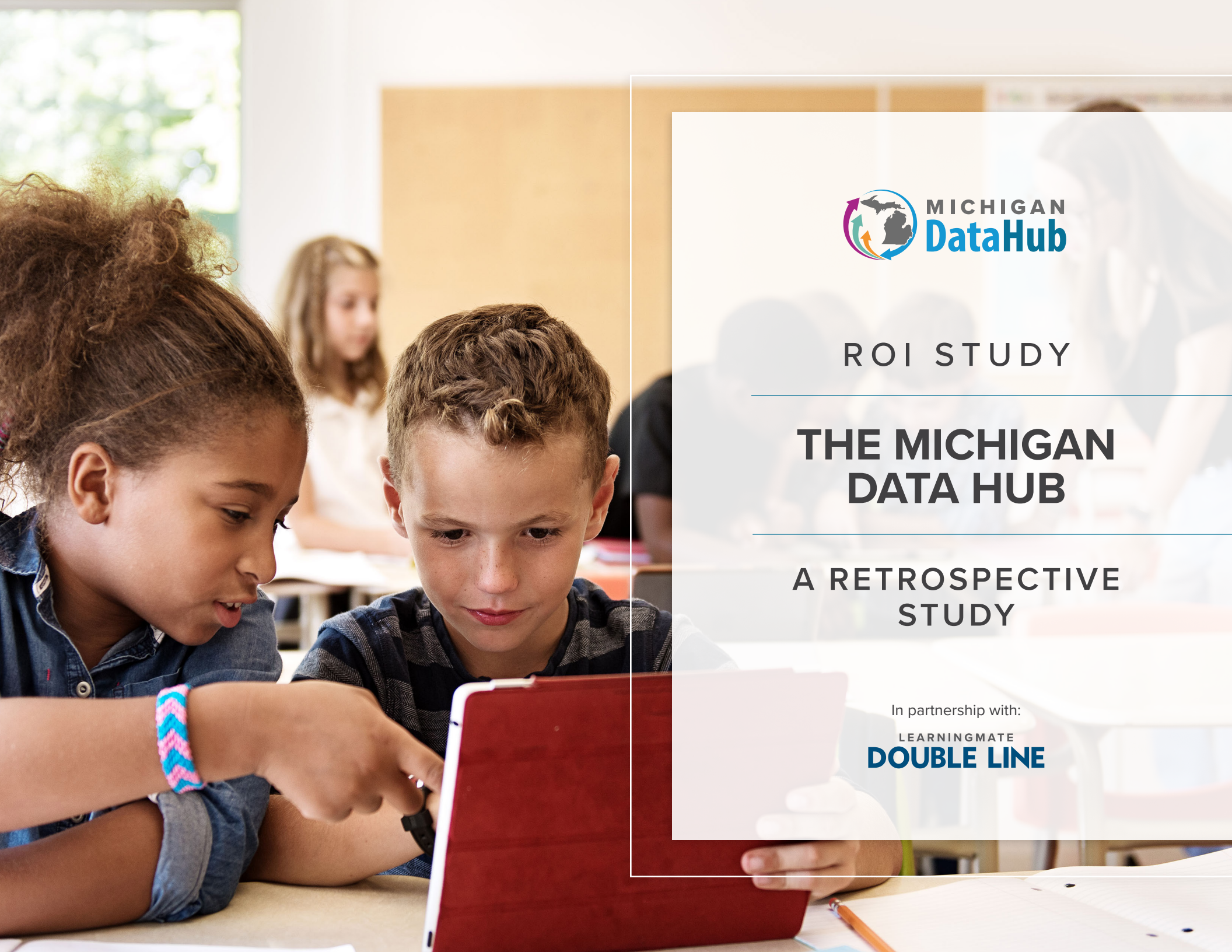

MICHIGAN DataHub

ROI STUDY

THE MICHIGAN DATA HUB

A RETROSPECTIVE STUDY

In partnership with:

LEARNINGMATE

DOUBLE LINE

Report prepared by LearningMate/Double Line

OCTOBER 2024

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Foreword

Dear Legislative Colleagues,

I am pleased to share this independent study performed by Double Line Partners (now LearningMate/ Double Line), a third party out of Texas, on the Michigan Data Hub, a key initiative that has demonstrated outstanding success in transforming educational data management across our state.

The Michigan Data Hub stands as a testament to the power of collaboration and innovation in education. One of its most impressive achievements is the remarkable level of district participation, with 100% of Michigan's school districts now actively engaged in the Hub. This universal adoption underscores the commitment of our educational institutions to harness data for improved decision-making and student outcomes.

The success of the Michigan Data Hub is further evidenced by the extensive collaboration between the Michigan Department of Education (MDE), the Center for Educational Performance and Information (CEPI), Intermediate School Districts (ISDs), Local Education Agencies (LEAs), Charter Schools, Public School Academies (PSAs), national partners, and private vendors. This collective effort has not only enhanced data integration but also fostered a cohesive approach to educational data management and analysis.

Our partnership with these diverse stakeholders has led to significant improvements in data quality. Districts have instituted robust data governance practices, ensuring that the information collected is accurate, timely, and actionable. These enhancements have translated into enormous efficiencies, streamlining data processes and enabling schools to focus more on their core mission of educating students.

Furthermore, the Michigan Data Hub has been instrumental in achieving significant cost savings over the past decade. With an annual savings of over $41 million and return on investment (ROI) exceeding $36 million, the financial benefits of this initiative are both substantial and enduring. This updated ROI study reaffirms the continued and significant return on investment that the Michigan legislature supports, highlighting the Hub's pivotal role in advancing educational efficiency and effectiveness.

The ongoing support and annual $3.5m investment in the Michigan Data Hub are crucial as we continue to build on these successes. The data-driven insights and efficiencies gained are invaluable assets to our educational system, ultimately contributing to better educational outcomes for all students in Michigan.

Thank you for your continued commitment to supporting this transformative initiative.

Sincerely,

Dr. John Severson

Executive Director, MAISA

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Executive Summary

This follow-up study to the original Strategic Alignment and ROI Study[1] completed in 2016 (hereafter referred to as the 2016 ROI Study) conducted for the Michigan Data Hub (MiDataHub) provides a unique opportunity to compare the actual return on investment (ROI) results with the original estimates. For this study, we examined the investments, cost savings, and other features that provide value back to schools and, ultimately, Michigan taxpayers for their investment.

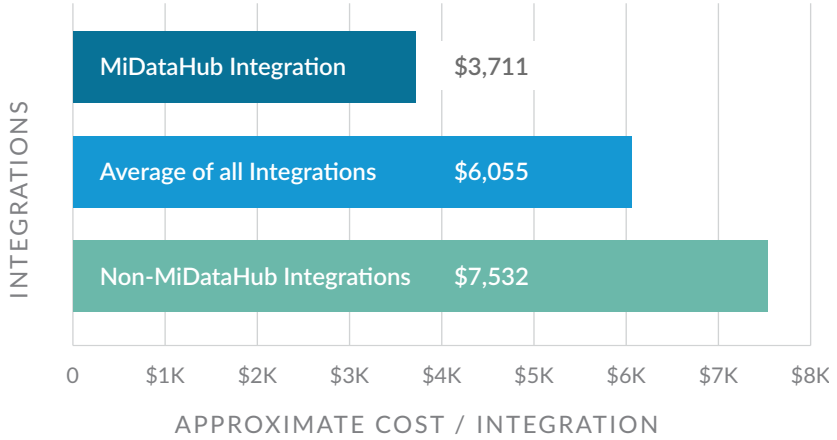
Over the years, investments in MiDataHub have come from numerous direct and indirect sources, including state funds, district efforts to configure the use of MiDataHub, collaborative work from state and national partners, as well as vendor partners who represent the data systems to be connected. For purposes of this study, the investments tallied were funds specifically put into MiDataHub work rather than funds to leverage MiDataHub work to carry out existing missions. Total investments to date include over $23,700,000 in state funds and $1,800,000 in initial configuration work by districts. For the 2023-24 school year, MiDataHub receives $3,500,000 in state funds and about $1,459,000 of estimated staff time to maintain data system integrations to work with MiDataHub. This annual investment totals $4,959,000, or about $3.47 per student.

ANNUAL INVESTMENT TOTALS

$4.96 MILLION OR **$3.47 / STUDENT**

An important step in estimating cost savings is to determine the average cost of an integration. This was computed from survey questions asking how many staff are committed to maintaining data integrations, separating out the time dedicated to MiDataHub and non-MiDataHub integrations, and using those numbers against average numbers of MiDataHub and non-MiDataHub integrations. Those numbers show that the average non-MiDataHub integration is $7,532, the average MiDataHub integration is $3,711, and the overall average is $6,055.

INTEGRATION COSTS



Based on survey data, the cost savings were projected in two different scenarios, with very similar results. In the first scenario, the per-integration costs above were used to determine a MiDataHub savings of $3,821 per integration over non-MiDataHub integrations. When multiplied by the 861 districts with data in MiDataHub and the 9.7 average MiDataHub integrations per district, that leads to a total of $31.9M in annual savings. In a second scenario, savings of over $4.4M across 8

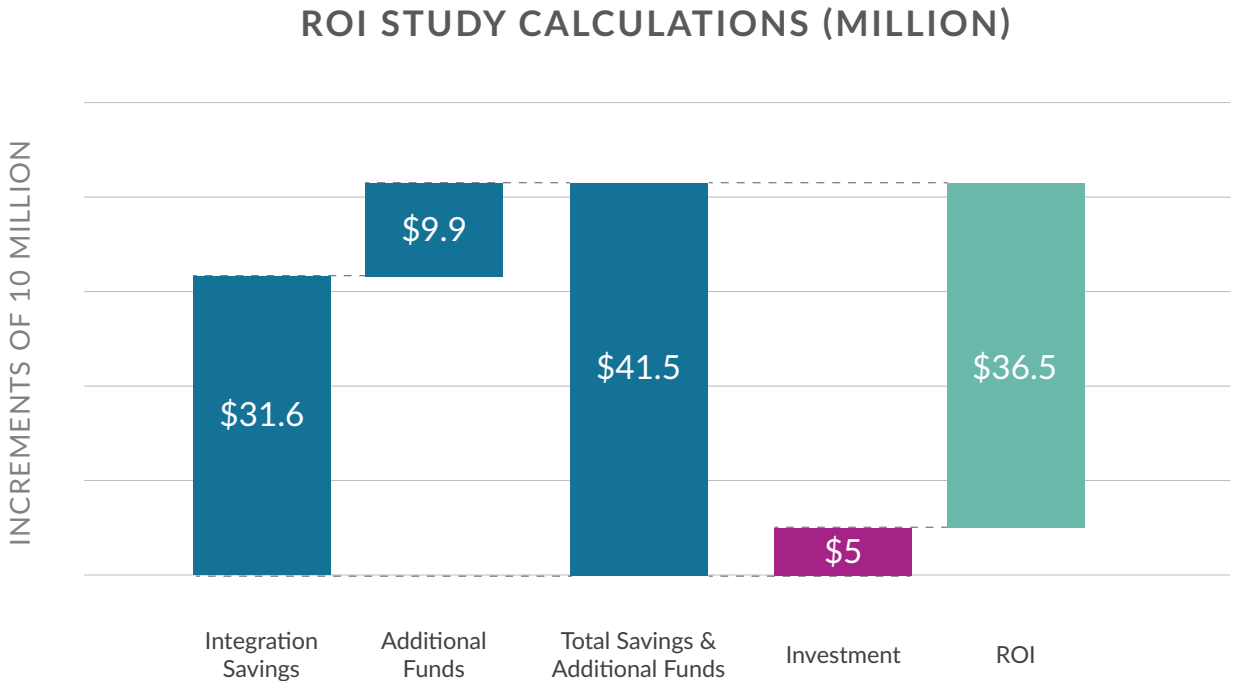
1. https://midatahub.org/downloads/data_integration/michigan_data_hub_roi_study_1.pdf

data management tasks were combined with value-added work that was avoided by MiDataHub of over $26.8M to provide a combined savings of $31.2M. In addition to these numbers, MiDataHub assisted districts in accessing $9.9M in state funds with almost zero effort. These combined numbers yield total savings of between $41.2 and $41.8M, or about $29 per student.

ROI = Cost Savings + Additional Value - Investment

$$\text{ROI \%} = \frac{100 * \text{ROI}}{\text{Investment}}$$

Return on investment is calculated by subtracting the investment from the cost savings and additional value provided. Based on the two scenarios and the investment numbers provided, MiDataHub provides an ROI between $36.2M and $36.9M annually and a per-student ROI of $25 to $26 annually. That equates to a percent ROI ranging from 830% to 843%.



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In some cases, more work is yet to be done to achieve the full savings that were originally anticipated and more. MiDataHub can continue to expand the savings and value provided by encouraging remaining unconnected districts to participate, expanding the number of integrated data systems, and working with vendors to make their integrations less time-consuming and easier for districts to manage. Connecting the 21 remaining districts would allow for a reduction of over $778,000 in staff time maintaining integrations, and another $316,000 can be saved as many of the MiDataHub efficiencies are scaled to more districts. For every integration moved to MiDataHub, districts will see a savings of $3,711 annually, and for every integration that MiDataHub puts in place that districts have not first created, that savings balloons to $7,532 annually.

Overall, what MiDataHub has accomplished with the investment made by the taxpayers of Michigan is impressive. Many areas explored in the calculations underestimate the true savings and value provided. While we have attempted to quantify the savings of effort in managing the data, much of the value lies in using the data to improve educational processes and student achievement. What is the value of having cleaner data when making decisions? What is the value of reporting more accurate data to the state? What is the value of having data consolidated into a single location that is easily accessible? What is the value of a staff person being able to devote time to more important tasks than managing data? How much is saved when less technical and lower-salaried staff can now handle technical tasks? How much is saved as each new system is added to the MiDataHub SSO, reducing the number of staff and student logins? What is the value of having a proactively ready system in a crisis such as the COVID-19 pandemic? Where would Michigan be if MiDataHub had not been created? For certain, the savings and value go well beyond what has been calculated in this study.

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Methodology

This study investigated the ecosystem of data and technology systems in Michigan districts and the impact of MiDataHub on that ecosystem. An emphasis was placed on the connections and data flow between systems (1) within districts and (2) between districts and state agencies, including the Center for Educational Performance and Information (CEPI) and the Michigan Department of Education (MDE).

The methodology used in this study involved five components:

1. Surveys completed by 410 Michigan districts seeking input from technology leadership and superintendents on data management and compliance reporting activities, representing coverage of 757,753 of the students in the state[2];
2. A systems inventory filled out by 330 Michigan districts that represent a coverage of 661,261 of the students in the state[3] as well as a corresponding integrations inventory filled out by 229 Michigan districts that represent a coverage of 423,041 of the students in the state[4];
3. Informal information requests from the Education Policy Innovation Collaborative (EPIC), the Michigan Department of Education (MDE), and districts that manually completed a template for the benchmark assessment mandate;
4. Manually maintained and system-generated records from the Michigan Data Hub, including existing usage status, annual budgets, annual reports, and other artifacts as referenced in the document; and
5. The Strategic Alignment and ROI Study completed in 2016 (2016 ROI Study).

ROI STUDY 2.0 DATA COLLECTION SURVEY

Data collection for (1) estimated time involved for various data management tasks provided through MiDataHub, (2) the same services if completed outside of MiDataHub, and (3) the impact of those services was carried out via a web survey (see Appendix A: District Survey), referred to as "the District Survey" or "the survey." The survey was open for district participation for a two-month period.[5] The survey consisted of fourteen groups of questions and was distributed to administrators and technical administrators representing every district and Intermediate School District (ISD) throughout the state. The survey requested information about the amount of staff time spent configuring and maintaining data integrations, compared the current state to five years ago, compared MiDataHub integrations with non-MiDataHub Integrations, and asked open-ended questions about impact and areas for improvement. Survey responses were collected from 410 districts and ISDs across the entire state. Among these were 268 Local Education Agency (LEA) districts, 111 Public School Academy (PSA) districts, and 31 ISDs.

DISTRICT DATA SYSTEMS INVENTORY AND INTEGRATIONS INVENTORY

Data collection for district systems and integrations was collected via an inventory entry system in the Data Cockpit (see Appendix B: District System Inventory). Data system and integration details were collected from two inventories: Systems Inventory and Integrations Inventory. In the Systems Inventory, district administrators were presented with seventeen different system types, and they were asked to identify the products used and their hosting arrangements (management status). The systems inventory collection was open for district participation for a two-month period. Then, for the

2. Per MI School Data 2023-2024 data, total enrollment of the 410 responding districts is 757,753 from a state total of 1,429,895.
3. Per MI School Data 2023-2024 data, total enrollment of the 330 districts that completed systems inventory is 661,261 from a state total of 1,429,895.
4. Per MI School Data 2023-2024 data, total enrollment of the 229 districts that completed integration inventory is 423,041 from a state total of 1,429,895.
5. April 15, 2024 through June 15, 2024

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Integrations Inventory, a matrix was charted with every combination of potential point-to-point integration among the data systems identified in the Systems Inventory. From there, administrators were asked to indicate the current status for each integration combination pairing and provide additional detail if applicable. The integration status values offered were Incomplete, Integrated, Integration Not Needed, Integration Desired, and Status Unknown. The inventories were completed when all systems categories were responded to, and integration intersections were identified for all possible system combinations. There were 330 districts and ISDs across the state that completed the Systems inventory and 229 districts and ISDs that completed the Integrations inventories.

MIDATAHUB RECORDS

MiDataHub utilizes a custom application called the MiDataHub Cockpit to track all information needed for districts to integrate their systems. Behind that application is a database that contains all of the integration details. Much of the actual integration information for this report was queried from that database.

INFORMATION REQUESTS

Informal information requests were sent to various stakeholders to provide information for parts of this study. The first information request was sent to ISDs and Districts that manually completed a benchmark assessment mandate Excel template. This information was provided by one respondent district and their ISD, which allowed us to estimate the amount of time saved by using MiDataHub processes to complete the work. The second information request was to the Education Policy Innovation Collaborative (EPIC) to identify the various studies completed using MiDataHub-sourced data. The final information request was to the Michigan Department of Education to identify the number of districts that received funding based on their K-8 student population for submitting benchmark assessment data, along with the total amounts received.

2016 ROI STUDY

The 2016 ROI Study will be referenced often for comparison purposes. This allows us to see how actual savings estimates compare with predicted estimates. It should be noted that:

1. The measurement of effort is different in this study in comparison to the 2016 ROI Study. Estimation of effort in this study is much narrower and focused specifically on integration related work and specifically on technical and clerical staff.
2. There was a limitation on the current survey responses about their organizations' 2016 ROI Study survey inputs. Natural turnover caused many of the current survey respondents to be a different group makeup from those who participated in 2016.
3. There were certain benefits (i.e., MiDataHub Single Sign-On) whose cost impacts could not be designed and captured in the 2016 ROI Study.

Throughout the study, we will note places where categories of savings are not estimated but may have been included in the previous study's calculations.

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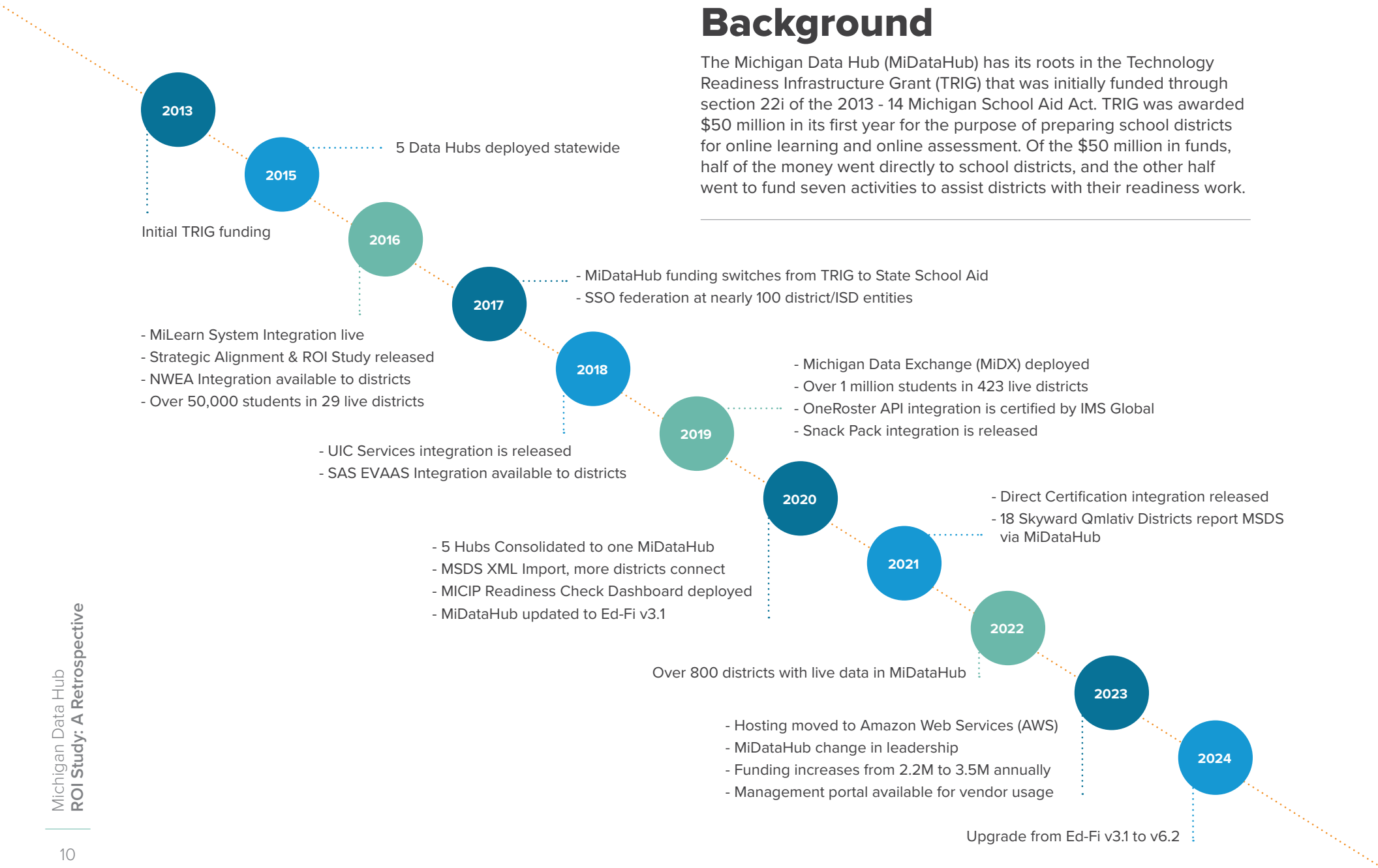
Background

The Michigan Data Hub (MiDataHub) has its roots in the Technology Readiness Infrastructure Grant (TRIG) that was initially funded through section 22i of the 2013 - 14 Michigan School Aid Act. TRIG was awarded $50 million in its first year for the purpose of preparing school districts for online learning and online assessment. Of the $50 million in funds, half of the money went directly to school districts, and the other half went to fund seven activities to assist districts with their readiness work.



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*The top 5 districts responded that they have **more than 50 systems**, with one district listing 67 different data systems that they must manage.*

Activity 6 of the grant was the Data Integration activity. The philosophy behind this portion of the grant was that in order for districts to be ready for online learning and online assessment, they would need data systems that allowed for the easy exchange of information so that an online assessment could be electronically rostered and that the assessment information could be used by downstream data systems as needed to improve student achievement. Appendix C provides a breakdown of the fiscal years of the initiative, as well as the expenditures and accomplishments.

COMPLEXITY OF SCHOOL DATA SYSTEMS

One of the biggest challenges to schools in the use of their data is the sheer number of systems and complexity of the ecosystems that result from the loose connections between all of the systems and the scope of users that access them. Each school district in Michigan has its own set of data systems that are unique to their district. This poses challenges for both small and large districts. For small districts like Bois Blanc Pines and Grant Township, each with 3 students, these districts have limited financial resources to fund positions to handle data. These smaller districts must heavily rely on ISDs and neighboring districts to leverage technical resources. On the other end of the spectrum, large districts like Detroit Public Schools Community District, with 48,476 students, have a different set of challenges. They have dramatically more data systems to synchronize and gather data from. While they have more technology staff and expertise to perform that work, it can consume a significant amount of time that could be used for other tasks.

System inventory data shows that the average Michigan school district has approximately 20 data systems. Additionally, the top 5 districts responded that they have more than 50 systems, with one district listing 67 different data systems that they must manage. When examining the possible connections between data systems in a district with 20 systems, there are approximately 380 one-way data flows (system A to system B, system B to system A), or about 190 two-way connections that are possible. Every system does not need to talk to every other system, or bi-directionally with the systems they must exchange data with. However, most systems have data that they are either the provider or consumer of, necessitating some level of connectivity for each system to be as efficient and reliable as possible. For the 229 districts that completed the integration inventory data, 4,423 systems were documented for an average of 19.3 systems per district. That equates to roughly 353 possible one-way integrations per district, or 80,837 total integrations for the 229 districts. Those same districts documented 4,407 one-way integrations that were desired, in place, or where they were unsure of the status, with the rest being integrations that were not needed. Dividing the number of needed one-way integrations by the possible one-way integrations, we arrive at a baseline of 5.452% integrations needed of the possible one-way integrations. Also, comparing the 4,423 data systems to the 4,407 needed integrations, we can conclude that most systems (99.64% of them) need at least one connection. With the potential need for 380 one-way connections per district at the 5.452% rate of integrations needed per integrations potential, that yields 20.7

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one-way integrations needed per district, or 18,257 needed one-way integrations for the 882 districts statewide. These integrations do not include compliance reporting or other uses of the data that might be seen as more of a one-time, or occasional, data pull.

It also appears that the complexity of district data ecosystems is increasing annually. One of the survey questions asked districts to compare the number of systems that district users log into today with those that users logged into five years ago. The results found that districts log into 13 systems today compared with 8 systems five years ago, for an average of one new system per year. As this trend of increasing complexity continues, districts will need to implement strategies to reduce the management burden. Addressing this data system complexity is the primary challenge that MiDataHub has boldly undertaken.

WRITE ONCE - USE MANY

MiDataHub's strategy to address complexity is implementing a data hub model where systems have secure, reliable, bi-directional connections via the Ed-Fi API to populate the Ed-Fi ODS. Systems that are the authoritative source for a set of data elements are referred to as the system of authority (SOA) for those elements. Having source systems write data for the data elements they are authoritative for and keeping that data up-to-date on a near-real-time basis allows MiDataHub to serve as a proxy SOA for systems that need to consume data. When a connected system requires data, it can use the Ed-Fi API to pull the necessary data from the data hub. In this way, MiDataHub promotes a "write once, use many" approach that dramatically simplifies the district ecosystem. Instead of a complex web of system-to-system connections that are prone to breaking, MiDataHub promotes robust, shared connections that serve many districts. Additionally, if a district changes a system, it only needs to connect the new system to MiDataHub, and the remaining connections remain unaffected.

The model relies on vendor partners to connect to the Ed-Fi API to populate and/or consume data appropriate for their system needs. This places huge emphasis on vendor partners making their Ed-Fi API connections included in the base cost of the system comprehensive, reliable, and user-friendly to implement and maintain. It also places a huge emphasis on the educational community to require their data systems to be Ed-Fi compatible. MiDataHub has had modest success in encouraging system vendors to connect, as highlighted in the Findings section, but will be able to maximize its impact once all systems are Ed-Fi capable.

WHAT IS THE VALUE OF AN INTEGRATION?

One of the most challenging efforts for this study is to determine the value of a single integration. Not all integrations are equal, so each integration instance provides a unique value proposition. The value proposition depends on a number of factors, including:

- Scale of the integration
  - District size/number of persons impacted
  - Data elements exchanged and their importance in the functionality of systems and data usage
- Reduction in staff time for monitoring and addressing data quality issues
- Improved data quality and reliability
- Increased use of data for decision-making and improving educational processes
- Improved stakeholder experience and reduced stakeholder time spent when systems work efficiently with accurate data

Ultimately, the value of an integration is the degree to which it improves student outcomes, as that is the primary goal of educational institutions.

The value of an integration should not be confused with the cost of putting an integration in place. Where automated integration is not in place of any kind, a de-facto "manual integration" exists, where users enter data in duplicate where needed. Manual integration is the costliest and least reliable of all methods of connecting data systems. Partially and fully automated solutions attempt to streamline some or all of the tasks typically undertaken in designing an integration.

Combining the API integration with data standards, such as Ed-Fi and OneRoster, leads to the ***ability to mass-replicate work across districts and applications, maximizing cost savings and overall value****.*

Those tasks include:

- Identifying the data elements needed in a target system
- Identifying source system data elements that most closely match the needs of the target system data elements
- Creating an extract, transform, and load (ETL) process that pulls the data from the source, transforms the data into the format needed for the target system, and then loads the formatted data into the target system. The ETL process typically follows these steps:
  - Source system generates the desired data file
  - Additional transformation may be applied to the data file
  - Data file is transferred to a location accessible to the destination system, either manually or by a scheduled task
  - Destination system is triggered manually or by the scheduled task to load the data file
  - Any exceptions or errors are usually noted in a log file for manual intervention to correct

These tasks can be complicated by many factors. The target system may require data that is not in the source system or exists in a format that cannot reliably be converted to what the target system needs. The source system may fail to generate the file or may experience an issue in transferring the file to the target system. The target system's trigger to load the data may fail due to access or permissions issues. Finally, the loading of the file may fail completely or generate errors occasionally, requiring a person to monitor the integrations to ensure they remain functional. These complicating factors dramatically increase the cost of maintaining an integration.

When a method exists to streamline the integration process, that results in a level of cost savings and becomes part of the value proposition of that method. While flat file integration methods are an improvement over manual integrations, API integrations provide a secure, bi-directional communication pathway that reduces the number of moving parts in the process. Combining the API integration with data standards, such as Ed-Fi and OneRoster, leads to the ability to mass-replicate work across districts and applications, maximizing cost savings and overall value.

LOCAL CONTROL

Michigan is considered a local control state in that districts have broad control over how they provide their educational services. That control extends to the data systems they use and which data elements they are required to report to the state. It has been suggested that districts would be better off if they all used the same data systems, which would allow for a standard set of integrations and reduced complexity. The data hub ecosystem proposed by Activity 6 was intended to

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Of the 882 public districts, 877 have signed the data hosting agreement, and 861 of them published data in one or more of the school years that MiDataHub has been operational.

serve as an alternative approach that allowed districts to keep the data systems that worked best for them while reducing overall complexity by streamlining data integration and use.

Local control also means that districts are free to choose whether or not to utilize MiDataHub. Districts with sufficient technical expertise or assistance from ISDs and vendors are capable of creating comma-separated value (CSV) integrations and sometimes API-based integrations through tools in their SIS. So, what is the incentive for a district to utilize MiDataHub? First and foremost, a district must find value. While the operational costs of MiDataHub are covered by state funding, districts still invest time and effort in configuring their systems to use the service. As districts have found integrations and other functionality that provide them value, they have connected to MiDataHub. Secondly, districts must be able to trust that MiDataHub and the MiDataHub team will be good stewards of the data they are entrusted with. Before utilizing MiDataHub, districts sign a data hosting agreement (DHA), which spells out that the district is the owner of the data they load to MiDataHub and that nobody on the MiDataHub team may disclose district data to any other source without the district's permission. The MiDataHub Cockpit has been designed to allow districts to have full control over which systems are connected, the data elements exchanged, and when those connections are active. In addition, audit and activity logs are maintained, which can show changes to system access and data integrations. Finally, districts are motivated to participate when they are part of the process. From the beginning, the data integration activity fell in line with the spirit of collaboration fostered by TRIG. Collaboration has led to diverse participation in advisory, workgroups, presentations, training sessions, and conferences by local, regional, and statewide educators. This community participation allowed MiDataHub to address needs at all levels of education and serve as a platform for vertical data integration.

100% PARTICIPATION

Although participation is optional for Michigan districts, one of the legislative goals for MiDataHub is to push for 100% district adoption. As of the drafting of this document, MiDataHub records show that the system is available to all 882 Michigan public school districts. Because MiDataHub is publicly funded, it is not permitted to be opened up to non-public schools. Of those 882 public districts, 877 have signed the data hosting agreement, and 861 of them published data in one or more of the school years that MiDataHub has been operational. However, all 882 districts have accessed and completed at least one action in MiDataHub, such as creating their single sign-on or approving an agreement for the use of a connected system such as the Michigan Integrated Continuous Improvement Process (MICIP) tool.

PURPOSE OF THIS STUDY

The purpose of this study is to quantify, both numerically and anecdotally, the value returned to Michigan school districts through the use of MiDataHub, as well as the overall impact on the educational landscape in the state. The information gathered in this study will assist the MiDataHub team in determining future directions as they seek to maximize the value MiDataHub provides. It will also serve to inform stakeholders, both inside and outside of the state, of the value of data standards and why it is important to invest in or continue to invest in, this type of work.

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*The average yearly investment from state funding is just over $2,068,000, or **$1.45 per student**, with the current investment at **$2.45 per student for the 23 - 24 school year**.*

Findings

To calculate return on investment (ROI), this study will examine and quantify the investment made in MiDataHub as well as the cost savings generated through the efficiencies in the MiDataHub ecosystem. Where possible, we will calculate estimates of dollars invested and dollars saved to determine a dollar amount returned as well as a percentage ROI. We will also highlight areas where there is evidence of time and cost savings but insufficient data to calculate actual dollar amounts.

This study attempts to identify the annual savings that MiDataHub generates in a typical year, such as the 2023-24 school year. However, MiDataHub's efforts address both the initial cost of work and reducing the work involved on an ongoing basis. The true ROI amount is a combination of one-time savings and ongoing reduction in work.

INVESTMENT

Many factors come into play when estimating the investment side of the equation for MiDataHub. While state funds directly committed to the work can easily be summed up, there is more that should be involved in the calculation. Districts and ISDs have spent time learning about interoperability and configuring their data systems to connect to the Michigan Data Hub. System vendors and other data consumers have spent time developing their systems to support connecting with the ecosystem. Other educational partners have spent valuable collaboration time and dollars contributing to the solution. This section will explore these various investments and which are applicable to ROI calculations.

State Funding

Beginning with the 2013 - 14 school year, the Michigan Data Hub has been allocated, received, and spent over $23,784,107 in state school aid dollars (see Appendix C). Those funds were for a period of about 11.5 calendar years, with the current year's $3.5 million allocation in process through September 30, 2024. MiDataHub is currently slated to receive $3.5 million again for the 2024 - 25 school year. The average yearly investment from state funding is just over $2,068,000, or $1.45 per student, with the 23 - 24 investment at $2.45 per student for the 23 - 24 school year.

District Costs

According to survey results, districts spent an average of 17.73 hours initially configuring their integration from their district SIS to MiDataHub and another 13.83 hours configuring other systems to connect to MiDataHub. Extending those results to the 882 school districts in Michigan and a typical district technology director cost, this adds an initial $1,810,000 to the up-front cost of integration.

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"Perhaps the Michigan Data Hub's most remarkable achievement over the past decade lies in its ability to foster an extraordinary level of collaboration across the education community. This collective efficiency isn't just a byproduct; it's the catalyst—driving a shared commitment to support and uplift every student across Michigan."

Bryan Smith
Executive Director, MiDataHub

With an enrollment of 1,429,895 students in the 2023 - 24 school year, this equates to $1.27 per student[6].

In addition to the more intensive initial configuration, districts must also work to ensure that data continues to flow to MiDataHub in subsequent school years and that any new systems are connected as they are implemented. This work often takes significantly less time than the original configuration as districts are more experienced in the process, SIS systems and other integrated systems retain most of their configuration settings, and overall system improvements provide more trouble-free connections. Districts surveyed indicated they spent about 25.5 hours annually managing data integration configurations with the Michigan Data Hub. That translates into an overall annual cost of about $1,459,000 statewide, or $1.02 per student.

Collaboration Costs

One of the most impressive things about the Michigan Data Hub is that it has garnered and leveraged a high degree of collaboration from educators across the state. Since collaborative efforts are a form of investment in the MiDataHub initiative we will explore the various collaborations and any investment costs that should be attributed to MiDataHub work.

MiDataHub has an advisory that consists of representatives from ISDs along with leaders of CEPI and MDE. These stakeholders spend from 4 to 8 hours monthly in meetings to assist in the work of guiding and directing the initiative, occasionally attending face-to-face planning retreats. For many years, MiDataHub provided a per-meeting stipend of $250 per person. This money was distributed to the advisory member's district for ISD and school district employees who attended the meetings to help offset the time spent. In recent years, that stipend was phased out; however, lodging and meal costs are covered for retreats and conferences to help compensate. While it could be considered that the time spent by these individuals is an investment, it can also be maintained that their efforts at streamlining the flow of educational information and its usage would still fall on the shoulders of these individuals as part of their normal jobs.

A very key part of the Michigan Data Hub is its Data Hub Support Specialist (DHSS) team. This group of largely ISD information specialists serves as the "boots on the ground" in assisting school districts with using MiDataHub. Since most ISDs host and support student information systems, it makes sense that these individuals have become experts in configuring those systems to send data to MiDataHub. In many cases, these DHSSs complete and manage the integrations on their own, relieving their districts of this work. In other cases, they facilitate training and support for their own districts that handle the configuration and management of MiDataHub. The DHSS members are also highly skilled and knowledgeable about all the other systems that districts use and are able to assist them with configuring the numerous MiDataHub integrations. The DHSS team, led by MiDataHub's Support Manager, meets on a monthly basis. These meetings are often three-hour

6. https://www.mischooldata.org/student-enrollment-counts-report/

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virtual sessions that serve as training for the DHSS members and provide them with the opportunity to provide input into MiDataHub processes. Similarly to the advisory members, MiDataHub has traditionally provided a stipend back to the member's district for the member's time. It often was far less than the cost of the actual amount of time spent on MiDataHub work, and the reimbursement practice was recently ended. However, because this work falls under the District Costs category, the time of these members is accounted for in that category.

The biggest game changer in MiDataHub's work has been its collaboration with the Center for Educational Performance and Information (CEPI) and the Michigan Department of Education (MDE). CEPI is the state agency charged with managing all academic information statewide and is the avenue through which the state funds MiDataHub. MDE is the state agency that oversees PreK - 20 education statewide. CEPI and MDE staff invest significant time as Advisory Committee members in meetings to work through services that bridge data between systems and in developing those services. The services provided through this collaboration have become some of the biggest value adds for MiDataHub. While the time investment of both agencies has been significant, it has always been part of their primary mission of managing information statewide (CEPI) and improving education statewide (MDE).

The Michigan Association of Intermediate School Administrators (MAISA) supports the Intermediate School Districts (ISDs) across Michigan, addressing the state's educational challenges through statewide collaboration. In recent years, MAISA's efforts have grown significantly, positioning the organization as a key player in numerous actionable data initiatives. MAISA employs various graphical elements to represent its initiatives, illustrating how they integrate education networks and applications. MiDataHub is a central component in these efforts, playing a crucial role in initiatives involving data. Through MAISA's development team, MiDataHub data is used to create systems for reading improvement (MiRead), early dropout warning system (MiEWIMS), and tracking tutoring interventions for students lagging in math and reading (MiKidsBackOnTrack). In addition, MAISA hosts numerous committees that provide feedback on various types of data, such as General Education, Special Education, Early Childhood, and information management in general (Michigan Educational Technology Leaders). Leveraging MiDataHub proves beneficial for MAISA, as it enables access to a wide range of data and simplifies access through single sign-on.

A final major collaboration partner that has invested significantly in MiDataHub is the Ed-Fi Community. This community includes the **Ed-Fi Alliance**[7] itself, the Michael and Susan Dell Foundation, which funds the Alliance, and all others who have implemented Ed-Fi and contributed back to improving the offering. These combined investments total tens of millions of dollars over the length of the MiDataHub initiative, and indeed, going back to the origins of the Ed-Fi Alliance initiative itself. The investments from the Ed-Fi community largely would have been made with or without the existence of MiDataHub, as they were made in carrying out the missions of their respective organizations.

Given that all of these investments by collaboration partners are also investments in their primary missions, we will not include estimates of their costs in the ROI calculations. With that said, the value that all of these partners have brought to the work is significant.

Vendor Partner Costs

To work with the Michigan Data Hub, vendors incurred costs to prepare their systems for the Ed-Fi standard and any relevant Michigan extensions. These costs were probably most significant for student information system (SIS) vendors, as they provide the base data to populate MiDataHub. SIS vendors also had the most effort to populate extensions needed for state reporting. At present, no vendor is charging Michigan districts an extra fee to integrate via the Ed-Fi API.

Vendor partners have their own return on investment (ROI) to consider. While there is a significant cost to retrofit their systems to use the Ed-Fi API, this is mitigated by two main factors. The first is that the work can ultimately streamline a vendor partner's onboarding

7. https://www.ed-fi.org/

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and ongoing integration management processes. Developed integrations can be replicated hundreds and possibly thousands of times within a state and nationally. Once a vendor system is Ed-Fi enabled, all the vendor needs is a key, secret, and appropriate URLs to connect and provide services. Even though there are variances between states and implementations, most of the development and processes can be repeated, requiring the vendor to only tweak the differences. The second factor is that vendor partners have the potential to increase the capability of their product through the use of data they can consume through the Ed-Fi API. For instance, a district SIS could read state assessment scores that are standardized in MiDataHub, allowing the system to provide useful functionality to districts, such as dashboards and identification of students in need of assistance. Without that reliable pipeline of standardized data, it would be difficult for a vendor partner to develop functionality that could be broadly replicated across customer districts.

Over time, streamlined integration and enhanced data capabilities are likely to actually reduce the overall vendor partner integration costs. Given the factors of an initial investment cost and then long-term savings for vendor partners, we will consider vendor costs to be zero for the purpose of this study.

Total MiDataHub Investments

	Initial Investment	2023 - 2024 Total Investment	2023 - 2024 Per-Student Investment
State Funding	$23,784,107	$3,500,000	$2.45
District Config Initial	$1,810,000	$0	$0
District Config Annual	$0	$1,459,000	$1.02
Collaboration Costs	$0	$0	$0
Vendor Partner Costs	$0	$0	$0
Total	**$25,594,107**	**$4,959,000**	**$3.47**

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COST SAVINGS

The other major component in determining return on investment is the cost savings generated from the MiDataHub initiative. The District Survey captured cost savings from three different perspectives. The first perspective is the time saved by staff needed to maintain integrations. From that lens, we can see from a broad perspective the total cost savings that can be attributed to MiDataHub usage. The second perspective is the collective time-savings across eight different tasks that are streamlined by MiDataHub. This lens recognizes a feeling of realized savings across the streamlined tasks, both in percentage of time and in actual dollars. A third and final perspective focuses on additional savings attributed to using MiDataHub. This third lens identifies costs that have been completely avoided through MiDataHub and resources available to districts through MiDataHub usage. This third category of savings was not studied in the survey questions but can be estimated from the actual integrations and usage information for MiDataHub.

Cost Savings from Lower Maintenance Costs for Data System Integrations

One dimension explored in the District Survey was a high-level look at the amount of employee time actively committed to maintaining data system integrations by comparing the total number of overall FTEs maintaining data system integrations to the portion attributed to MiDataHub and non-MiDataHub integrations. To calculate the savings, we will use survey data to estimate the per-district cost of integrations, reduce that down to the cost of a single integration per district, separate the cost per integration into a MiDataHub integration cost and a non-MiDataHub integration cost, and then use those numbers to calculate a statewide savings amount for the MiDataHub integrations over the non-MiDataHub integrations.

Estimated Cost Per-District of Integrations

To calculate cost savings per integration for the Michigan Data Hub to serve as a primary basis for further calculations, we first need to understand how much an average district spends in staff time on data integrations. The survey asked, “How many of your district personnel are actively committed to maintaining data system integrations (both Data Hub and non-Data Hub) today?” and “Of those, how many are dedicated to non-Data Hub integrations?”. Districts responded with the number of full-time equivalent (FTE) staff assigned to that work in each case. The difference, then, is the number of FTE involved in MiDataHub integrations. Survey results indicate an average of 1.12 FTE assigned to integrations and 0.86 FTE (76.5%) of those covering non-MiDataHub integrations, leaving 0.26 FTE (23.5%) of staff time to handle MiDataHub integrations. Multiplying by a typical salary for a district technical person who manages these processes, we arrive at a total per-district cost estimate of $152,000 spent on integrations, broken down into $116,00 for non-MiDataHub integrations and $36,000 for MiDataHub integrations.

MiDataHub integrations cost less than half the staff time (49%) *to maintain than a non-MiDataHub integration.*

Estimated Cost of an Integration

From the Complexity of District Systems section above, we know that districts average about 19.3 data management systems and about 20.7 integrations for those systems. MiDataHub also provides integrations for numerous systems not included in that figure. For the 410 surveyed districts, that equates to 1,786 additional integrations, for an average of about 4.4 more integrations per district. Dividing the $152,000 total integration staff time by 25.1 integrations per district (20.7 + 4.4), we estimate that each integration maintained costs districts roughly $6,055.

Cost of an Integration Through MiDataHub Compared to Other Methods

In the District Survey, districts were asked directly how many data integrations they had in place through MiDataHub. With the field being an open-ended text field, many districts responded that they were unsure or otherwise commented on it rather than providing a number. As such, the number of integrations through MiDataHub for those districts could not be calculated from survey data. Instead, the number of MiDataHub integrations was calculated for the districts in the survey using information from MiDataHub's management database. For the 410 districts that responded to the District Survey, the integration records show 3,986 MiDataHub integrations once duplicates are removed. That is about 9.7 integrations per district. Dividing the $36,000 that districts estimate spending on MiDataHub integrations by the 9.7 average integrations, we arrive at a cost per integration of $3,711. Similar calculations for non-MiDataHub integrations divide $116,000 by 15.4 non-MiDataHub integrations (25.1 per district minus 9.7 MiDataHub integrations) yields a per-integration cost of $7,532 for non-MiDataHub integrations. This figure compares reasonably well with past estimates. The 2016 ROI Study estimated "an average cost of building and maintaining a single integration at $9,533 per year (based on median yearly integration cost and number of integrations per district)". For many years, MiDataHub included cost savings estimates in its annual legislative reports. In the 2022 - 2023 Annual Report[8] MiDataHub provides calculations for a more conservative estimate of $7,371. Based on these three estimates, we will use the $7,532 figure established with this most recent set of survey results as the average cost of integration. From this data, we can conclude that MiDataHub integrations cost less than half the staff time (49%) to maintain than a non-MiDataHub integration and that MiDataHub integrations have been actively reducing the statewide spend on integration work.

8. https://www.midatahub.org/downloads/data_integration/midatahub_annual_report_2023.pdf | See Pg. 43, Appendix G

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Savings Attributed to Reduced Staff Time Needed to Manage Integrations

The sections above established that the average cost to maintain a non-MiDataHub integration is $7,532, and the average cost to maintain a MiDataHub integration is $3,711.

> *That leads to a savings of $3,821 for every integration moved from a non-MiDataHub integration to a MiDataHub integration. With about 9.7 integrations per district, for 861 of the 882 districts that have data in MiDataHub,* ***that is a savings of over $31.9 million dollars in staff time statewide.***

If the remaining 21 districts used MiDataHub for an average of 9.7 integrations, that would be an additional potential savings of over $778,000.

Cost Savings from Streamlining Data Management Tasks

The District Survey explored eight data management tasks from an hourly perspective, comparing hours spent on these tasks prior to MiDataHub with the number of hours spent once their district started using MiDataHub services. This section will calculate the amount of savings for each task based on the time saved and the cost of staff salaries typically attributed to the work.

Data Integration Configurations

Prior to the Michigan Data Hub, districts employed a variety of strategies for configuring data system integrations, with most of those strategies involving work to export and import data via comma-separated value (CSV) files or other flat file formats. Some districts did this work directly through tools in their SIS, some leveraged work done by other districts, ISDs, or vendors, and in some cases, CSV files were sent to an integration partner (like Clever, Classlink, and LevelData) where other integrations were handled from there. These manual and partially automated integrations were often fraught with data quality issues and had numerous points of failure, requiring a great deal of monitoring by district staff.

With the implementation of the Michigan Data Hub, much of this work was automated. SIS systems populate MiDataHub through an Ed-Fi API integration and are kept near real-time through transactions that fire off as data changes. Similarly, other source systems provide their data in a timely manner, creating a rich repository of information that is easily accessible to downstream systems

MiDataHub sees the most effectiveness in the interoperability process when individual integrations are leveraged dozens and hundreds of times with a few simple clicks.

***31 integrations** are currently **used 50 or more** times each.*

via API and other mechanisms as needed. All these connections are monitored through a single tool, the MiDataHub Cockpit application.

MiDataHub sees the most effectiveness in the interoperability process when individual integrations are leveraged dozens and hundreds of times with a few simple clicks. This commonality of data system integrations is the key to the initiative's return on investment. MiDataHub integration tables indicate that 31 integrations are currently used 50 or more times each. Examining the list further, there are three instances where the functionality is duplicated for various reasons and four MSDS processes treated as integrations, leading to a reduced total of 24 integrations leveraged 7,116 times by districts (see **Appendix D**). An additional benefit is that the success of these common integrations encourages districts to select systems that are well integrated with MiDataHub, leading to an overall consolidation of data systems. Further, that consolidation occurred naturally through district choice rather than as a result of state mandates.

The District Survey asked respondents to estimate the amount of time spent on data integrations before MiDataHub and the time spent on the task using MiDataHub. The responses indicate significant time savings. Survey data shows that districts averaged 36.8 hours managing data integration configurations prior to MiDataHub and now average 25.5 hours, for a savings of 11.3 hours per district annually in that work. That equates to a 30.9% savings of time in configuring systems.

Most of the work configuring system integrations falls to Technology Directors and other technical staff.

> *Based on typical technology director salaries (see Appendix E), the hours saved, and the percent of districts responding that indicated they performed this activity, **we calculate a real savings of staff time of $626,000 and a potential savings of over $25,000 more if all districts leveraged this service**.*

When asked about the impact of MiDataHub in an open-ended question, 51 districts responded that MiDataHub helps with data integration configuration. Responses cited themes such as automation, ease of management, ease of use, aligning data between systems, and saving time. A few notable responses are:

- Aligned systems across the district.
- Automated communication without much IT intervention. The systems talk.
- Ease of use to interface with all of our integration points
- Having the Data Hub offers a method for 3rd party integrations to be easier, enabling local districts to potentially work with vendors on API integrations to the Hub to improve data integrity, add efficiencies, etc.

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- It has taken some of the integrations off the District's plate so that we don't have to put so much time into submitting similar information to multiple sources.
- Much less time exporting and importing data between systems!

Not included in the savings numbers for this category is the value of this data being easily available to educators for actionable use in improving student achievement. Not only does MiDataHub consolidate data from many sources into one location and make that data more easily accessible, but it truly provides access to data that districts would not have had before. One example of this is the state assessment integration service. Prior to MiDataHub, districts downloaded CSV files from the state, which gave them access to the assessment results for the students the district tested. Through the state assessment integration, the district receives historical assessment data for the students they have today, even if those students tested elsewhere. Armed with that information, the district can better address a student's educational needs. The time savings this generates for administrators and teachers were not estimated, but it is clear that the savings in this category go well beyond the estimate above.

Also not included in the savings numbers above are the savings for integrations solely provided through MiDataHub. When districts responded to the question for this task, they responded based on integrations with which they were familiar. The value and cost savings for these exclusive integrations will be tabulated separately in the sections below.

Providing District Data for Loading into Additional Systems

One aspect of data configuration that is often overlooked is that data has to be loaded into additional systems on a repeated but infrequent basis. Compared with integrations, these are handled more manually and less frequently, making them more of a challenge. The state assessment service mentioned above is a good example. Prior to MiDataHub, a district might work to load the assessment data to their SIS, provide it separately to a data warehouse/analysis application, and work with it manually in a spreadsheet tool. This causes the district to touch the process many times, often repeating steps differently each time. Through MiDataHub, the data can be reused in multiple systems with the exact same set of steps and a consistent level of data quality.

An important enhancement made by MiDataHub was allowing data to be accessed through the OneRoster API in addition to the Ed-Fi API. OneRoster, a data standard from 1EdTech, is primarily used to provide student enrollment and class roster data to educational applications. Since educational applications are highly used by teachers, and many of those applications had existing OneRoster integrations, it became a highly effective way to connect a large number of additional systems quickly.

When posed with this scenario of loading data into additional systems, districts indicated they spent 37.8 hours on this task prior to MiDataHub and 24.9 hours with MiDataHub, equating to a savings of 12.9 hours, or 34.1% of their time.

Based on typical technology director salaries (Appendix E), the hours saved, and the percent of districts responding that indicated they performed this activity, ***we calculate a real savings of staff time of $696,000 and a potential savings of over $43,000 more if all districts leveraged this service*** *(for data loading).*

Most of the work of loading data into additional systems is handled by Technology Directors and other technical staff. Based on typical technology director salaries (see **Appendix E**), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a real savings of staff time of $696,000 and a potential savings of over $43,000 more if all districts leveraged this service.

From an impact perspective, 60 district survey respondents commented that MiDataHub was helpful in providing district data for loading into additional systems. In addition to previously mentioned comments about configuring data systems, the following comments note consolidation of data, easier management of irregular data requests, providing information faster, eliminating data silos, and providing a framework to discuss integration needs with vendors prior to purchase. The comments also detail some of the beneficial integrations MiDataHub has established.

- Has made it easier for me to manage requests that happen irregularly.
- It has helped us with integrations of other products, including Munetrix and helps us identify student needs.
- It has impacted us positively. We have our NWEA assessments and Delta Math integrated with MiDataHub, no more pulling data from the SIS.
- It has saved time in the exporting of data out of our SIS to populate demographic information to other products.
- It's a great tool to discuss with prospective systems and vendors to ensure our data systems can connect to products being considered for purchase.
- Made sending required benchmark assessment data possible. Beneficial for MICIP requirements. BHworks integration is great for us.
- Seamlessly integrating data to MiEWIMS.
- Simply managing multiple connections that used to be CSV/SQL imports and imports into various systems.
- The Data Hub gives us much-needed information faster.
- The Data Hub has allowed us to attempt to consolidate our data into one location.
- The MiDataHub has improved the flow of data between what used to be siloed areas. This has improved efficiencies for both data synchronization as well as user login flow.

Providing District Data for Legislative Mandates and Requests

Another aspect of integration that is not often considered by districts is work that is done to comply with state and legislative data requests. These requests often come out of the blue and

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*Survey results on this category indicate that **districts spent 38.2 hours annually for this work prior to MiDataHub and only 25.9 hours annually once MiDataHub took on this work**, indicating a savings of 12.3 hours, or 32.2% of their time on this task.*

cause districts to interrupt their regular work to mine the data needed to comply. While at times these requests are fairly small, one-time needs, other data requests are more detailed and take significant effort to generate the information needed. Such was the case with the recent COVID-19 response. Originally titled "Return to Learn," and later called the "Benchmark Assessment Mandate," this one request was collected twice a year for four school years in a row and included the vast majority of districts in the state. It was also one of the most complicated requests, requiring districts to aggregate assessment data across a number of demographics and to provide that data to MDE using a spreadsheet template. Further, there was an additional section of legislation (Section 98b) that, for the first three years (20-21, 21-22, 22-23), required districts to report to their board of education in February and at the end of the school year about how students were performing on benchmark assessments. The numbers reported to school boards were similar to the numbers needed for reporting to MDE but were needed on earlier timelines than the MDE numbers.

Fortunately, MiDataHub was able to automate these requests using data that, for the most part, was already available in MiDataHub, saving districts significant time. MiDataHub was already importing NWEA assessment data for hundreds of districts, which was the bulk of the data needed. They also worked with Curriculum Associates to load their i-Ready assessment data via API and worked with Renaissance Learning to import their STAR assessment data from CSV files. Upon learning of these legislative requirements and the MDE-identified assessment list, the MiDataHub team met with the assessment providers, added an API integration for Data Recognition Corporation (DRC), and assisted the remaining districts with integrating this data.

To report the data from MiDataHub, the team worked with the Michigan Education Data Center (MEDC) to allow MEDC to pull assessment data via API, where districts provided explicit permission for them to do so. This permission was provided by creating a Return to Learn aggregation API connection, which districts created following MiDataHub instructions or emailed the MiDataHub helpdesk with a request to create. Once MEDC pulled the data, they merged it with demographic and program data from CEPI, aggregated the data, and forwarded it to the Education Policy Innovation Collaborative (EPIC). EPIC was selected by MDE to write mandated reports based on the data to provide to the Michigan Legislature and other stakeholders, estimating the degree of learning loss due to the COVID-19 pandemic (see Appendix F).

For the section 98b portion of the legislation, the MiDataHub team worked with the formulas identified by EPIC to determine students significantly behind grade level and created custom exports to provide information for their board reports. These queries were used by 295 districts over the years. For the 2023 - 24 school year, the 98b requirement to report to a school district's board was eliminated.

Survey results on this category indicate that districts spent 38.2 hours annually for this work prior to MiDataHub and only 25.9 hours annually once MiDataHub took on this work, indicating a

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Although there was a decrease in districts providing data for that year, the fact that 617 districts still provided data when it was optional is a testament to the ease with which they could provide the data and receive the funding for that work.

savings of 12.3 hours, or 32.2% of their time on this task. Most of the work of providing district data for legislative mandates and requests is handled by Technology Directors and other technical staff. Based on typical technology director salaries (see Appendix E), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a real savings of staff time of $668,000 and a potential savings of nearly $38,000 more if all districts leveraged this service.

In addition to the direct time savings, districts were compensated $12.50 per student in grades K-8 when they provided assessment data from i-Ready, NWEA, and Star. Except for the few districts who completed their own Excel template, the vast majority of districts received this funding due to the data they provided through MiDataHub. The table below shows that districts received over $31.5 million in funding over three years from that effort.

School Year	# of Districts Funded	Total Amount of Funding
2021 - 2022	746	$10,815,200
2022 - 2023	756	$10,791,473
2023 - 2024	617	$9,911,900
Total		**$31,518,573**

Districts received over $31.5 million in funding over three years due to the data they provided through MiDataHub.

In the 2023 - 2024 school year, districts were no longer mandated to provide data but still received the per-student funding if they voluntarily provided it. Although there was a decrease in districts providing data for that year, the fact that 617 districts still provided data when it was optional is a testament to the ease with which they could provide the data and receive the funding for that work.

The COVID-19 Benchmark Assessment work also allows us to double-check the calculated savings numbers. In an informal survey, districts that manually completed the MDE-provided Excel template were asked about the amount of time taken per district to compute all the information needed. The response indicated that the district spent an average of three hours per submission completing the information but also received assistance from their ISD, who gathered the information from an

The combined savings of over $711,000 exceeds the $668,000 estimated savings based on survey data without considering any other state data requests.

existing data warehouse tool. The ISD indicated they spent about 13.5 hours on the initial request and about 3.5 hours on subsequent data submissions. For analysis purposes, we will ignore the initial request and calculate estimated savings based on a technology director's salary, two submissions per school year, 6.5 hours per district (ISD + District time), and an average of 706 districts over the last three years as shown in the table above, we arrive at just over $596,000 in savings. Further, for the 295 districts that used the 98b queries, we can assume that they saved the three hours per submission that the district spent massaging the data for an estimated additional savings of $115,000. The combined savings of over $711,000 exceeds the $668,000 estimated savings based on survey data without considering any other state data requests.

In the 23 - 24 school year, MiDataHub started to prepare for data collection for a new initiative, the 23g MiKidsBackOnTrack tutoring initiative. For this initiative, MiDataHub would provide roster data to tutoring vendor partners and collect information from those partners and their systems on the tutoring provided. This tutoring would be tracked as intervention and, when combined with assessment data, could be used to evaluate the program's effectiveness. While we do not have a mechanism to estimate the cost savings for this piece. It would be expected to be significant due to its statewide impact.

Examining the comments provided for the impact over the last year, 53 comments referenced the ability to address legislative mandates and requests. Those comments emphasize the time savings, easier process, and money received for providing assessment data.

- Easier to provide data to MDE for mandates
- Easy to send data for state assessments.
- It has allowed us to integrate our student information system and our standardized test scores with the entities that are requiring it. This makes the reporting requirement seamless.
- Less time spent integrating data. Less confusion about benchmark testing results.
- MiDataHub has saved our district a lot of time and effort on things like mandatory state reporting and data integrations.
- Not having to do some mandatory state reporting has saved the district a considerable amount of time.
- NWEA data received got us money for testing through Data Hub

UIC Management (Confirmation, Retrieval, Creation, Correction)

The student Unique Identification Code (UIC) is the lifeblood of managing students in Michigan. Every student receives a UIC based on their name, gender, and date of birth. Prior to MiDataHub automating this work, districts had two options for assigning UICs. The first was to log into a Center

*This work not only reduced the time needed for the process but also significantly improved the data quality of the resulting UIC. Unsurprisingly, this showed the **largest percentage time savings at 37.6% or 13.2 hours annually** based on an average of 35.2 hours prior to MiDataHub services and 22.0 hours after.*

for Educational Performance and Information (CEPI) website to enter the student information and search for students one at a time. The search might result in a full match to an existing student, multiple possible matches, or no match at all, which would generate a new UIC. Once a UIC was identified, it would be copied and pasted back into the district's SIS system or other system that was being populated, or even worse, manually typed in. To expedite this work, CEPI implemented a second option, which was a bulk search and UIC resolution process. The bulk search required a district user to create a data file in a CEPI-provided format, log into the CEPI website, upload the file, go through a resolution process to resolve any multiple matches, download the resolved file, and import that back into their data system. That also required the data system to be capable of supporting that process.

Working with CEPI staff, MiDataHub was able to utilize CEPI API services to automate the process. District systems simply call the MiDataHub Identities API and send the required information as a student is being entered. In cases of a positive match or new UIC, the UIC is available to the district system to automatically update its database. In the case of multiple possible matches, a result set is sent to the downstream system so that it could present the possible options, allowing a user to select the right UIC, which is then automatically added to the database. This work not only reduced the time needed for the process but also significantly improved the data quality of the resulting UIC. Unsurprisingly, this showed the largest percentage time savings at 37.6% or 13.2 hours annually based on an average of 35.2 hours prior to MiDataHub services and 22.0 hours after. Most of the work of acquiring student UICs falls to school secretaries and other clerical staff. Based on typical clerical salaries (see **Appendix E**), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a real savings of staff time of over $386,000 and a potential savings of nearly $22,000 more if all districts leveraged this service.

The use of UIC services also allows us the opportunity to do a quick double-check of these numbers. The 2023 - 24 MiDataHub Legislative Report indicates 290,000 UIC services transactions completed in the year leading up to the report. We estimate that each transaction saves at least 2 minutes of staff time in logging into the state's UIC system, entering the required fields, copying the UIC, pasting it into their SIS, and handling data quality issues along the way. For the 756 districts, this calculates to a time savings of over $338,000. Scaling this statewide to all 882 districts would bring an additional $56,389 for over $394,000 in savings.

The impact of the UIC Services was mentioned by 52 survey respondents in their comments. Almost unanimously, the comments talk about how simple and easy the process has become, as we have described above. Some of the notable comments include:

- It has greatly decreased the amount of time central teams must spend when completing UICs for students. Schools now have a designated staff member that is responsible for clicking the Request UIC button just for that school's students; rather than two people in central office who used to manage all UICs for all students.

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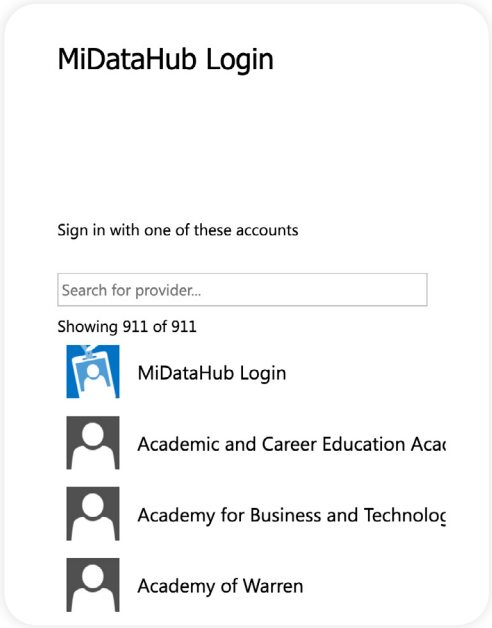
*At present (Fall 2024), 911 entities are federated with MiDataHub (see screenshot below), including **853 of 882 school districts**, which amounts to approximately **97% of all public districts in the state**.*



- Made UIC retrieval a breeze.
- The availability of features like the UIC Request and the SnackPack in our SIS has been of great use and value to our school.
- The UIC and SnackPack have been a game changer.
- The UIC look-up is a significant time saver.
- UIC creation is incredible.
- We've connected Powerschool to MiDataHub which allows us to do the UIC creation much quicker.

User Authentication Management

One of the most unexpected value propositions for the Michigan Data Hub was the addition of federated single sign-on (SSO) functionality. Initially, MiDataHub was provisioned with its own authentication method that required districts to have a separate user ID and password to access the interoperable ecosystem. In the 2014 - 15 school year, it was decided that MiDataHub would develop a federated SSO, and in the 2015 - 16 school year, the SSO mechanics were in place, and the first region, Eastern Upper Peninsula ISD, was federated. That federation allowed all persons with an eupisd.org email address to log into MiDataHub with the same credentials they used for other systems in their Microsoft environment. Over the years, school districts, organizations, vendor partners, and more have federated their Azure, Google, Microsoft, Okta, and other authentication systems with MiDataHub to enable access to all systems connected to MiDataHub. At present (Fall 2024), 911 entities are federated with MiDataHub (see screenshot on the left), including 853 of 882 school districts, which amounts to approximately 97% of all public districts in the state.

While the SSO is valuable for districts to log into the MiDataHub applications, the value of the SSO exploded when it allowed staff and students to access other systems. One of the more popular career planning tools, Xello, uses the MiDataHub SSO for the 180 districts it serves. Michigan's ISDs collaborate to develop applications through a group called the Michigan Collaboration Hub (MiCH). MiCH has developed several applications that use the MiDataHub SSO. Currently, 131 districts use the MiRead application to assist students with reading, 55 districts access the MiEWIMS tool to monitor students for dropout risk, and all 852 districts with SSO configured access the MICIP school improvement tool. A positive spiral exists where the more systems a user can access through the MiDataHub SSO, the more districts are encouraged to federate their authentication methods. The more federated districts, the greater the value of a system to utilize the SSO.

As of the survey responses, districts reported they now spend 24.1 hours managing authentication through MiDataHub, down from 33.3 hours, for a ***savings of 9.2 hours per year, or 27.6%.***

As of the survey responses, districts reported they now spend 24.1 hours managing authentication through MiDataHub, down from 33.3 hours, for a savings of 9.2 hours per year, or 27.6%.

> *Most of the work of configuring SSO falls to technology directors and other technical staff. Based on typical technical salaries (see Appendix E), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a* ***real savings of staff time of over $484,000 and a potential savings of over $42,000 more if all districts leveraged this service****.*

However, that is only the savings in the configuration and management work. The savings due to SSO climb every time a staff member or student logs in with a familiar password instead of remembering a password unique to each system. Over the course of a school year, students and staff will log into systems dozens and even hundreds of times. The savings from streamlining these logins are not included in the numbers above but would potentially exceed the configuration savings many times over. As such, the value in this category is an underestimate of the actual savings.

The impact of the SSO was highlighted 12 times in the comments for its role in streamlining user authentication management. While this number seems low, ***the MiDataHub SSO is one of the most often used parts of MiDataHub***. Even districts that don't have data in the data hub use the SSO to connect to systems like MICIP. The comments provided highlight increased efficiency and the benefit of having a single place to log in. The notable comments include:

- One place to log in.
- It has helped us keep data in one central location with one login.
- More one-stop shopping. :)
- SSO for Math Nation and MICIP are the two primary functions utilized through MIDataHub. It does simplify access to the tools and resources.
- The use of the MiDataHub has greatly increased our users' login efficiency and increased the use of our tools.
- There is an efficiency with the single sign-on.

System Data Quality Issue Detection

One of the major challenges for school districts nationwide is data quality. Due to the wide variety of users entering data and the lack of data governance processes in most school districts, data quality issues are often rampant in school data systems. To combat this problem, MiDataHub has employed several methods to assist with identifying issues so they could be resolved as quickly

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The survey results indicate that districts are saving over 10.1 hours annually using these features in MiDataHub. Prior to using MiDataHub for this work, districts estimated spending 38.6 hours per year on data quality. With the efficiencies provided by MiDataHub, they estimate spending only 28.5 hours annually for a time savings of 26.3%.

as possible. Initially, when districts send data through the Ed-Fi API to MiDataHub, SIS vendors provide dashboards, reports, and statistics that indicate where any issues occur when sending data. By resolving these issues, districts can be assured that all data flows to MiDataHub from their source systems.

Once the data has landed in MiDataHub, districts can employ the various data quality tools available in MiDataHub.

- **Reports** are most commonly used to evaluate broad data quality. The most often used report is the At-A-Glance report, which allows users to look at district and school building totals across the broad cross-section of data available in the Ed-Fi Operational Data Store (ODS). Those reports show places where data is flowing and looks sufficient, where it is flowing but seems less than expected, and where data is not flowing at all.
- **Queries** from the Query Bank can be used to troubleshoot specific issues or pull data for specific information needs. Districts can execute these queries as written or tailor them to specific district needs.
- **Feature Dashboards**, such as the Benchmark Assessment Mandate, typically show data quality statistics for an implemented feature. These dashboards can be easily created and updated through a Feature Manifest file that details the data quality rules and how they are reported to the end user.
- **The Rules Engine** allows rules to be run against the ODS on a scheduled or ad-hoc basis.
- **Alerts** allow for proactive execution of the rules in the rules engine, alerting one or more users if an issue is detected so it can be cleaned up right away. The best practice for districts is to schedule all the data quality rules they can to run on a weekly basis, allowing them to address issues in a prompt manner.

The survey results indicate that districts are saving over 10.1 hours annually using these features in MiDataHub. Prior to using MiDataHub for this work, districts estimated spending 38.6 hours per year on data quality. With the efficiencies provided by MiDataHub, they estimate spending only 28.5 hours annually for a time savings of 26.3%. While many school staff are involved in detecting and resolving data quality issues, most of the work falls to technology directors and other technical staff. Based on typical technical salaries (see Appendix E), the hours saved, and the percent of districts responding that indicated they performed this activity, ***we calculate a real savings of staff time of over $533,000 and a potential savings of over $48,000 more if all districts leveraged this service***.

What is not included in these numbers is the value of having cleaner data for informing district decisions. Poor data quality can often cost districts real dollars by not accurately counting all students or not identifying students eligible for programs that would provide the district with extra

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funding. It also can be helpful in early identification and avoidance of scenarios that would lead to financial penalties, such as a teacher teaching outside of their area of certification. For these reasons, the savings estimate above is likely to be underestimated.

From a qualitative perspective, nine districts commented that MiDataHub has helped them improve data quality. While this is one of the lower impact numbers, other areas that districts commented on, such as UIC services and streamlining MSDS, have an impact on data quality. Of the nine comments, the following were notable:

- Cleaning up data prior to counts and running reports
- Correcting errors on the Dashboard is helping clean up our SIS, which has been my primary role.
- Increased data validation efforts
- It has been very beneficial for the accuracy of my data collection. It is not always easy to correct the errors that are found, but it is getting better. The Data hub Team and support are outstanding!
- It's helped us catch errors in the way the data is being entered and cross-walked over.
- More consistent data.
- Saves time! Minimized errors.

Data Validation/Correction Cycle for MSDS

One specific category of data validation is the Michigan School Data System (MSDS) reporting cycle. The MSDS General Collection is reported to the Center for Educational Performance and Information (CEPI) three times a year, as is the MSDS Early Childhood collection. Additionally, districts report the MSDS Teacher Student Data Link (TSDL) in the summer, can optionally submit an MSDS Early Roster file in the summer, and an MSDS Student Record Maintenance (SRM) file between most collection periods. For migrant students, the MSDS Migrant Teacher Student Data Link (Migrant TSDL)[9] must be submitted with course information within ten days of a migrant student enrolling in or leaving a district, requiring extra attention. These collections are both taxing in difficulty and high stakes because the data often has funding implications for districts. MiDataHub has developed a suite of tools to assist with this work.

- The **MSDS Error Check** process runs CEPI's rules against district data to allow districts to identify their errors proactively on a scheduled basis. Paired with the Alert functionality, districts are able to be notified as frequently as desired that they have data in need of correction. Staying on top of these alerts allows districts to both have better quality data for their own uses as well as a faster state reporting process during correction periods. Prior to MiDataHub, districts only identified these errors when they went through the state reporting process, meaning that they often went months with errant records.
- MiDataHub has replicated numerous **MSDS Reports** from the CEPI Staging Area, where districts upload their information. These reports allow them to check their pupil counts, special education data, early childhood data, free and reduced lunch counts, early middle college details, and more. These allow districts to view that data outside of regular count periods when the CEPI staging area is not available.
- The **MSDS Comparison Tool** will compare the data as it is found in MiDataHub to a separately created MSDS XML file from the district student information system. Because most SISs generate that XML file, this becomes a double-check to make sure all data from the SIS is flowing to MiDataHub for state reporting purposes. It has led to SIS vendors correcting processes so that they ensure complete transfer of data. The tool will identify students missing from MiDataHub, students missing from the SIS XML file that are in MiDataHub, data elements that are in one location but not the other, and data elements that are different in each version.
- MSDS XML files can be created by the **MSDS File Extractor** process. While most districts can also pull and submit the files from their SIS, the Skyward Qmlativ SIS was the first to take

9. https://www.michigan.gov/cepi/pk-12/msds/tsdl

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advantage of using MiDataHub for this work completely. Qmlativ does not create its own XML file, so it must rely on this process in MiDataHub. Skyward deserves credit for taking this approach, as working through that process in the 21 - 22, 22 - 23, and 23 - 24 school years has led to tremendous refinement of the processes to the benefit of all who use the MSDS tools. Once a file is created from MiDataHub, it can be uploaded directly into the CEPI staging area for final submission. Eventually, CEPI and MiDataHub envision a process where the XML file process is skipped completely, and the data is sent to CEPI directly via API.

Given the complexity of the MSDS work, districts reported that they spent 48.8 hours prior to MiDataHub and 36.2 hours per year when using MiDataHub. That yields a time savings of 12.6 hours or 25.8% of the time originally spent. Many school staff are involved in the MSDS process, including administrators, technical staff, and clerical staff. Based on a blended salary rate (see **Appendix E**), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a real savings of staff time of nearly $505,000 and a potential savings of over $50,000 more if all districts leveraged this service.

Looking at the impact comments from survey responses, 19 comments referenced receiving benefit from validating data for MSDS. The comments support that MiDataHub has helped to save time in the process, assisted with eliminating MSDS errors, and that for some districts, MiDataHub is the only way that state reporting can be created. Specifically, the districts that use the Skyward Qmlativ student information system generate the files needed for state reporting through MiDataHub. The notable comments from MSDS data quality validation are below:

- Ensuring our numbers match MSDS reporting is a great system check.
- Helped a lot with MSDS Errors.
- MiDataHub has saved our district a lot of time and effort on things like mandatory state reporting and data integrations.
- MiDataHub is the only method available for state reporting.

Requesting Information for Newly Enrolled Students (CA60, State Assessments, Direct Certification)

A significant challenge for districts is getting records from a previous district for a student newly enrolling in their district. A CA-60 is a student's official cumulative record folder, which contains all or most of the information on a student in a school district. When a student changes districts, the new district can request a CA-60 from a previous district, but often those requests take days, weeks, or months to fulfill and sometimes are never provided. This delay causes issues with providing the appropriate services and educational support for a new student. Working with CEPI, a three-stage process has been envisioned to address this "records transfer" issue. The process is based on the concept of a student backpack that contains all of a student's records, a lunchbox that would be inside the backpack, and then a snack pack that would be in the lunchbox. These were envisioned as follows:

- The **Snack Pack** would be the smallest unit of enrollment transfer. It consists of the most recent data that has been sent to CEPI from the prior district. The Snack Pack is only accessible for a short period of time. Once the receiving district reports the student in MSDS, they are seen as the most recent district, and the information is no longer available. The Snack Pack has been implemented through the Ed-Fi API as an "identify service." This service is called by all the major SIS systems in the state and is available to districts at the click of a button in their SIS. Some vendors have even gone so far as to automate communication to special education, food service, and other contacts based on Snack Pack data.
- The **LunchBox** has not yet been implemented. The vision around this piece would be to provide similar data sourced from CEPI state reporting but in a longitudinal manner. This would be more broadly available and would allow a receiving district to see all of the previous districts a student attended and their relevant information in each.
- The **Student Backpack** concept has been created in a tool called the Enrollment Transfer. While this has been developed, it has not yet been tested and used. The Student Backpack

A major benefit of this service is that districts receive state assessment data for new students from any previous districts they tested in.

would deliver a JavaScript Object Notation (JSON) file that had details of students from prior districts in a detailed manner. Records such as transcripts and assessments could possibly be ingested from this more robust process into a requesting SIS.

In addition to the student backpack methods listed above, MiDataHub also worked with the Michigan Department of Education (MDE) and CEPI to create an assessment importer process. This process consists of two integrations that work in conjunction to facilitate the transfer of state assessment records from MDE to a district's ODS. The first integration is a trigger that indicates to MDE which students MiDataHub needs assessment data for in a given district. Upon receipt of that list, MDE publishes any assessment records it finds over to MiDataHub via the Ed-Fi API. This two-step method has been established to provide the most efficient transfer possible given the high volume of assessment records. Assessments currently being transferred include:

- **M-STEP:** According to MDE's website, the Michigan Student Test of Educational Progress (M-STEP) is "a 21st Century computer-based assessment designed to gauge how well students are mastering state standards". This assessment is given in the spring to students in grades K-8, with the results generally being available to districts after an embargo period where data is being cleansed and confirmed.
- **PSAT:** The College Board PSAT test is given to students in grades 8 and 9 (PSAT 8/9) and grade 10 (PSAT 10).
- **SAT:** The College Board SAT test is typically administered to students in grade 11 and is considered a college entrance exam.
- **AP:** College Board Advanced Placement exams are subject-specific exams that allow students to receive college credit and place out of introductory college courses in that subject area based on achieving identified score levels.

Via the MDE Assessment Service, districts receive up-to-date, historical assessment scores for the students they currently serve. A major benefit of this service is that districts receive state assessment data for new students from any previous districts they tested in. Previously, districts downloaded data from MDE's secure site for only the students they tested in the district, leaving a gap for students tested in other districts that now attend a new district. This is most valuable in the case of M-STEP, and future plans are to add WIDA and MiAccess to the assessments already being transferred.

One of the newest services is a Direct Certification service. This service provides districts with a list of students who are pre-certified to receive free lunch based on data held at the state through various programs. The service is facilitated by the Ed-Fi identity API, similar to the UIC and Snack Pack, allowing student and food service systems to look up either individual students or all students in a district. Previously, a file in the correct format was uploaded to CEPI, where a matching

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We calculate a real savings of staff time of over $544,000 and a potential savings of over $46,000 more if all districts leveraged this service.

process was run, which resulted in a revised file with the identified students. This service allows that process to occur much more quickly and more often so that systems are kept as up-to-date as possible.

> *Through these various records transfer mechanisms, surveyed districts are indicating a **savings of 30.8% of their time** in accessing records from prior districts. Districts estimated spending 29.6 hours per year using MiDataHub services down from 42.7 hours per year prior to the availability of those services for a savings of 13.2 hours.*

This work falls under a variety of job roles, including administrators, technical staff, and clerical staff. Based on a blended salary rate (see **Appendix E**), the hours saved, and the percent of districts responding that indicated they performed this activity, we calculate a real savings of staff time of over $544,000 and a potential savings of over $46,000 more if all districts leveraged this service.

The impact of being able to request data for new students and receiving that data quickly was highlighted in 44 of the comments. Respondents commented on the timeliness, efficiency, and usefulness of the data that districts receive.

- Direct certification and Snack Pack have been helpful.
- Improved the efficiency of retrieving UIC and Snack Pack information for new enrollees. Improved the efficiency of housing testing data for students.
- Improved timeliness of UIC assignments and the Snack Pack has been a great benefit when enrolling new students.
- The availability of the UIC Request and Snack Pack in our SIS has been very useful.
- The Snack Pack feature helps identify MV students quicker as well as student special services.

Total Realized Cost Savings from Task Analysis

The table below provides a summary of cost savings identified from analyzing the tasks above. While these tasks tell part of the story, they are not the complete picture of savings. In the next section, cost avoidance, we will see that there are additional savings to add to the picture.

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Category	Savings	Potential	Total	Hours Saved	Percent Saved
Data Integration Configuration	$625,990	$25,421	$651,411	11.36	30.9%
Loading Data to Additional Systems	$695,995	$43,274	$739,269	12.89	34.1%
Legislative Mandates	$668,476	$37,903	$706,379	12.32	32.2%
UIC Management	$386,068	$21,890	$407,958	13.22	37.6%
Authentication Management	$484,416	$42,402	$526,819	9.19	27.6%
Data Quality Issue Detection	$533,307	$48,225	$581,532	10.14	26.3%
MSDS Data Cycle	$504,992	$50,093	$555,085	12.59	25.8%
Providing Data for New Students	$533,492	$46,698	$580,190	13.16	30.8%
Totals	**$4,432,736**	**$315,907**	**$4,748,644**	**94.87**	**30.7%**

Cost Avoidance

As indicated at the beginning of the cost section, avoided costs are places where districts and other stakeholders either did not have to take on a task or the tasks they undertook were dramatically simplified by MiDataHub. This section will explore several examples of places where cost was avoided almost completely which are not covered in the streamlining data management tasks section.

Collaborative Applications

Under the umbrella of the MAISA, ISDs have begun to develop applications that address a variety of needs for students. These applications rely on data from student systems for everything from rostering to metrics for identifying students in need of interventions and other strategies for support. In most cases, districts already have the data they need loaded in MiDataHub and only need to provide permission for that data to flow to the needed system. These systems do not show up in integration numbers because they are considered under the umbrella of the Michigan Data Exchange (MiDX). However, they utilize many of the benefits of MiDataHub including the use of data, SSO, and Launch Pad.

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Application	Description	Data Used	# Districts
MiEWIMS	Michigan's Early Warning Intervention Monitoring System allows districts to track indicators for student dropout and to put in place research- and evidence-based strategies to reduce dropout risk	Roster, attendance, behavior, course grades	55
MiRead	Michigan's Read by Grade 3 system to identify students who are not reading at grade level and to put in place reading improvement plans with research- and evidence-based strategies to get students reading at grade level.	Roster, assessment	137
School Blue Envelope[10]	This social-emotional learning tool allows districts to identify students who may be at risk of suicide.	Roster	71

Every instance of districts using these applications means that the district did not need to separately handle authentication or data flow. They were simply able to turn on the new applications and start using them.

> *The applications in the table above represent a total of 263 integrations where their cost has been completely avoided. Using the cost of creating and maintaining a manual integration of $7,532 referenced above, that* ***represents a savings of nearly $1,981,000****.*

MAISA and its member ISDs continue to work on applications and tools to address educational challenges, so this category of savings will continue to grow.

Educational Entity Master Service

The Educational Entity Master (EEM) service is an automatic integration that every school district has in place. Since most districts are not asked for EEM data directly, this is an integration that districts would not include in their savings estimates. EEM represents information on all of the schools and districts in the state and consists of official names, entity codes, grade levels supported, programs supported, and official state contacts. This information is essential to MSDS processes, error checks, and integrations that leverage information stored in EEM. Due to the importance of this data in many integrations, it was decided that this should automatically synchronize the data from the state to a district ODS, and to allow that data to change as it is changed in the state EEM application. ***For the 875 districts with EEM, this integration avoided about $6,590,500 in cost***.

10. https://www.spectrumhealth.org/services/mental-and-behavioral-health/blue-envelope

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MiLearn

One of the first state systems to leverage MiDataHub data was the Michigan Linked Educational Assessment Reporting Network (MiLearn). According to its website[11] MiLearn "is a Michigan Department of Education service that delivers state assessment data electronically to students, parents, and educators directly through the district's Student Information System (SIS)". MiLearn leverages an SSO through MiDataHub based on student, parent, and staff identification codes to allow those stakeholders to authenticate into MiLearn directly from their SIS. Once logged into MiLearn, those stakeholders see the data that is appropriate for them according to the data MiLearn receives from MiDataHub. As such, parents see assessment data for their children, students see their own data, and teachers see the students in their classes. When a teacher receives a new student, they are able to access that student's assessment scores the next day once MiLearn receives data files from MiDataHub. As of this report, 292 districts take advantage of MiLearn for a savings of just under $2,200,000.

Research Studies

One of the biggest returns on investment for MiDataHub stems from using data for research, which was not one of the items considered in the original ROI Study. Research is one of the avenues where education can truly be informed by data on a broad scale. MiDataHub has worked very successfully with the Michigan Education Data Center (MEDC) and the Education Policy Innovation Collaborative (EPIC). These two research institutions, based at the University of Michigan and Michigan State University, work together to collect, prepare, analyze, and report on information with high professionalism and regard for data privacy.

"EPIC's research has benefited tremendously from our partnership with the Michigan Data Hub and participating districts. Through the MDH, we are able to tap into otherwise inaccessible sources of data that provide valuable insight into our state's K-12 public education system, which can drive policy and program decisions to make improvements on behalf of students and communities." – Emily Mohr, Education Policy Innovation Collaborative

MiDataHub provided a conduit through which school districts could opt to provide data for research by simply putting in place an API integration. That integration provided MEDC with a key/secret pair, which allowed them access to the data appropriate for their study. Through conducting several studies using MiDataHub data, MEDC became very efficient at pulling data via API and providing that data to EPIC for research. The research studies and savings are tabulated below:

Research	# Districts	Savings
Benchmark Assessment Mandate	841	$6,334,412
Read by Grade 3 Research	567	$4,270,644
Transitional Kindergarten Study	182	$1,370,824
Partnership District Data Analysis	51	$384,132
Total		**$12,360,012**

11. https://sport.mde.state.mi.us/Home/About

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We have included the Benchmark Assessment Mandate in this area, even though it was also mentioned under the ***Providing District Data for Legislative Mandates and Requests*** section. The reason is that in the "prior to MiDataHub" part of the question, districts had no prior experience with such a large and complex data request, so that was not a consideration in those numbers. Their work to comply with the mandate through MiDataHub was minimal because the districts only had to create an integration or give permission for it to be created. In either case, the real work was about a minute of time.

What is not included in this section is the value of the insights and the action that is taken on a statewide level as a result of having this data. We encourage those reading this report to explore the various EPIC research reports found in Appendix F.

SAS EVAAS

For the last several years, the Michigan School Aid Act has annually included funding for SAS to provide their EVAAS value-added metric tool to all districts in Michigan. According to the SAS website, EVAAS "provides educators with powerful tools for reflecting on practices and planning for students' future needs and goals"[12]. While EVAAS can provide reports for all Michigan districts thanks to state assessment data they receive directly from MDE, one of the most valuable features, teacher-level reports, cannot be provided without receiving student-teacher class roster data from MiDataHub. SAS was very quick to work with the Ed-Fi API to access the data and, as of the latest numbers, has an integration with 491 districts. That resulted in savings of over $3,698,000 as districts were not required to manually create their own integrations. Further, SAS enhanced their reporting for districts with other benchmark assessment data available through the API.

Total Avoided Costs

The table below summarizes the estimated costs avoided for MiDataHub Districts.

Integration	Savings
Collaborative Applications	$1,981,000
EEM	$6,590,000
MiLearn	$2,199,000
Research Studies	$12,360,000
SAS EVAAS	$3,698,000
Total	**$26,828,000**

12. https://www.sas.com/en_us/software/evaas.html

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COST SAVINGS SUMMARY

In summarizing the savings figures above, the savings fall into two scenarios for calculating overall savings. In Scenario 1, we have added the savings from reduced staff time spent to maintain integrations with the additional funds available to districts for providing benchmark assessment data. In Scenario 2, we have added the total savings from each of the identified tasks, the savings from cost avoidance, and the additional funds that were made available to districts because MiDataHub assisted them in providing benchmark assessment data. These scenarios show a range of savings from $41.2 million to $41.8 million, with a per-student savings of about $29 per student in either case.

Scenario 1

Category	Savings	Savings / Student
Savings from Reduced Staff Time Spent on Integrations	$31.9 mil.	$22.31
Additional Funds Available	$9.9 mil.	$6.93
Total funds - Scenario 1	**$41.8 mil.**	**$29.24**

Scenario 2

Category	Savings	Savings / Student
Task Savings Total	$4.4 mil.	$3.10
Avoided Cost Savings Total	$26.8 mil.	$18.76
Additional Funds Available	$9.9 mil.	$6.93
Total funds - Scenario 2	**$41.2 mil.**	**$28.79**

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RETURN ON INVESTMENT

*Taking into account the cost savings scenarios and investment information detailed above, the **return on investment in dollars is between $36.2 and $36.9 million**, and the **per-student ROI is between $25 and $26**. That calculates to a percent **ROI of between 830% to 843%**.*

Scenario	Cost Savings	Savings / Student	Investment	Invest. / Student	ROI	ROI / Student	ROI %
Scenario 1	$41.8 mil.	$29.24	$4.96 mil.	$3.47	$36.9 mil.	$25.77	843%
Scenario 2	$41.2 mil.	$28.79	$4.96 mil.	$3.47	$36.2 mil.	$25.32	830%

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Summary and Recommendations

SUMMARY

As you can see from the findings, there are many lenses through which to view cost savings and the overall value and impact that MiDataHub has had on Michigan's educational ecosystem. Further, many of the categories analyzed represent an underestimate of the value and cost savings, which would lead to an even greater ROI than calculated.

ROI Accelerators

During the writing of this report, it became evident that a few items dramatically accelerated the return on investment.

1. **Commonality of data systems.** When hundreds of districts use the same system, MiDataHub can impact them all by working on a single integration that is used by all. The best way to leverage that knowledge is to identify and address all of the most common integrations needed.
2. **Solve and streamline process challenges.** Two of the most popular features used in MiDataHub are the UIC services and the Snack Pack. Those two features are not included in the integration calculations because they are technically not integrations themselves but are part of the student information system integrations. In that way, value is added on top of integrations rather than generating more integrations. Both of these features save time and provide enhanced value for processes that districts perform every day.
3. **Solving issues before they land on district plates.** While many districts had hopes that MiDataHub would reduce or eliminate the integrations they handle via other methods, districts already had an investment in a workable solution in the short term. MiDataHub has been very effective in working with new initiatives so that districts do not have to take them on to begin with. A good example of this was the benchmark assessment mandate that was a response to the COVID-19 pandemic. Other than the few who chose to do the manual work, the remaining districts never felt the full weight of the effort to comply with the legislation.
4. **Increase in actionable uses of the data.** As mentioned earlier, the ultimate goal of educational institutions is to improve student outcomes. MiDataHub has contributed to sharing data for that purpose more easily and with a focus on improved data quality to provide better data-driven decisions. MiDataHub has assisted in providing data for research, providing districts with data for new students, populating collaboratively developed software applications, and establishing processes to identify data quality issues before the data is used.

All of these accelerators allow MiDataHub to not only save money, but to deliver real value to districts.

RECOMMENDATIONS

In reviewing the comments provided by districts regarding MiDataHub's impact and the enhancements needed, a few common themes emerged as recommendations for MiDataHub to consider for the future. Focusing on these items will help MiDataHub continue to grow in usage, impact, and cost savings going forward.

- **Communication/Marketing** - In the comments, many respondents indicated they knew little about MiDataHub and its benefits for schools. In many cases, these respondents were new to their positions, while in others, they simply had not heard much about MiDataHub in their normal communication channels. While MiDataHub has become a common term for many in the Michigan educational community, we recommend that MiDataHub increase marketing and communication outreach to ensure all stakeholders have a strong awareness of all that MiDataHub does.
- **Training** - Similar to the communication and marketing recommendation, some respondents indicated feeling unprepared and unskilled in using MiDataHub. While this may be related

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to the use of ISD staff to assist districts with much of the work, there is a need for increased training opportunities for districts. Given that one size does not always fit all, we recommend a suite of training opportunities, including an updated online course in EduPaths, periodically scheduled online training, updated recordings of training sessions on the MiDataHub website, and continued expansion of the YouTube channel topics covered. While not all districts will avail themselves of these options, the variety of delivery methods and updated content will provide a great number of options. Additionally, MiDataHub should continue its efforts to have various associations include MiDataHub training requirements in their certification criteria for positions that utilize data.

- **Increase API Integration Availability** - One of the largest comments was that districts must continue leveraging their SIS and other integration mechanisms where MiDataHub does not provide an API integration. While it is ultimately the decision of a system vendor to create an Ed-Fi or OneRoster API integration, continued work is needed to provide vendor partners with the rationale for undertaking the work. Where vendor partners see connecting through the standard APIs as a win-win, they will find the time and money to complete the work needed. MiDataHub must continue to rally Michigan districts to demand API-based integrations from system vendors, work with partners like the Ed-Fi Alliance and the Ed-Fi community to aggregate demand nationally, and provide guidance to vendor partners on how to complete development in a cost-effective manner. Finally, this work should prioritize the connectivity of data systems used by the largest number of districts to maximize value.
- **Improve Student Information System Onboarding** - The most important and challenging data system to connect to MiDataHub is the district SIS. The SIS contains the largest amount of information for a school district, and without that data being easily and accurately synchronized with MiDataHub, other connections and uses that depend on the data will suffer.
- Some districts report that connecting their SIS is difficult, takes significant time, and requires too much monitoring to ensure that the data flows trouble-free. While the ease of SIS connectivity largely falls in the hands of the SIS vendor, it can negatively impact district opinions of MiDataHub and Ed-Fi. MiDataHub and the Ed-Fi Alliance must continue to work with all vendors, especially SIS vendors, to make Ed-FI API integration easier, less time-consuming, and more reliable. This can be done by facilitating end-user feedback on connectivity and encouraging vendor use of best practice guides for API Integration[13] and UI/UX[14] that have been developed by the Ed-Fi Alliance.
- **MiDataHub UI Improvements and Ease of Use** - Some survey respondents mentioned that they would like the MiDataHub Cockpit to be easier to use. While basic integration is fairly easy, some of the other steps could be made simpler. The MiDataHub team recently worked with Atomic Object to develop plans for a more modern user interface (UI), built on principles of human-centered design. We recommend developing and implementing the new UI as soon as conveniently possible.
- **Enhanced State Reporting** - State reporting was mentioned as an area to enhance by several survey respondents. In addition to making the process easier, the comments suggested working with CEPI to allow for state reporting data to be sent directly from MiDataHub, or for CEPI to be able to pull applicable data directly from MiDataHub. Finally, it was desired that all state collections come from MiDataHub without further district data manipulation.
- **Improved Report Generation** - Similar to the request for state reporting, a few districts mentioned that they would like system reports and ways to use data from MiDataHub in an actionable manner. Respondents indicated that they would like reports to be easier to navigate and to reduce the need to configure custom queries. One district indicated that they would like to see MiDataHub serve more of a data warehouse role, with the ability to generate charts, graphs, and dashboards.

13. https://edfi.atlassian.net/wiki/spaces/TNG/pages/23700360/Best+Practices+-+API+Integration
14. https://edfi.atlassian.net/wiki/spaces/TNG/pages/23700376/Best+Practices+-+UI+UX

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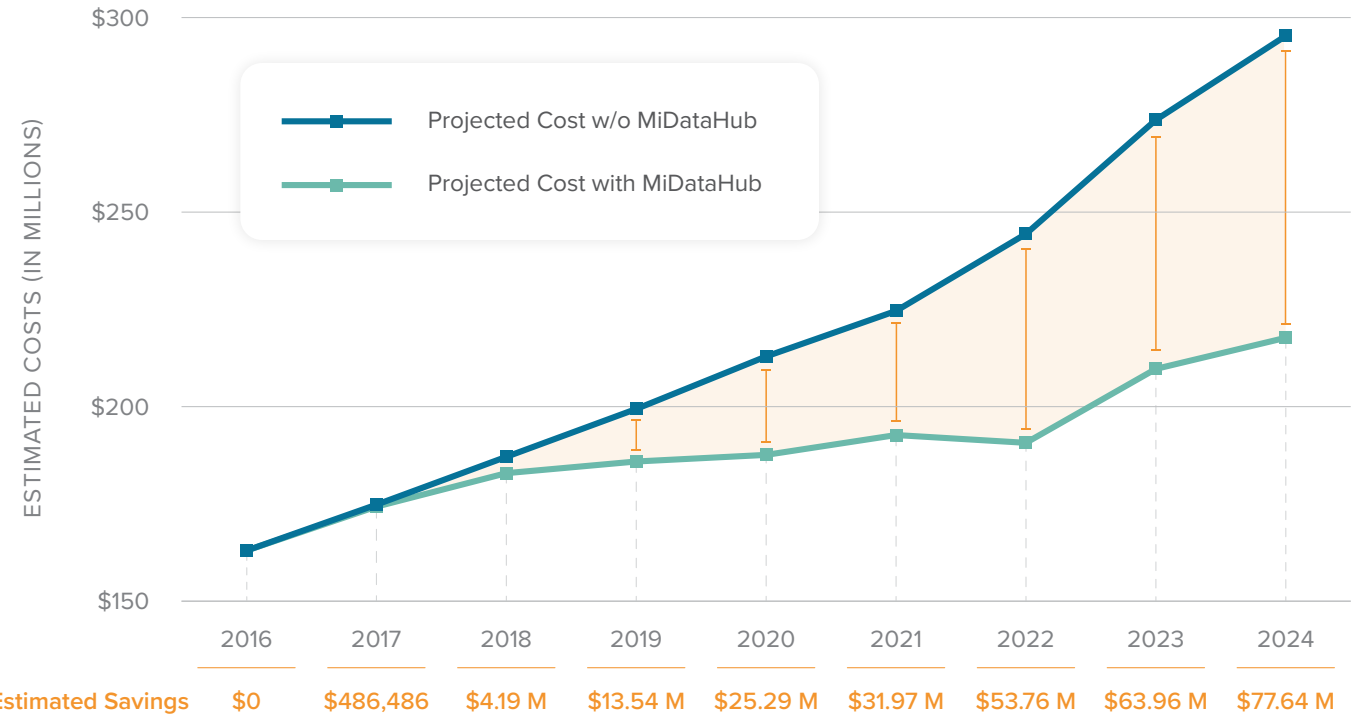
WHAT IS THE COST OF DOING NOTHING?

> *One thing to consider is what the cost would have been if MiDataHub had not been put into place. Thanks to the 2016 ROI Study, we have a starting point to explore that question. That study indicated that the total statewide cost of managing educational data was $163,000,000.*

The table in Appendix G uses the rate of inflation to identify the increase in that total cost through 2024. The model also takes into account the finding that districts are adding one new data system per year, which we have equated to one additional integration per year for 882 districts. Those integrations were added to the future year's total cost at the "Per Integration" cost listed, which also was increased by the rate of inflation.

The estimations in the table illustrate the cost savings and overall projected cost with MiDataHub in place, based on numbers of integrations reported in MiDataHub's annual reports. The integration numbers were multiplied by the $7,371 savings figure estimated in MiDataHub's annual reports to arrive at an annual savings.

Estimated Total Cost of Data Management Statewide Without MiDataHub



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Estimated Savings	$0	$486,486	$4.19 M	$13.54 M	$25.29 M	$31.97 M	$53.76 M	$63.96 M	$77.64 M

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From the table in **Appendix G**, we can see that, unchecked, the total integration cost would grow to over $295,000,000, and the per integration cost would grow to $12,340.

> *With MiDataHub in place, the total cost reduces by over $77M to just under $218M.*

MiDataHub integrations this year were estimated at $3,711 each, and even the non-MiDataHub integrations were estimated at $7,532, which is still far less than the $12,340 projected in the table. This shows that MiDataHub has truly provided significant cost savings to Michigan districts while providing increased value in terms of data quality, data access, and use of data to improve education.

Appendices

APPENDIX A: DISTRICT SURVEY

APPENDIX B: DISTRICT SYSTEM INVENTORY SCREENSHOTS

APPENDIX C: MICHIGAN DATA HUB EXPENDITURES AND ACCOMPLISHMENTS BY FISCAL YEAR

APPENDIX D: COMMON INTEGRATIONS USED IN MIDATAHUB

APPENDIX E: STAFF COMPENSATION ASSUMPTIONS

APPENDIX F: EPIC RESEARCH STUDIES USING MIDATAHUB PROVIDED DATA

APPENDIX G: ESTIMATED COST OF DATA MANAGEMENT STATEWIDE WITHOUT MIDATAHUB

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Appendix A
District Survey

ROI Study 2.0 Data Collection Survey

Not shared

* Indicates required question

Name of person completing this survey *

Your answer

Email address of person completing this survey *

Your answer

District name *

Your answer

5-Digit District Code (EEM Code) for your District *

Your answer

Approximately how much time did it take your district to configure the **Student Information System (SIS)** data integration with MiDataHub? *

- ◯ Less than 1 day
- ◯ 1-5 Days
- ◯ 1-3 Weeks
- ◯ Longer than 1 month

Approximately how much time did it take your district to configure the **non-SIS** data integration with MiDataHub? *

- ◯ Less than 1 day
- ◯ 1-5 days
- ◯ 1-3 weeks
- ◯ Longer than 1 month

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How many of your district personnel were actively involved in carrying out the integration configurations with MiDataHub? *

- ◯ Zero
- ◯ Less than 1 FTE
- ◯ One FTE
- ◯ More than 1 FTE

What was the interaction level required for this effort? *

- ◯ Less than half-time per day throughout the integration duration to populate MiDateHub
- ◯ Nearly full days throught the integration duration to populate MiDataHub

How many of your district data systems have been integrated with MiDataHub? *

Your answer

How many of your district personnel are actively committed to maintaining data system integrations **(both Data Hub and non-Data Hub)** today? *

- ◯ Less than 1 FTE
- ◯ One FTE
- ◯ 2-3 FTE
- ◯ More than 4 FTE

Of those, how many are dedicated to **non-Data Hub** integrations? *

- ◯ Zero
- ◯ Less than 1 FTE
- ◯ One FTE
- ◯ 2-3 FTE
- ◯ More than 4 FTE

Comparing this school year with approximately 5-years ago, how many different data systems do you estimate your district students and staff log into during the school year (consider all management and instructional systems)? *

	1-10	11-20	21-30	31-40	41-50	51+
This year (2023-24)	◯	◯	◯	◯	◯	◯
5 Years ago (2018-2019)	◯	◯	◯	◯	◯	◯

Of the systems referenced above, and continuing to compare this school year with approximately 5 years ago, how many of the systems have their own separate user id and password (no single sign-on approach)? *

	1-10	11-20	21-30	31-40	41-50	51+
This year (2023-24)	◯	◯	◯	◯	◯	◯
5 Years ago (2018-2019)	◯	◯	◯	◯	◯	◯

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Which of the following systems does your district log into via the MiDataHub Single Sign-On (SSO)?

- [ ] Algebra Nation/Math Nation
- [ ] Edupaths
- [ ] MAISA Events Portal
- [ ] MICIP
- [ ] MiDataHub/MiLaunchpad
- [ ] MiEWIMS
- [ ] MiRead/MiRead Admin Console
- [ ] MiStrategyBank
- [ ] Xello/Career Cruising
- [ ] Other:

Prior to the Data Hub services, how much time had your district spent per school year on the following activities? *

	0-20 hours	21-40 hours	41-80 hours	81-120 hours	121-160 hours	More than 160 hours	My district did not do this activity
Data integration configurations	○	○	○	○	○	○	○
Providing district data for loading into an additional system	○	○	○	○	○	○	○
Providing district data for legislative mandates/requests	○	○	○	○	○	○	○
UIC management (confirmation, retrieval, creation, correction)	○	○	○	○	○	○	○
User authentication management (for web application logins)	○	○	○	○	○	○	○
System data quality issue detection	○	○	○	○	○	○	○
Data validation/correction cycle for MSDS	○	○	○	○	○	○	○
Requesting information for newly enrolled students (CA60, state assessments, direct certification, etc.)	○	○	○	○	○	○	○

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Via the use of the Data Hub services, how much time does your district now spend per school year on the following activities? *

	0-20 hours	21-40 hours	41-80 hours	81-120 hours	121-160 hours	More than 160 hours	My district does not use this Data Hub service
Data integration configurations	○	○	○	○	○	○	○
Providing district data for loading into an additional system	○	○	○	○	○	○	○
Providing district data for legislative mandates/requests	○	○	○	○	○	○	○
UIC management (confirmation, retrieval, creation, correction)	○	○	○	○	○	○	○
User authentication management (for web application logins)	○	○	○	○	○	○	○
System data quality issue detection	○	○	○	○	○	○	○
Data validation/correction cycle for MSDS	○	○	○	○	○	○	○
Requesting information for newly enrolled students (CA60, state assessments, direct certification, etc.)	○	○	○	○	○	○	○

In what ways has the use of MiDataHub specifically impacted your district over the last year?

Your answer

In what ways could the MiDataHub service be enhanced to provide greater value to your district?

Your answer

Submit Clear form

Never submit passwords through Google Forms.

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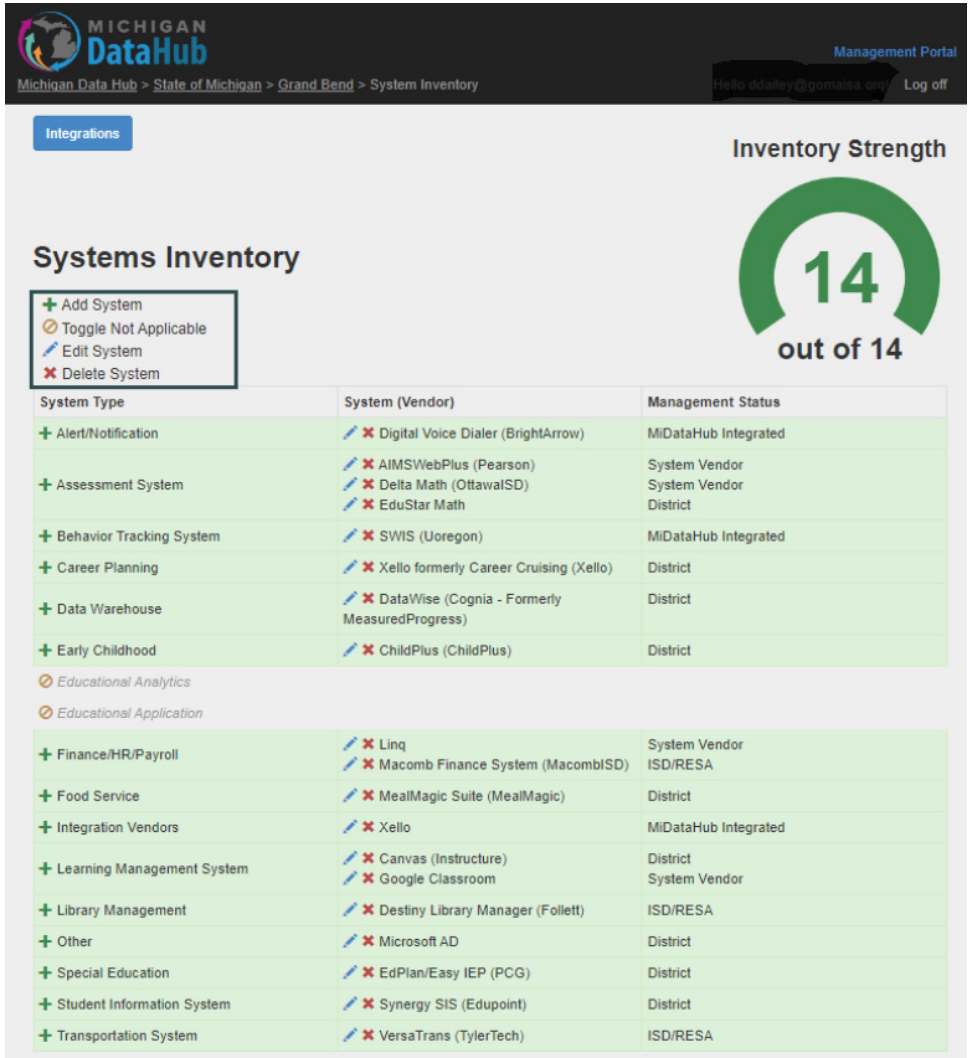
Appendix B
District System Inventory Screenshots



System Type	System (Vendor)	Management Status
Alert/Notification	Digital Voice Dialer (BrightArrow)	MiDataHub Integrated
Assessment System	AIMSWebPlus (Pearson) Delta Math (OttawaISD) EduStar Math	System Vendor System Vendor District
Behavior Tracking System	SWIS (Uoregon)	MiDataHub Integrated
Career Planning	Xello formerly Career Cruising (Xello)	District
Data Warehouse	DataWise (Cognia - Formerly MeasuredProgress)	District
Early Childhood	ChildPlus (ChildPlus)	District
Educational Analytics		
Educational Application		
Finance/HR/Payroll	Linq Macomb Finance System (MacombISD)	System Vendor ISD/RESA
Food Service	MealMagic Suite (MealMagic)	District
Integration Vendors	Xello	MiDataHub Integrated
Learning Management System	Canvas (Instructure) Google Classroom	District System Vendor
Library Management	Destiny Library Manager (Follett)	ISD/RESA
Other	Microsoft AD	District
Special Education	EdPlan/Easy IEP (PCG)	District
Student Information System	Synergy SIS (Edupoint)	District
Transportation System	VersaTrans (TylerTech)	ISD/RESA

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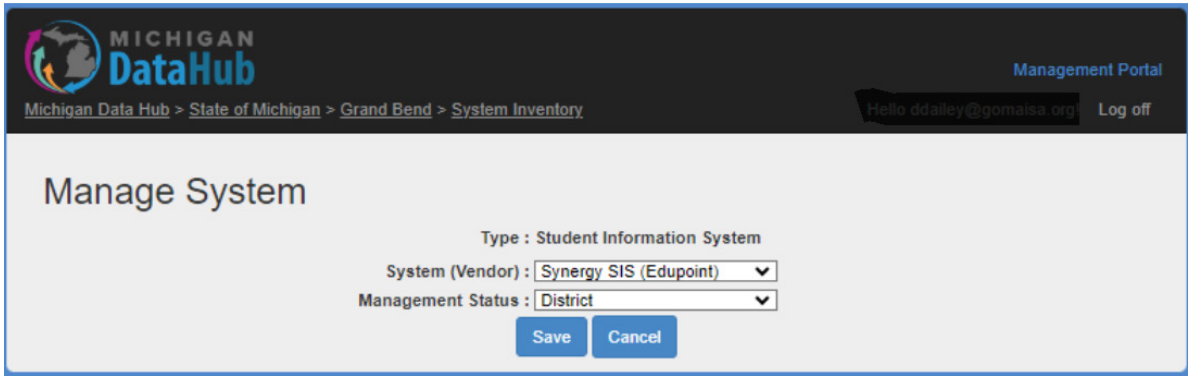
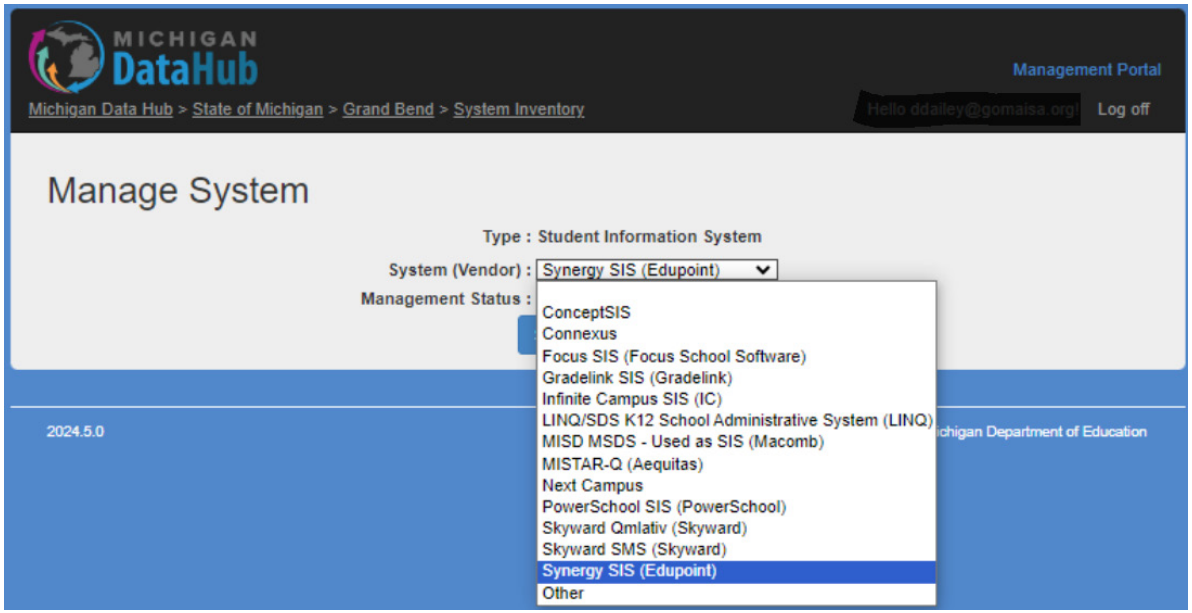
Appendix B: District System Inventory Screenshots (continued)





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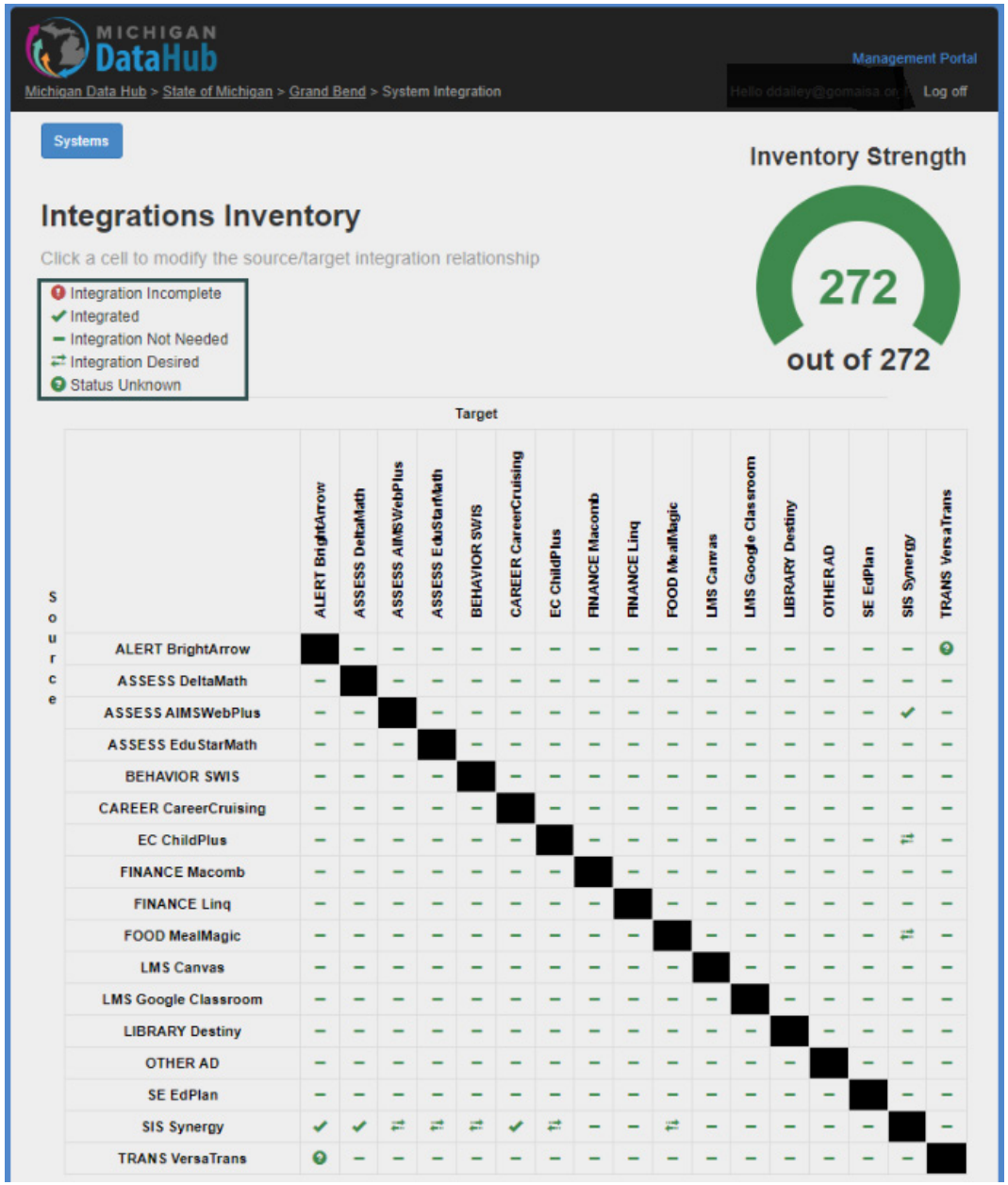
Appendix B: District System Inventory Screenshots (continued)



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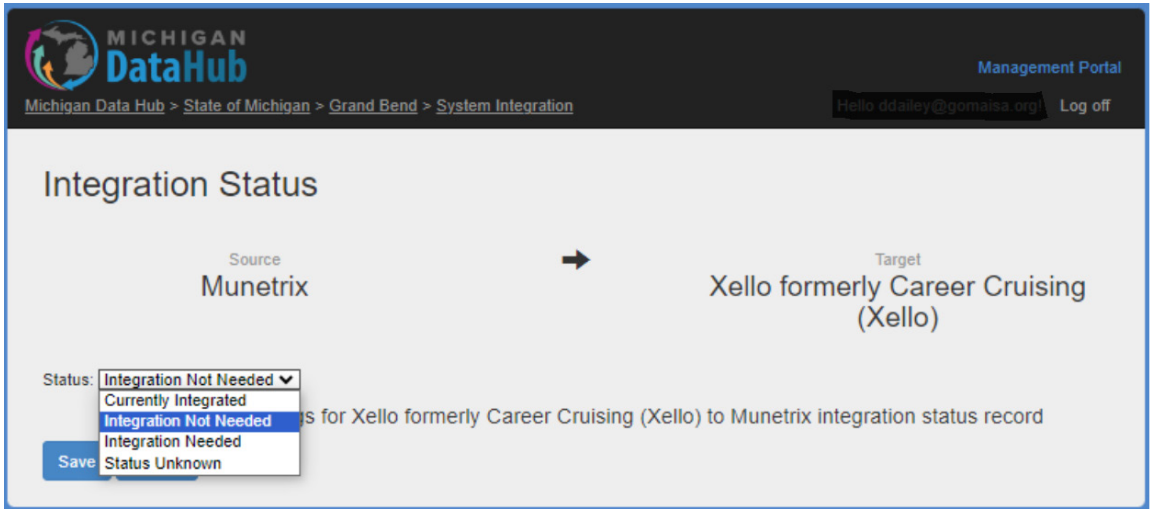
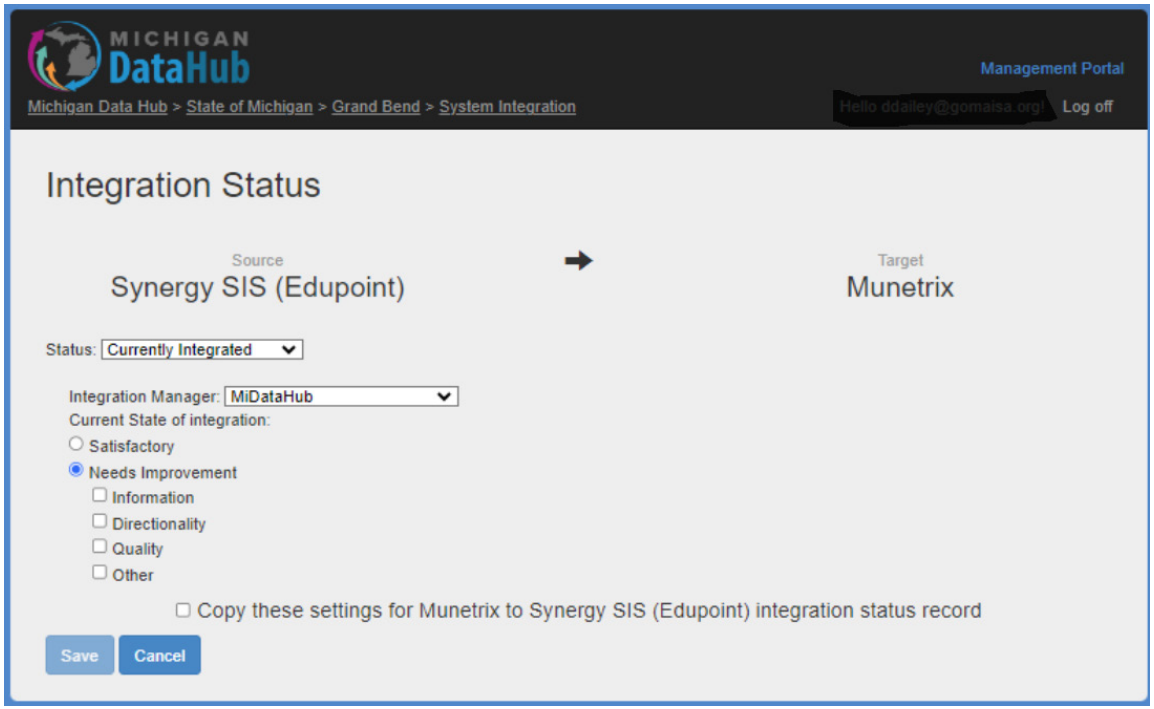
Appendix B: District System Inventory Screenshots (continued)





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Appendix C
MiDataHub Expenditures & Accomplishments by Fiscal Year

The table below shows the Michigan Data Hub expenditures and accomplishments by fiscal year. The expenditures were sourced from the MiDataHub budget files; the first four years of accomplishments are linked to the TRIG Final Reports, while the remaining years are linked to the legislative reports filed by the MiDataHub team.

Year	Expenditures	Accomplishments
2013 - 2014	$533,659	• Identified SIS, Assessment, Data Warehouse, and Special Education systems to integrate • Began development of those connectors • Created pilot data hub at Kalamazoo RESA around the Ed-Fi Alliance Solution • Contracted with Double Line (now LearningMate/Double Line) to develop a virtual Cockpit application • Developed legal agreements for data hosting and contracted access to data • Created a repository of information for the project • Selected pilot districts Identified data hub hosts in each region
2014 - 2015	$2,054,400	• Production hub environment in place at KRESA and Oakland, with Copper Country, Kent, and Macomb in process • Synchronization process created to keep data hubs consistent • Functioning Cockpit with the ability to send/receive Ed-Fi v 1.2 XML to/from any enabled application • SIS Connectivity was established to four vendors (eSchoolPlus, MISTAR, PowerSchool, and Skyward) for testing with nine total pilot districts providing data • Ed-Fi Dashboards deployed for two pilot districts as proof of concept • Reporting capability provided in data hubs with several initial reports created • Created a single sign-on (SSO) envisioning report and began development of statewide SSO • Worked with Michael & Susan Dell Foundation to develop the System of Authority specifications needed to control multiple systems writing to the hub, utilizing their grant funding • Established dialogs with many agencies and organizations (CEPI, MDE, MASA/MAISA, MASSP) around aligning the data hubs with their work

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Appendix C: MiDataHub Expenditures & Accomplishments by Fiscal Year (continued)

Year	Expenditures	Accomplishments
2015 - 2016	$2,000,000	• Five data hubs fully deployed and functional, with Ed-Fi 2.0 XML and API • Five of six SIS systems integrated • One alert product certified for integration and several others in testing • 20 districts live at EOY on three hubs • Extensions created for MSDS, REP, FID and EEM • Successfully piloted dynamic link to MDE/M-STEP test results for three districts • SSO Integration for EUPISD region completed • ROI Study completed showing potential of $56M in savings on total cost of $163M • Numerous trainings and presentations for districts and support specialists • Dashboards deployed in test environment and integrated with the SSO • Sustainability plan created
2016 - 2017	$2,200,00	• Five data hubs fully functional • Six Student Information Systems integrated • 153 Districts with live data in the hubs • Three Certified integrations (BrightArrow, Career Cruising, USA Scheduler) • Two Integrated state initiatives (MiLEARN and MiExcel) • Ability to generate MSDS files and run CEPI error checks against district data • Free dashboard and early warning System (EWS) available to all districts with live data • MTRAx integrated with MiDataHub single sign-on for easy access between systems • $2.2M of continued funding provided for in Section 22m will allow for future progress

Appendix C: MiDataHub Expenditures & Accomplishments by Fiscal Year (continued)

Year	Expenditures	Accomplishments
2017 - 2018	$2,160,589	• Profile Implementation • ODS Data Anonymizer • State Reporting Modifications for 2016-17 • Custom Export Tool • Google and Active Directory Account Creation • Ed-Fi Dashboard ETL performance enhancements • Central Cross-Hub Cockpit Management • District Ability to Activate FIM Sync • Integration of Intervention Data between ODS and IC • Data Cockpit Modifications and Enhancements – Ability to delete an integration – Display years of created ODSs – Tool for namespace prefix on security/vendor configuration + report – Ability to add/close district – SFTP remote site configuration – Test Connection feature – Ability to run Maintenance Scripts – District Activity Log ODS Reset feature – Launch Pad for SSO-integrated Applications • Dashboard Landing Page • Google Federation with MiDataHub ADFS for Algebra Nation • NWEA Plugin

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Appendix C: MiDataHub Expenditures & Accomplishments by Fiscal Year (continued)

Year	Expenditures	Accomplishments
2018 - 2019	$2,443,559	• OneRoster Integration • Michigan Data Exchange • "Feature" functionality suite – need info on how to best use • Enhancement of EEM data load • Import CSVs for Pearson/AimsWeb and DIBELS data • Region-level Activity Log • Enable Log Analysis – API Integration screen • Extensions – Course Requests and Next-Year School • MSDS updates for 2017-18 • CEPI UIC services integration
2019 - 2020	$2,200,000	• MiDataHub – One Statewide "HUB" • Upgrade Ed-Fi ODS / API to v2.4 • Renaissance Learning / STAR Assessments CSV integration • SWIS CSV integration • OneRoster API Assessment 'write' capability • UserName management via Data Cockpit • Skeleton for integration statistics – visuals would be ideal • At-A-Glance Report enhancements – how best to inform SIS of data population status/results? • Enhancements to Custom Export Tool • Alerts/Notifications Framework + Identified Alerts • MSDS Count Day Database – UI – ETL Data Load – Modifications to MSDS utilities (Extractors, Rules Engine, Error Checks, Collection Comparer, SSRS Reports) • Descriptor Mapping Application • CEPI SnackPack service integration

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Appendix C: MiDataHub Expenditures & Accomplishments by Fiscal Year (continued)

Year	Expenditures	Accomplishments
2020 - 2021	$2,239,138	• Upgrade Ed-Fi ODS / API to v3.x • Application Username Retrievability as LoginId for OneRoster • MiMTSS Agreement & API-based Retrievability • MiDataHub SSO Management Tool • Open Badges 2.0 Import • Cascading Delete for Student/Staff • MICIP Readiness Check • Translate MSDS XML into Ed-Fi XML to seed ODS via Inbound Integration – (MSDS Import) • Ability to manage activation of System Integrations • Data Cockpit upgrades for Ed-Fi ODS / API v3.x • Management Portal • Implementation of Ed-Fi Analytics Middle Tier • OneRoster Configuration
2021 - 2022	$2,252,762	• MSDS Pilot support • Enrollment Transfer • Concurrent Enrollment • Capture of Mode of Instruction • Support for MiDX • Proof-Of-Concept for MISchoolData Student Enrollment Counts Report • Dynamic Data Dictionary • Product Profile Definition Collection

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Appendix C: MiDataHub Expenditures & Accomplishments by Fiscal Year (continued)

Year	Expenditures	Accomplishments
2022 - 2023	$2,200,000	• MSDS State Reporting Pilot support • Enrollment Transfer functionality • Concurrent Enrollment functionality • Collection of Mode of Instruction data for state reporting • Enhancements and support for MiDX • Proof-Of-Concept for MISchoolData Student Enrollment Counts Report • District Data Governance Tool functionality • Dynamic Product Catalog • Feature Manifest for Data Validation functionality
2023 - 2024	$3,500,000	• Funding increase to 3.5 Million through School Aid Act • Increased staffing • Transition to new Director • Upgrade from Ed-Fi 3.1 to 6.2 • OneRoster Certification Renewal • Move to MiServiceDesk for Support • Integration with tutoring vendors in support of 23g MiKidsBackOnTrack

Appendix D
Common Integrations Used in MiDataHub

Integration Type	System Type	System Name	Count
APIIntegration	State-Sourced System	EEM	875
APIIntegration	Educational Analytics	Benchmark Assessment Mandate Aggregation	841
InboundIntegration	Assessment System	Measures for Academic Progress [MAP] Distributed	681
APIIntegration	State-Sourced System	Assessment Importer	608
APIIntegration	Educational Analytics	Read by Grade 3 Research	567
APIIntegration	Data Warehouse	EVAAS	491
APIIntegration	Student Information System	PowerSchool	462
APIIntegration	Behavior Tracking System	BHWorks	301
OutboundIntegration	External System	MiLEARN	292
APIIntegration	Data Warehouse	Eidex Insights	289
APIIntegration	Data Warehouse	Munetrix	254
InboundIntegration	Educational Analytics	Mode Of Instruction	202
APIIntegration	Educational Analytics	Transitional Kindergarten Study	182
InboundIntegration	Student Information System	MSDS as SIS	176
APIIntegration	Student Information System	Skyward Student Suite	163

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Appendix D: Common Integrations Used in MiDataHub (continued)

Integration Type	System Type	System Name	Count
APIIntegration	Career Planning	Xello	162
InboundIntegration	Assessment System	Star Combined	100
APIIntegration	Assessment System	DRC Smarter Balanced Assessments	85
APIIntegration	Assessment System	i-Ready	82
APIIntegration	Assessment System	Delta Math	77
APIIntegration	Student Information System	MISTAR	74
APIIntegration	Student Information System	Infinite Campus	51
APIIntegration	Educational Analytics	Partnership District Data Analysis	51
APIIntegration	Student Information System	Synergy	50
		Total	**7116**

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Appendix E
Staff Compensation Assumptions

This study assumes three levels of staff compensation for the calculations where staff salaries are involved. Most of the calculations are tied to a Technology Director, who would be in charge of handling higher-level processes, such as data configuration and overseeing data quality strategy for the district. The clerical/entry job listed was used for calculations pertaining to work handled by a school secretary or data entry person. Finally, where a mix of job titles might apply to the work, a blended rate averaging the two jobs was computed. Each calculation involving staffing rates is noted as technical, clerical or blended.

Job	Rate/Hr	Total Salary & Benefits
Tech Director	$65	$135,200
Clerical/Entry	$35	$72,800
Blended	$50	$104,000

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Appendix F
EPIC Research Studies Using MiDataHub Provided Data

The information below was provided by the Education Policy Innovation Collaborative (EPIC) as a summary of research studies derived in part from MiDataHub provided data.

1. Mandated reports and studies based directly on Return to Learn and subsequent legislation around benchmark assessments, such as:
    1. https://epicedpolicy.org/mi-2022-23-benchmark-assessments/ (the sample size information is on page 4 of the report/page 13 of the PDF)
    2. https://epicedpolicy.org/mis-2020-21-and-2021-22-benchmark-assessments/
    3. https://epicedpolicy.org/michigans-fall-2021-benchmark-assessments/
    4. https://epicedpolicy.org/k-8-student-achievement-and-achievement-gaps-on-michigans-2020-21-benchmark-and-summative-assessments/
    5. https://epicedpolicy.org/michigans-2020-21-benchmark-assessments/
    6. https://epicedpolicy.org/wp-the-path-of-student-learning-delay-during-covid-19/ and https://epicedpolicy.org/pol-br-the-path-of-student-learning-delay-during-covid-19/
2. Other studies that use benchmark assessment for analyses, such as:
    1. https://epicedpolicy.org/wp-content/uploads/2022/09/Yr4_PartnershipRpt_Full.pdf
    2. An upcoming academic paper on the impact of retention eligibility and decisions under the Read by Grade Three law
3. Studies that used MiDataHub for contact information to conduct surveys to educators, such as:
    1. Our evaluation of Michigan's Partnership Model of school turnaround conducts annual surveys of educators in Partnership districts. We utilize MiDataHub to supplement contact information for educators, and we use the results broadly across the project, such as:
        i. https://epicedpolicy.org/wp-content/uploads/2023/10/Partnership_HumanCaptialReport_Oct2023.pdf
    2. Our evaluation of Michigan's Read by Grade Three law conducted annual surveys of K-5 educators and coaches. We utilize MiDataHub to supplement contact information for educators, and we use the survey results broadly across the project, such as:
        i. https://epicedpolicy.org/elementary-ela-curriculum-resources-in-mi-trends-from-2019-2023/
        ii. https://epicedpolicy.org/rbg3-year-two-report/

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Appendix G

Estimated Cost of Data Management Statewide Without MiDataHub

	2016	2017	2018	2019	2020	2021	2022	2023	2024
Projected Cost w/o MiDataHub	$163.0 M	$174.8 M	$187.1 M	$199.4 M	$212.9 M	$224.6 M	$244.4 M	$273.7 M	$295.3 M
Per Integration	$9,533	$9,733	$9,938	$10,126	$10,359	$10,484	$10,976	$11,854	$12,340
Rate of Inflation	2.10%	2.10%	1.90%	2.30%	1.20%	4.70%	8.00%	4.10%	3.00%
Increase in Integrations	882	882	882	882	882	882	882	882	882
Added Integration Cost	$8.41 M	$8.59 M	$8.77 M	$8.93 M	$9.14 M	$9.25 M	$9.68 M	$10.46 M	$10.88 M
MiDataHub Integrations	0	66	569	1,837	3,431	4,337	7,293	8,677	10,533
MiDataHub Estimated Savings	$0.00	$486,486	$4.194 M	$13.54 M	$25.29 M	$31.97 M	$53.76 M	$63.96 M	$77.64 M
Projected cost with MiDataHub	$163.0 M	$174.3 M	$182.9 M	$185.9 M	$187.6 M	$192.7 M	$190.7 M	$209.7 M	$217.7 M

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