vermont's complex education system and federated governance model have naturally produced high levels of variability across the state in terms of the maturity and robustness of data infrastructure, culture and practices. This is true at the state level as well, and presents challenges to sustainably staffing, resourcing and generally managing the work if simplified, shared approaches, processes and toolsets aren't identified and implemented quickly and uniformly.⁴

While technology can help with some of the work toward becoming an effectively data-oriented organization, as in most things, it's the human resources that make the biggest difference.

This was clearly articulated by many survey respondents; who highlighted the gaps they felt between their current conditions, staffing and resources, and what was required to be successful with making data submissions through the new Vertical Reporting mechanism.

One participant summed their experience up this way:

The highly technical nature of this sudden (to us local staff) change meant that suddenly people who had never done state reporting before and had no past knowledge of business rules and requirements were now in charge of coding, exporting, formatting, interpreting, and troubleshooting this huge set of data, with very high stakes (our entire funding!). We had very full time jobs before this was implemented, and our entire work lives were disrupted to implement this. We were expected to do this work and still get all of our other work done...

Another commented on personnel constraints presenting their largest challenge:

...There were many emails regarding SLDS before it went live but they were long and didn't make much sense. This may not have been an issue for larger schools but smaller schools don't have "data managers" on staff to deal specifically with data. For me, SLDS is just another hat I wear, not my full-time job.

Other respondents who appear to be in the field characterized these challenges in terms of time, opportunity costs associated with pulling staff from work understood as valuable, and concern

⁴ Center for Digital Government, "Data: The New Currency."

about their organizations not having a sound grasp of the data they are responsible for collecting, managing and reporting:

My biggest worry for the future of this system is not in its implementation or use directly. It is the secondary effects of it. We now have a league of data staff who are spending inordinate amounts of time working on state reporting, when in the past this may have not been their role at all. I know of at least one colleague who quit, because he felt that he could no longer do the job that he loved – innovating education with technology – as he was spending all of his time on state reports. The first secondary impact is that data staff such as myself are spending less time supporting our district with their day-to-day education needs. The second and more troublesome impact is that districts now feel they need to have a dedicated technical data person if they did not have this before; or to add an additional staff person to support this. Budgets are not going up – many are shrinking. These additional IT staff will be drawn from downsizing paraprofessionals or classroom teachers, which will impact our students.

It has been incredible how much time this has required of us. We are still on our heels. We need to hire another person. Also, surprises about what data we are supposed to be reporting but are not collecting, or collecting inconsistently.

[A fundamental challenge to the project was] [h]undreds of local LEA's [sic] having their own way of doing things, lack of personnel/infrastructure at the AOE, lack of clear communication on the part of [name of vendor].

The fact that we needed to implement a system like this at all was unavoidable. If not now, it would have been within 10 years. The current state reporting systems were untenable in the long term. Also unavoidable were the SLDS grants that came from outside the state, with their own timelines and rules. The AOE itself is not a large organization, and was not robust enough to handle the volume of problems that this rollout created. Jen, Nicole, and Glenn daily have my sympathy. I have no doubt that they are feeling the strain just as much or more than we are.

These reflections are all the more important given the legislative impetus for the SLDS federal grant program, which came about through the Education Sciences Reform Act of 2002. Specifically, the purpose of the national SLDS federal grant program is to “[e]nable grantees to design, develop, and implement SLDSs to efficiently and accurately manage, analyze, disaggregate, report, and use individual student P-20W+ (early childhood through workforce) data.”⁵

The National Center for Education Statistics (the federal home of the SLDS program), states that:

Better decisions require better information. This principle lies at the heart of the Statewide Longitudinal Data Systems (SLDS) Grant Program. Through grants and a growing range of services and resources, the program has helped propel the successful design, development, implementation, and expansion of K12 and P-20W (early learning through the workforce) longitudinal data systems.⁶

⁵ SLDS Grant Program, “SLDS Grant Program Overview.”

⁶ “Statewide Longitudinal Data Systems Grant Program.”

Immediate next steps the AOE is undertaking include reviewing and posting technical documentation to the web, standing up new approaches to field outreach and training through interactive webinars (as noted in sections above), and exploring ways that federal resources might be accessed and deployed to support field staff at the District level. It is early in this work. It will be challenging, and it will require a deep, durable partnership to be built between the state and the district personnel to think collaboratively about how we bridge the many, varied gaps outlined here.

Conclusions and The Work Ahead

Taken together, the responses from the Lessons Learned Survey, reflections of the state project team and the purpose undergirding the SLDS grant program at large showcase that now, more than ever, the state and local partners must grapple with the cultural, technical and procedural work of becoming organizations that value and prioritize data.

This will require concerted partnership, compromise and key investments of time, energy and other resources to ensure that the AOE and field partners prioritize and have access to training, understand their respective responsibilities surrounding required data collections and have the capacity to steward and report those data in successful, sustainable ways.

In response to the feedback from our internal staff and partners in education data management, the AOE has done an internal evaluation of the themes identified and is committed to making improvement in these areas.

Communication and Leadership

In response to the need for improved communication and targeted field training identified through the project team interviews and feedback from SU/SD staff, AOE immediately deployed personnel across the state for regional trainings. The following table outlines the training schedule and the locations across Vermont where field partners hosted AOE team members throughout the sixteen (16) trainings over the last nine (9) months:

Table 3. Dates and Locations for 2019 Targeted Field Trainings

Date	Location
3/12/2019	Hartford High School
3/13/2019	Skype Virtual Training
3/14/2019	U-32 High School
5/8/2019	Windham Regional Career Center
5/14/2019	Mt Mansfield UHS
5/16/2019	Williston Central School

6/21/2019	Franklin Northwest SU
6/24/2019	Kingdom East SU
6/26/2019	Bennington Rutland SU
6/27/2019	Barre Town Middle Elementary School
7/31/2019	South Burlington
8/1/2019	Hardwick Elementary School
8/6/2019	Green Mountain UHS
9/25/2019	Rutland City Public Schools
10/2/2019	Green Mountain Technology and Career Center
10/3/2019	White River Valley SU

The AOE plans to continue making iterative adjustments to its field communications and outreach. From attendance at conferences, to working sessions with field staff, to in-person trainings held regionally as outlined above and accepting invitations to meet with field partners the AOE team is oriented toward collaboration and will adjust its approach as the work progresses.

With regard to exercising leadership, over the next six months we will establish a weekly interactive and recorded webinar model for data field support, an approach that has proven extremely successful in [Colorado](#).⁷ This approach will be geared toward providing more frequent, scalable, repeatable communication and training to field users. The webinars will be posted on AOE’s website for access to users who can’t attend during the live session. While Colorado calls their sessions “Data Pipeline Town Hall” presentations, Vermont has adopted the moniker “Data Town Meeting” with view to these sessions being a place for data staff across the state to gather, learn, contribute and leverage better practices together as part of the state-led effort.

Project Management

AOE has made the commitment to work with the state’s Enterprise Project Management Office (EPMO) – a part of ADS – to ensure projects incorporate the principles of project management, consistent with the Project Management Institute’s (PMI) Project Management Body of

⁷ Colorado Department of Education, “Data Pipeline Town Hall Presentations | CDE.”

Knowledge (PMBOK) Guide. For the remainder of the SLDS project and with related projects going forward, effective project management helped improve the organization of cross functional teams and assisted with vendor relationships. In the future, improved project management will also address feedback around the lack of a point person for the project and ensure the involvement of stakeholders at the appropriate times in the process.

Infrastructure

In recent years, the SLDS project work surfaced that a high level of technical debt exists at both the AOE and in most of the districts across the state. These conditions make it extremely challenging to adapt to change and highly burdensome to execute on required work at the state and the local level.

To begin addressing these collective and complicated infrastructure issues, AOE is embarking on a structured, centrally managed effort to pay down the technical debt that has accrued at the organization and provide leadership to the education data programs in LEAs across the state. This work includes making the necessary investments (e.g. time, human resources, professional development, software, servers, etc.) to functionally own and operate large-scale pieces of data infrastructure over the long term. More about this work is covered in the section below.

Skills Gaps and Training Needs

As a first step in closing the internal skills gaps, in October of 2018, AOE unified its mission critical data staff into one division, the Data Management & Analysis Division (DMAD), to emphasize the importance of the role of data in the organization, share staff resources across programs, and alleviate redundant activities.

Shortly after formation, DMAD established a project critical to the long-term success of the Agency, the Enterprise Data Environment (EDE). EDE's goal is to create a coordinated, logical and cohesive means of managing, governing and using education data in scientifically sound ways. It is geared towards enabling AOE and ADS partners to support platforms like the SLDS along with many other, data applications and workflows currently implemented across the AOE. This new program is designed to guide how AOE and ADS partners integrate, modernize, centralize, standardize and utilize data efficiently, securely and intelligently. Professional development to modernize skill sets is also a major component of EDE, assuring staff grow the skills needed to work effectively in the new EDE as modern IT and Data professionals.

Without appropriate tools and practices to lighten the burden of data collection, management and staging for data reporting and use, the AOE and ADS partners cannot hope to achieve a state where value added analyses can inform decision making. This same challenge is shared by partners in the field. By standing up the SLDS and developing the EDE Program, the AOE and ADS partners are taking meaningful steps toward scaffolding the intelligent use of data and transforming the way our state does education data work.

Sustainable operation of this data infrastructure will enable the State to leverage data assets in service to stakeholders at the local, state, and federal levels. DMAD and ADS partners will be working toward those goals in the following ways:

1. leading the field in the practices required for sound collection, management, stewardship and use of education data;
2. supporting data submissions, data quality, data integrity and ensuring appropriate data use;
3. overseeing the appropriate use of data in analyses and reporting to the public, stakeholders, decision-makers, other state agencies, partners in research and higher education organizations, and the federal government.

By taking care of our data, through cultivation of both the infrastructure and the cultural conditions required to support, manage, and use them well, we can harness data science in service to education.

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