CENTER FOR EDUCATIONAL
PERFORMANCE AND INFORMATION

CEPI Transformation Vision & Roadmap

MiDataHub Conference
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Today's Agenda

0 Project Context

1 State Data Needs and CEPI's Vision

- *What are Michigan's data needs?*
- *What is CEPI's role in Michigan's data ecosystem?*

2 Current State Findings

- *How is CEPI operating and providing services today?*
- *What are its challenges and strengths and the implications on its workforce and stakeholders?*

3 Target State and Roadmap Recommendations

- *How can CEPI transform its digital services and organizational capabilities?*
- *What is CEPI's proposed path?*

4 Target State Architecture

- *What workforce investments and collaboration models are necessary to do this successfully?*
- *What are the budget implications?*

5 MiDataHub Collaboration Recommendations

- *What workforce investments and collaboration models are necessary to do this successfully?*
- *What are the budget implications?*

Today's Central Objective

Develop an understanding of the scope of the transformation that CEPI is proposing and the implications for the MiDataHub

Guidehouse Project Overview & Context

MICHIGAN CEPI BUSINESS ALIGNMENT PLANNING

As the State's knowledge-hub for education data, CEPI is defining a go-forward roadmap to help deliver against the organization's 2023 strategic vision and continue its commitment to Michigan's students and educators. This action plan will need to address existing infrastructure, processes, and resourcing challenges to align key initiatives and investments with CEPI's strategic vision. Operationalizing CEPI's strategic vision will require deep analysis of the current environment against their strategic goals to identify, design, and document an alignment plan and operational roadmap to serve as a detailed implementation guide and investment planning resource for the next 10 years.

THE APPROACH

CEPI has partnered with Guidehouse to support the development of this plan and roadmap. During this engagement, Guidehouse will conduct a deep-dive into the current state at CEPI to better understand where the organization is today compared to where it wants to be moving forward. Taking this current state understanding, Guidehouse will work closely with CEPI and its key partners to develop a roadmap to operationalize the strategic goals.

DESIRED OUTCOME

The analysis and subsequent roadmap that will come from this work is intended to support CEPI in achieving their strategic goals and provide the organization with the tools they need to make the plan actionable moving forward.

PHASES OF WORK

1 **Current State Assessment**
How does CEPI's current environment compare to the organization's strategic vision?

2 **Refined Business Strategy & Technology Roadmap**
What are the key initiatives and priorities that CEPI needs to address to achieve the strategic vision?

3 **Final Roadmap & OCM Strategy**
What change management tactics must be employed for successful alignment?

1 State Data Needs and CEPI's Vision

What are Michigan's data needs?

What is the role of CEPI in Michigan's data ecosystem?

STATE DATA NEEDS AND CEPI'S VISION

As the State's approach to data and insights evolves, CEPI will play an increasingly critical role in supporting this expanding data ecosystem

Evolving Demands and Expectations

Demands on education data continue to grow as data driven insights are seen as an increasingly valuable tool for addressing the State's most pressing challenges – particularly those related to education and economic outcomes.

MiLEAP *"Cradle to Career"*

The establishment of MiLEAP is an example of this trend as it puts cross sector collaboration and data at the center of policy and program development across developmental stages.

FEDERALLY MANDATED & COMPLIANCE DATA

Collected and used for securing appropriate school funding and tracking education performance across the State

- CEPI

EDUCATION DATA ANALYTICS & INSIGHTS

Analyzed to identify education trends, track student performance, identify indicators of performance, and support education-related decision making

- CEPI
- MDE
- MILEAP

INTERDISCIPLINARY ANALYTICS & INSIGHTS

Merged with health and economic data to build an interdisciplinary understanding of State outcomes and identify key trends and indicators for health, economic, and education outcomes

- CEPI
- MDE
- CENTER FOR DATA & ANALYTICS
- P20W+ COUNCIL
- MILEAP

STATE DATA NEEDS AND CEPI'S VISION

As CEPI has evolved and continued to drive excellence, demands and expectations from stakeholders have grown

CEPI's operational outputs and delivery expectations are extensive and expanding

CEPI COLLECTION RESPONSIBILITIES EXPAND

The State's growing interest in the connections between early learning, K-12, postsecondary, and workforce outcomes is expanding CEPI's data collection scope to cover the full range of P20W+

AD-HOC REQUESTS CONTINUE TO GROW

CEPI staff at all levels frequently field requests for additional data pulls from agency and research partners with requests increasing in complexity and expectations around turnaround time and depth of analysis growing

STAKEHOLDERS WANT GREATER AND FASTER DATA INSIGHTS

End data consumers are looking for faster access to data insights and greater depth in analysis, including new delivery mechanisms such as data storytelling and reports that appeal to users with different data literacy levels (particularly for longitudinal and outcome data)

MI SCHOOL DATA PORTAL REPOSITORY IS EXPANDING

The 2019 re-design has greatly increased the utility of the Portal and ongoing transition to Power BI allows for more dynamic reporting that includes greater self-service features

STAKEHOLDER DEMANDS

At-A-Glance

Top 5 Topics of Interest for Portal Consumers
(2019 Re-design Survey)

1. Entity Comparisons (K-12)
2. Academic Performance / Assessments
3. Cohorts of Students Over Time (P20-W)
4. Student Groups *(e.g., demographics, special populations, financial aid)*
5. Inputs Tied to Outcomes

55+

# of fulfilled ad-hoc requests from MDE, SBO, governor's office and the Legislature, among others

469+

# of reports (e.g., ad-hoc, researchers, LDU / non-LDU Portal extracts)

STATE DATA NEEDS AND CEPI'S VISION

CEPI today and its longer-term ambitions help to drive change in the role and impact of data

CEPI'S MISSION

REDUCE DATA COLLECTION BURDENS

Facilitate efficient data gathering to reduce the administrative overhead for reporting entities while ensuring student privacy

INCREASE EFFICIENCY STATEWIDE

Help schools comply with federal and state reporting requirements and work to eliminate collection and reporting redundancy

TRANSFORM EDUCATION DATA

Connect data in powerful ways to help parents, educators, and policymakers make decisions that can improve student outcomes

CEPI'S TARGET STATE ASPIRATIONS

It is easier for data from across Michigan to be collected and processed

Processes to collect, process, analyze, and consume data are streamlined and provide an enhanced service experience

Greater data access and insights play a critical and invaluable role in Michigan's education policy, system, and outcomes

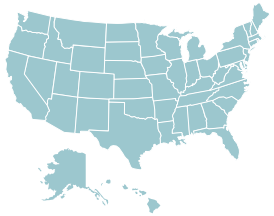
CEPI'S MODERNIZATION TARGET STATE VISION

A ***stronger***, ***technology-enabled***, and ***standards aligned*** CEPI enables more effective and efficient collection and consumption of data across Michigan's education system and government agencies

STATE DATA NEEDS AND CEPI'S VISION

Across the country, states are investing in data ecosystem modernization and expanding P20W+ analytic capabilities[1]

What we are seeing across the country



States are investing, undertaking large initiatives such as:

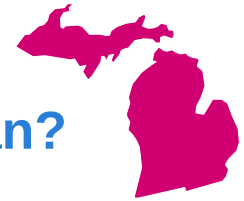
- Ground up building of data ecosystems
- Replacing legacy applications with user-centered and more unified services
- Delivering new self-service analytic tooling
- Expanding data analytic and data science capacity
- Training up their workforce – raising data literacy and data skills competencies

Peer State Spotlight: California and its "Cradle to Career" Initiative[2]

$30M+
Budget Allocation

California has established a new office developing a newly integrated education data system, with plans to include extensive data products and experiences that address a wide array of stakeholder needs. This undertaking alone is viewed **as just one component of broader efforts** to build out their data capabilities and user services.

What does this mean for Michigan?



- **Peer Group:** CEPI's vision and proposed efforts for modernization are in line with peer states
- **National Working Group and Collaboration:** There is a cohort to leverage as accelerators and supports as it moves forward
- **Navigating Complexity:** As a multi-SIS[3] and decentralized state, Michigan faces a high complexity scenario (relative to most peer states), and will benefit from learnings and resources from others

[1]*P20W+= Preschool, K12, postsecondary and workforce data (field of longitudinal and integrated data analysis)*
[2]*Source: California's Legislative Analyst's Office (LAO)*
[3]*Student Information System*

2 Current State Findings

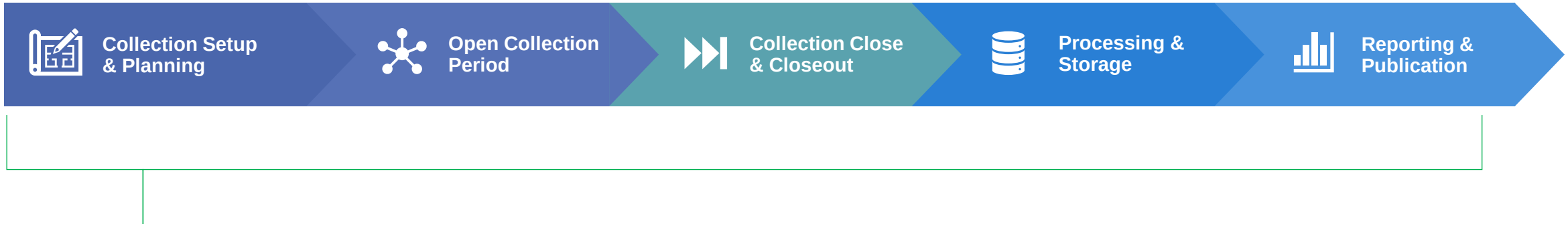
How is CEPI operating and providing services today?

What are key challenges CEPI is facing and the implications on its workforce and stakeholders?

CURRENT STATE FINDINGS

CEPI's complex web of processes meet the needs of today, but may be vulnerable when tested with more significant changes on the horizon

From data collection, through reporting and publication, CEPI is responsible for numerous key processes that enable the quality education data and insights to flow across Michigan education and government stakeholder landscape. Together, these processes create a complex web of coordination and workflows that are essential to achieving the organization's mission.



Elements of CEPI Processes:

- Digital services and technology intensive
- Reliant on dedicated functional specialization
- Involves multiple hand-offs with DTMB partners
- Requires institution knowledge to navigate
- Patchwork of use cases developed overtime

Operational Implications

The delicate balance of hand-offs, functional specialization, and technology reliance can make CEPI processes vulnerable to small changes and evolutions that can disrupt the process and cause a chain reaction.

As stakeholder and data requirements change and the technology landscape ages and shifts, CEPI's processes too will need to grow and evolve.

CURRENT STATE FINDINGS

CEPI has grown significantly, but incrementally over time, generating many single use case applications, workflows, and data products

As data complexity, data volume, use cases, user needs the ability to **scale** collection, integration, and analysis services will become especially critical. To do this, a robust capability offering spanning governance, processes, technology, and people must be in place.

CEPI in 2010

CEPI supported one component of P20W+ data continuum, with a focus on federal reporting compliance.

P20W+ Continuum

8
Collections across the calendar year

5
Collection systems to be managed

MI School Data

Limited reports and information architecture

CEPI in 2024

CEPI now supports array of data, customers, and applications, with strong specialization present across the organization.

P20W+ Continuum

37
Collections across the calendar year

3K+
Entities submitting data

100+
MI School Data Portal reports

11
Collection systems to be managed

~1400
Databases storing CEPI data

7
Terabytes of data storage in use

Operationally supported

Not operational supported

[1]*Includes both education, staffing, and operational data collections*
[21]*Includes both education, staffing, and operational data collections*

CURRENT STATE FINDINGS

The current technical ecosystem is largely stable, but limiting

The technology architecture operates within a complex, easily broken point-to-point ecosystem that was developed over a 20+ year period. The cost to maintain and limitations on user experience, process efficiencies, and data quality controls inhibit the organizational transformation sought by CEPI. **Both CEPI and DTMB leadership and staff recognize the need for significant investment in modernizing and overhauling the present environment.**

PAST

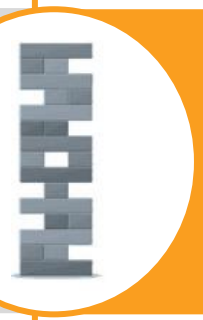
Technical infrastructure was built brick by brick

Initial Use Case Alignment

Systems were largely custom developed and built to address particular use cases and requirements.

Key Root Cause: A larger strategy and architecture did not set controls on configuration, governance, development, and documentation.

PRESENT



Infrastructure and processes strain to support increasing demands

Stressing Capabilities and Requirements

The volume of data, users, and applications has steadily increased, creating new demands, requirements, and performance strains.

System complexity and variation limits integration capabilities and the viability of large-scale and cost-effective enhancements.

FUTURE

Systems become increasingly fragile and limiting

Limiting Performance and Driving Greater Risks

Expanding requirements and demands will continue to outpace O&M and enhancements possible by DTMB, making management of the aging infrastructure bear increasing cost, risk, and performance challenges.

CURRENT STATE FINDINGS

CEPI's current technology and processes are not optimized to drive modernization efforts at scale

People

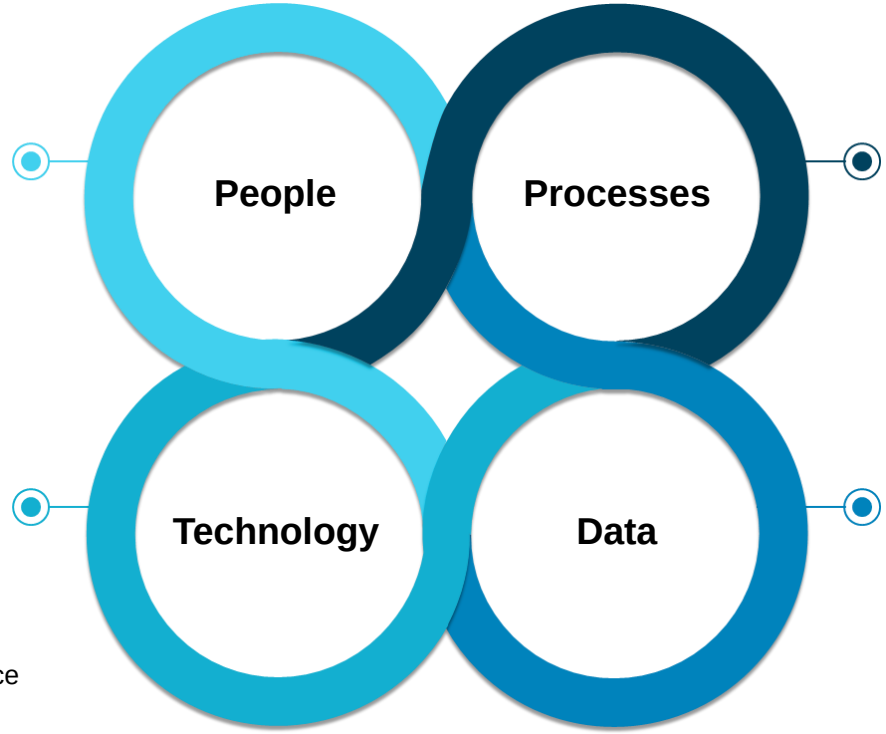
Ever-increasing demands on a siloed workforce

- CEPI has a committed workforce with strong expertise but is staffed for operations and constrained by the extending window of collection '*busy seasons*'
- CEPI and DTMB have a largely effective relationship when concentrating on O&M support
- Work siloes and process/tech-driven frictions exist between DTMB and CEPI, that hinder collaboration and culture building

Technology

Aging and disparate technology systems

- Limited collection app functionality inhibits user experience
- Significant technical debt hinders the utility and management of legacy applications
- Applications are siloed, creating complex and time-intensive integration and data processing steps
- The MSLDS does not provide a full reporting layer and support current reporting requirements



Processes

Well-established, but manual processes

- Data collection processes are rigorous and well established across CEPI and have been largely effective in supporting the mission to date
- Modernization efforts and growing responsibilities will make collection more complex and siloed process ownership less sustainable and exacerbate current vulnerabilities

Data

Growing strain on existing services

- Data moves through CEPI's aging technology landscape with multiple transformations and hand-offs, creating inefficiencies and risks
- Manual data processing and quality management
- CEPI provides greater data quality services than most comparable entities across states
- A culture of governance persists, but is inconsistently practiced within siloed functions

CURRENT STATE FINDINGS

Q: What does this mean for CEPI customers (collections)?

A: System and process limitations impede the user experience (collections) and inhibit organizational efficiencies and innovation

Implications

Users experience significant friction as they navigate a service or product (e.g., email DQ snapshots)

Undermining data quality and end-user consumption of data

Notables

Strong Team Expertise and Commitment
CEPI and DTMB staff do an admirable job in managing processes and products, but limitations mean they must focus on system reliability, rather than enhancements for a greater customer experience

Varying Data and Digital Fluency Among Users
CEPI handles a diverse array of stakeholders with varying digital and data fluency levels, adding extra layers of complexity to everything they do

DATA COLLECTION EXPERIENCE PAIN POINTS

District Driven ← → *CEPI Driven*

HIGH COLLECTION STAFF TURNOVER

Lack of staff to backfill positions and high turnover rates can impact data quality and lead to potential financial impacts like withholding State foundation aid payments for erroneous submissions to the State

LACK OF COLLECTION STANDARDIZATION

Districts have flexibility in how they meet the reporting requirements, creating a lack of consistency and integration of processes and roles needed for reporting to the State

DISPARATE COLLECTION SYSTEMS AND SERVICES

CEPI uses multiple data collection systems and, despite recent consolidation efforts, a high volume of SIS vendors in use across the State limit data ingestion enhancements against the current legacy. CEPI processes often jump across processes (e.g., email, collection application)

MANUAL DATA QUALITY PROCESSES

CEPI's manual and laborious processes for identifying data errors and communicating back to districts causes frustration from districts that struggle to address quality issues and need more assistance from CEPI's customer support

3 Target State and Roadmap Recommendations

How can CEPI transform its digital services and organizational capabilities?

What benefits and outcomes would be derived from these changes?

TARGET STATE AND ROADMAP RECOMMENDATIONS

A vision for the future: End-to-end modernization of CEPI's core services and how it engages with its customers

	DATA COLLECTION EXPERIENCE	DATA CONSUMPTION EXPERIENCE
	Deliver excellent data collection and consumption experiences to CEPI's customers and partners	*Provide products and services that advance the depth of insights and facilitate greater data usage*
Vision	CEPI has strong relationships with data providers and state agency partners that provide a deep understanding of their needs. Operational practices, supporting technologies, and organizational culture enable CEPI staff to transform that understanding of customers into excellent experiences.	Self-service features and robust longitudinal data connections enable Portal users to have an independent, customizable, and holistic view of the state of education in Michigan. Users are less reliant on CEPI to provision data for them, returning bandwidth to the organization.

What will this require?

- ✓ **A modern IT infrastructure (scalable and integrated)**
- ✓ **Strong governance and oversight**
- ✓ **Enhanced data product management**
- ✓ **Maturation of data management capabilities**

TARGET STATE AND ROADMAP RECOMMENDATIONS

Planning recommendations concentrate on enhancing the customer experience and the impact of data

A unified and enhanced customer experience

What would this look like?

- Providing customer-centered digital services in a central place
- Meeting people where they are – providing intuitive experiences for low-literacy (data, digital, language)
- Connecting data collection and consumption products and services (backend and frontend)
- Automating previously manual or unavailable steps and capabilities
- Delivering new capabilities and services

Expanded data access and consumption

What would this look like?

- Expanding levels of analysis performed by CEPI
- Stewarding data and advising on responsible usage
- Promoting greater access to data that is in ready to use formats
- Providing self-service tooling

Overarching Concepts

Vision

A ***stronger***, ***technology-enabled***, and ***standards aligned*** CEPI enables more effective and efficient collection and consumption of data across Michigan's education system and government agencies

Supporting Themes

- **Center customers**
- **Streamline data processing**
- **Embrace automation**
- **Apply an enterprise approach**
- **Empower the workforce**

TARGET STATE AND ROADMAP RECOMMENDATIONS

The proposed roadmap would drive end-to-end change across CEPI's digital services, IT infrastructure, and business processes

This roadmap takes into consideration current modernization efforts, current limitations, and its ambitious vision.

	Initiative 1 **Modernize the Collection Experience**	Initiative 2 **Develop Unified Reporting and Enhanced Data Consumption**	Initiative 3 **Establish Strong Organizational Foundations**	Initiative 4 **Implement Near-term Operational Improvements**
Goal	All data providers have an improved user experience and new technology capabilities create operational efficiencies for CEPI and DTMB staff.	Implement a new solution architecture that provides streamlined and improved processing, analysis, and consumption capabilities for CEPI and its stakeholders.	Create strong organizational and technical capabilities that enable CEPI to effectively address its evolving data and technology needs and environment.	Strengthen CEPI's operational capabilities, improving the experience of both the CEPI workforce and its customers.
Objective	All CEPI data collections are supported by a modernized collection infrastructure (frontend and backend).	Implement the new CEDS data warehouse and build more efficient and enriched data reporting and analytic solutions.	Mature and expand organizational management, governance, and architecture capabilities that address both near-term and long-term operational needs.	Invest in operational and structural improvement efforts that address critical CEPI needs and improve organizational readiness to handle ongoing enterprise digital modernization.

SPOTLIGHT: VALIDATING AND CONNECTING TO EXISTING MODERNIZATION EFFORTS

CEPI is already underdoing modernization across all roadmap initiatives. As part of Guidehouse's review, we conducted independent technical approach planning (e.g., target conceptual architecture design). These efforts validated the approaches being utilized by most of CEPI's existing initiatives and reinforced limitations cited by both CEPI and DTMB operational and special project resources.

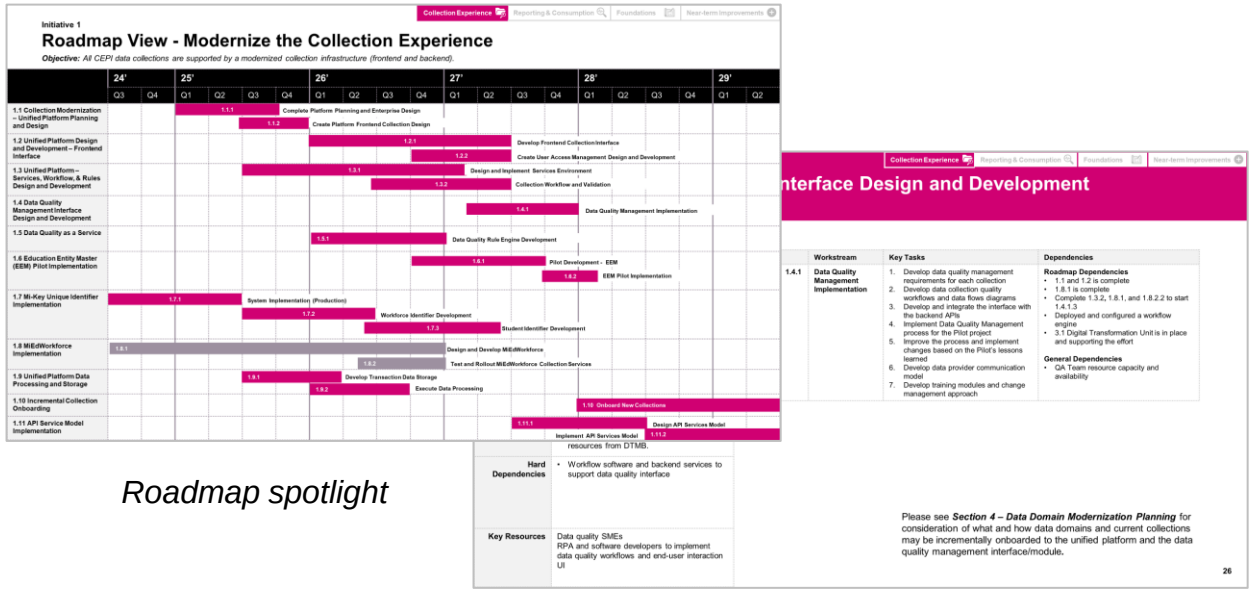
Modernize the Collection Experience

Initiative Goal

All data providers have an improved user experience and new technology capabilities create operational efficiencies for CEPI and DTMB staff.

Initiative Objective

All CEPI data collections are supported by a modernized collection infrastructure (frontend and backend).



Roadmap spotlight

Key Features

User Experience: An intuitive and streamlined experience for customers

Upstream and Enhanced DQ Management: Data quality management is embedded into the collection systems, providing real-time and assistive supports to data providers

Dynamic Systems and Infrastructure: The applications and foundational infrastructure are flexible and adaptive to collection changes

Standards Alignment: Collections align to the CEDS data model and reduce downstream data transformations

Seamless Integration: Integrate seamlessly with the broader CEPI ecosystem (e.g., MSLDS)

Data Service Enablement: Technologies improve the flexibility and capability of current CEPI services (e.g., identifier)

Enterprise Security Model: Operate under a common security model, risk management, and user access controls

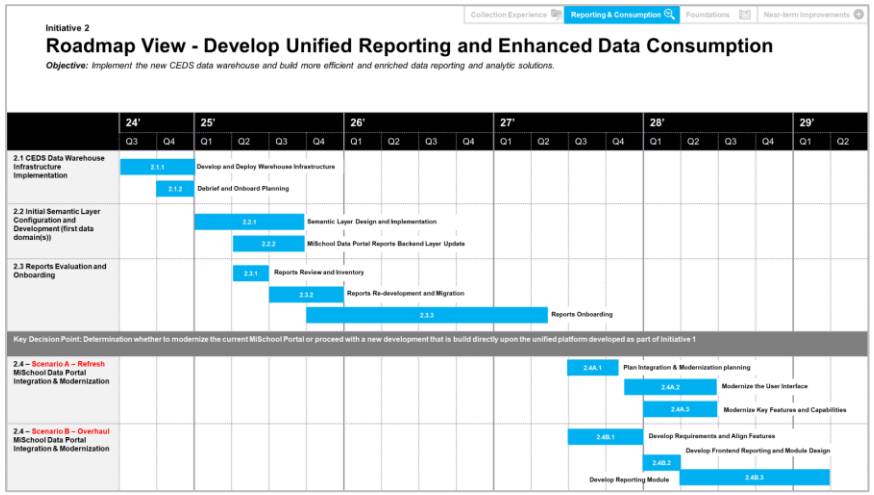
Develop Unified Reporting and Enhanced Data Consumption

Initiative Goal

Implement a new solution architecture that provides streamlined and improved processing, analysis, and consumption capabilities for CEPI and its stakeholders.

Initiative Objective

Implement the new CEDS data warehouse and build more efficient and enriched data reporting and analytic solutions.



Roadmap spotlight

Key Features

Streamlined Data Processing: Strong system interoperability and data model alignment accelerates data processing steps

Flexible Design: Technology design and configuration decisions are able to accommodate evolving requirements.

Tracking and Monitoring: System and processes enable tracking and monitoring of data flows, data changes, and technology performance

Self-Service Offerings: Users are empowered to develop and analyze their own data and reports

Richer Analytics: Use of automation and technology-driven updates to core services frees up staff time for more advanced and value-added services

TARGET STATE AND ROADMAP RECOMMENDATIONS

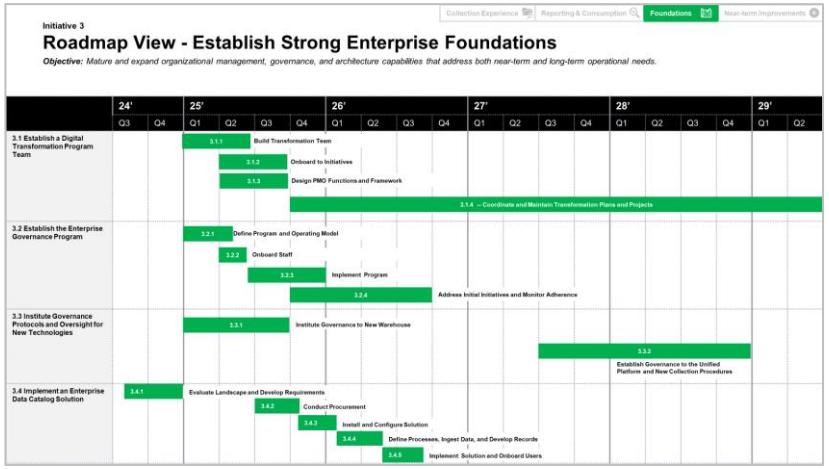
Establish Strong Enterprise Foundations

Initiative Goal

Create strong organizational and technical capabilities that enable CEPI to effectively address its evolving data and technology needs and environment.

Initiative Objective

Mature and expand organizational management, governance, and architecture capabilities that address both near-term and long-term operational needs.



Roadmap spotlight

Key Features

Business-led Transformation: CEPI-led transformation efforts are centrally coordinated and executed by a common team

Standards and Best Practice Alignment: Enterprise planning and change efforts are grounded in standards (e.g., CEDS) and industry best practices

Coordinated Governance: Data, technology, and corporate governance is centrally and formally coordinated

Common Architecture Framework: Management and planning for current and future technology investments and decisions are grounded from a common framework

Cost-Benefit & Impact Analysis: Planning and investment decisions on improvements to current or future technologies and operations conduct proper benefit and impact analysis

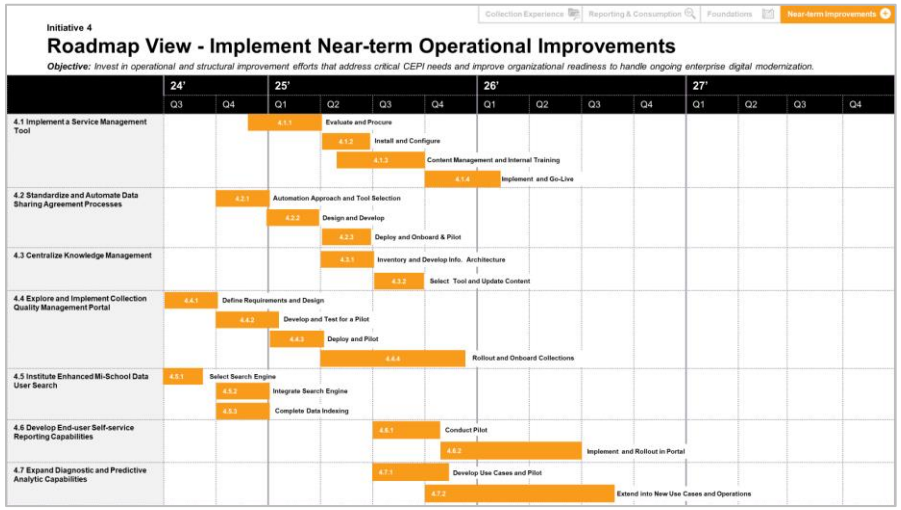
Implement Near-term Operational Improvements

Initiative Goal

Strengthen CEPI's operational capabilities, improving the experience of both the CEPI workforce and its customers.

Initiative Objective

Invest in operational and structural improvement efforts that address critical CEPI needs and improve organizational readiness to handle ongoing enterprise digital modernization.



Roadmap spotlight

Key Features

Scalable Services: Mature service offerings and operational capacity with consideration of current and anticipated demand

Automation: Automation will augment or replace current manual processes, improving operational capacity and experience

Quick Benefits Realization: Efforts will have immediate and measurable impacts on CEPI operations and/or its customers

Downstream Transformation Benefits: Wherever possible, these efforts will maintain relevance and usage following implementation of key aspects of Initiatives 1 and 2

TARGET STATE AND ROADMAP RECOMMENDATIONS

Roadmap Items in Motion

Initiative 1 **Modernize the Collection Experience**	Initiative 2 **Develop Unified Reporting and Enhanced Data Consumption**
Entity Data (EEM)	CEDS SLDS Grant
Staffing Data (MiEdWorkforce)	Mi School Data • Transition to PowerBI • Report Builder • Our District at a Glance
Unique Identifiers (Mi-Key)	
Unified Platform – *proposal for change*	

4

Target State Architecture

What architecture will support the handling, flow and consumption of data through CEPI's ecosystem?

What are the key technologies CEPI will need to implement this future state?

Target State Architecture Guiding Principles

A modern reference architecture along with the guiding principles in conjunction with key business priorities provides a framework for establishing the future state data collection and analytics architecture for CEPI. An enterprise approach must be consistently applied to each technology decision.

Design for Simplicity

Build **simple architecture designs** incorporating enterprise-standard modern tools, reusable APIs, and modularity. This approach aims to minimize the number of components, reduce technological clutter, and improve data integration.

Accelerate Data Velocity

Design and standardize data pipelines to **minimize data hops and reduce data latency** thereby increasing performance, validity and speed of data to insights generation.

Enhance Data Availability & Accessibility

Increase the speed of data collection, improve data sharing & curation across CEPI. Implement proper role-based access controls, introduce data cataloging and stewardship and standardize data while **reducing the duplication of business rules** / logic.

Improve Data Quality

Prioritize the **proactive resolution of data quality issues** and provide a **unified & integrated data** to make quality data easily accessible for use.

Encourage Innovation

Democratize data & analytics capabilities across CEPI by providing self-service capabilities for exploration & ideation, fostering a culture of innovation.

Adopt User-centered Design

Focus on delivering an **exceptional customer experience** through the creation and **frictionless delivery** of data collection points, report dashboards & advanced analytics

Protect & Secure Data

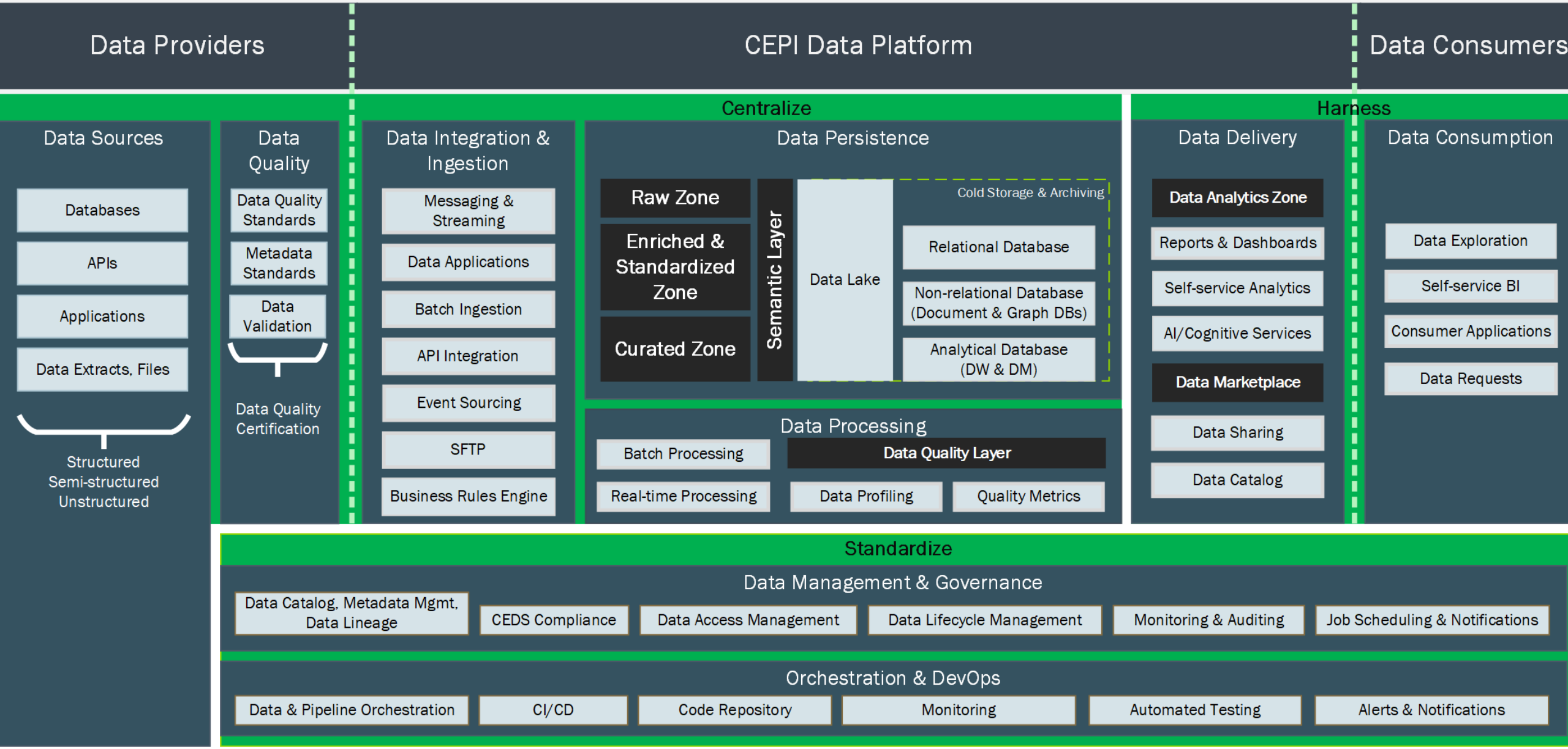
Ensure appropriate **data security, policies and privacy controls** are applied, and processes, applications, tools & designs adhere to these guidelines, policies & federal regulations.

Build Nimble Infrastructure

Develop a **flexible & resilient infrastructure** capable of supporting CEPI's long-term needs and allowing flexibility for easy adaptation to new tools / technologies while delivering value in a cost-effective way.

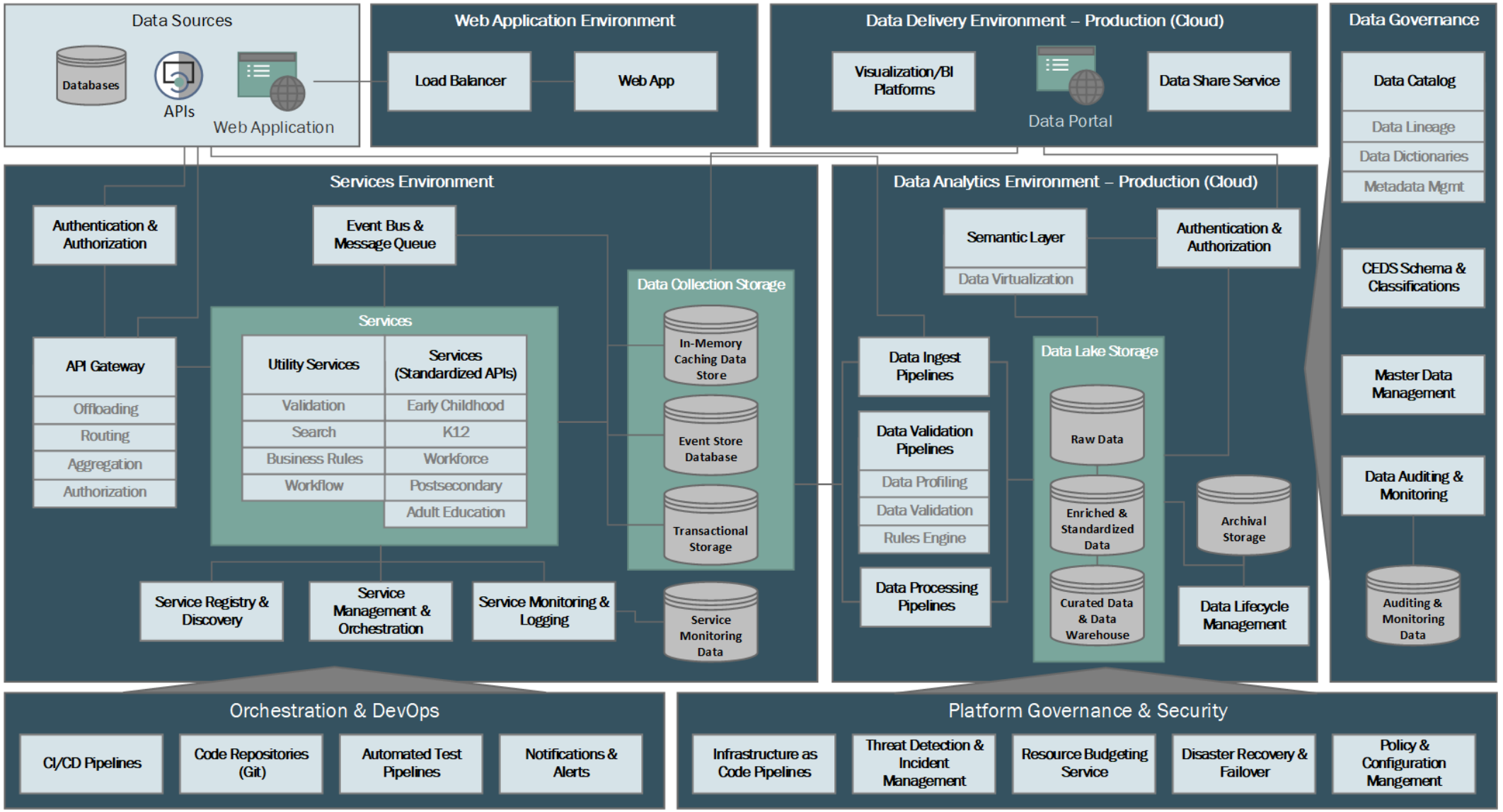
Target Capability Architecture Diagram

A set of capabilities essential for meeting the majority of both functional and nonfunctional requirements of CEPI's collection system. It serves as a strategic blueprint for the development of the target state architecture, ensuring a structured approach to system design and implementation.



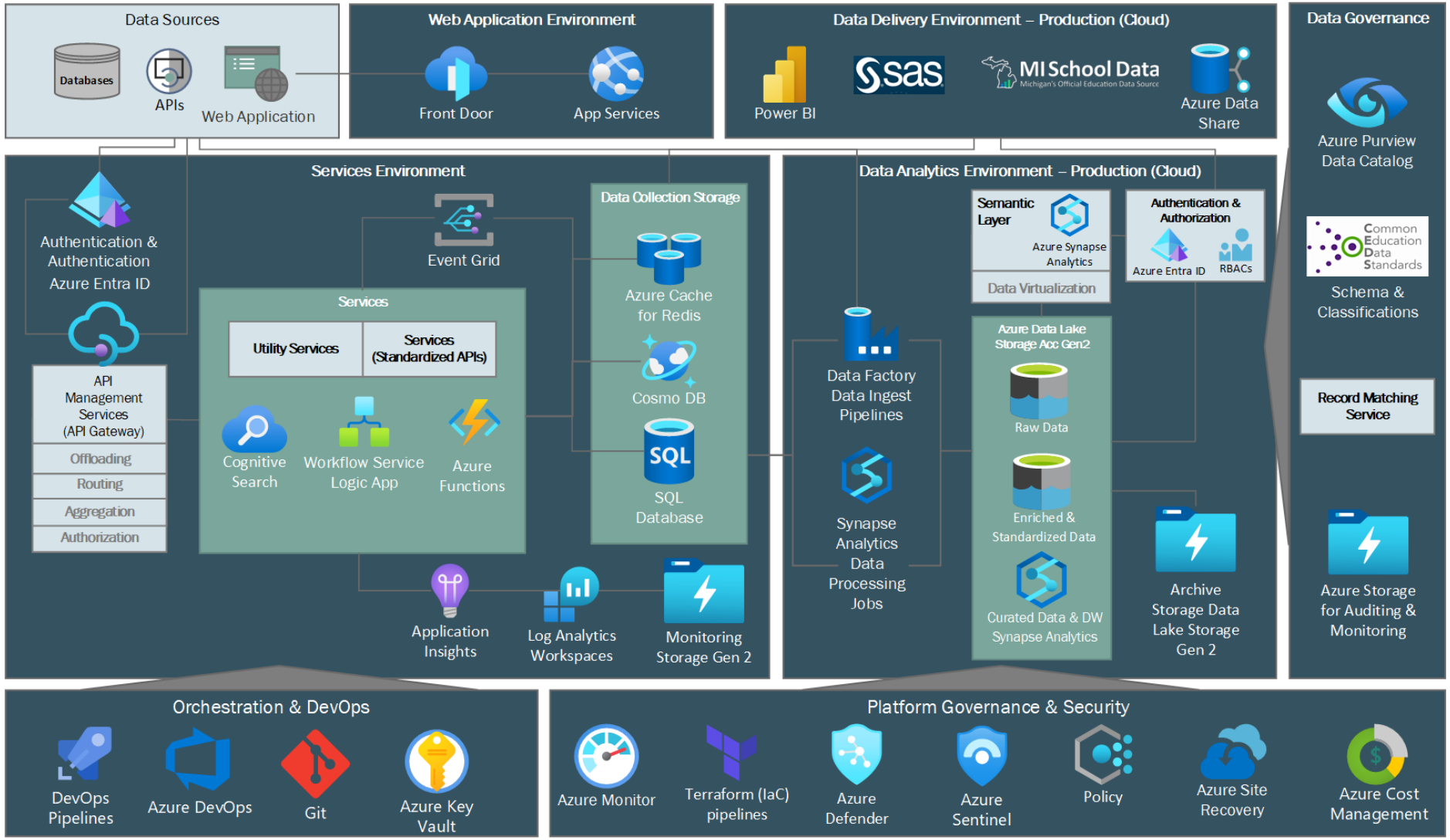
Target Logical Architecture Planning (Technology Agnostic)

A logical target state architectural blueprint for the CEPI collection system, focusing on the arrangement of components and their interactions without committing to specific technologies.



Target Logical Architecture – Technology Specific

A logical target state architecture that aligns with CEPI's data collection system objectives and is implemented using Azure cloud. It maps the logical components to Azure-specific services, illustrating how each aspect of data collection and analytics is managed within the Azure ecosystem.



5

MiDataHub Collaboration Recommendations

How can we improve data quality and support quality management practices locally?

How can we streamline reporting effort while maintaining confidence and trust in both CEPI and the MiDataHub?

Improving the Handling and Usage of Michigan Data Across the Lifecycle and Stakeholder Landscape

Current partnerships and ongoing planning efforts concentrate on:

- Improving how Michigan educational entities are able to handle and leverage their data assets and develop valuable insights that improve operational and strategic decision-making
- Increasing the utility of Michigan education data across the entire calendar year – assuring quality data and relevant insights are available and integrated into all levels of the Michigan education landscape (e.g., d*ay-to-day school-level student information system usage, Michigan Department of Education programmatic planning*)

Objectives

What will partnership initiatives seek to address?

1. Improve data quality and supporting quality management practices within school and district-level systems
2. Provide services and accelerators that streamline how LEAs prepare and submit their data for state and federal reporting [to CEPI]
3. Reduce the level and duplication of effort for LEAs in maintaining their data and submitting it during mandated collection periods
4. Effectively maintain and foster LEA confidence and trust in CEPI and MiDataHub handling of their data assets

Data Quality as a Service – CEPI and MiDataHub Collaboration

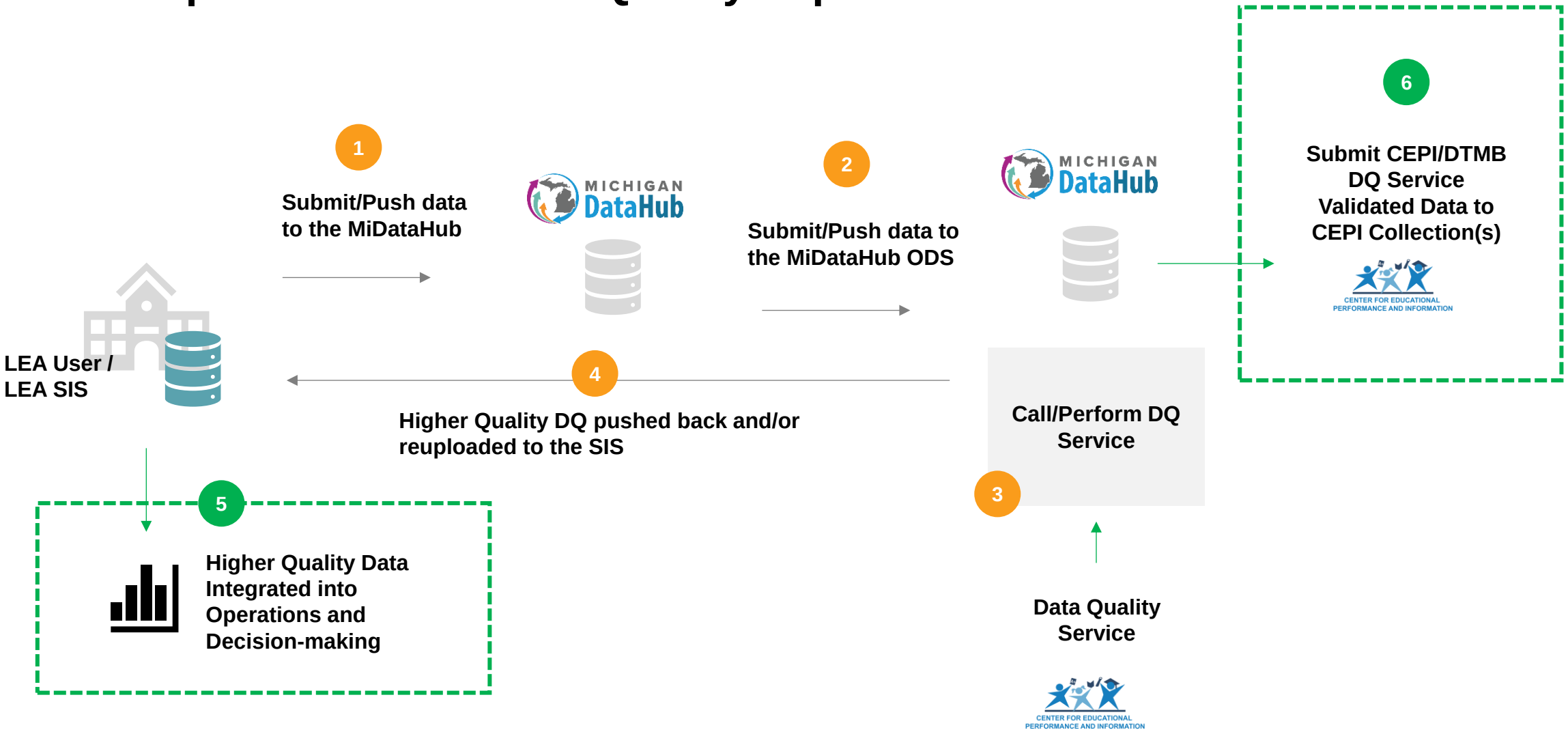
Key Objectives

- **Data Quality and K-12 Stakeholder Value:** Create a long-term collaboration approach between CEPI and the MiDataHub that reduces CEPI's data quality burden and improves the services provided to k-12 provides
- **CEPI DQ Offset:** Move data quality checks earlier and farther upstream in the collection process/timelines (eg., pre-collection opening)
- **Cost Management:** Develop a cost-considerate approach for both the MiDataHub and CEPI that factors in both data transfer, storage, and upfront investment costs

Factors to Consider

- Upfront development costs and its alignment to the longer-term CEPI target architecture
- CEPI bandwidth to establish and maintain systems
- MiDataHub EdFI standards usage
- Data transfer and exchange cost considerations (especially as volumes scale)
- Compatibility considerations between Azure and AWS
- K-12 data provider comfort in sharing data and cautions around lost control and any form of data exchange with CEPI (outside the actual collection period)
- MiDataHub's need to maintain an independence from State entities

How to Improve the LEA Data Quality Experience?



Coordinate and Expand the Data Quality Services Available to LEAs across the Calendar Year

What would this look like?

- Allow MiDataHub to increase the scale and flexibility of providing checks and services that support LEAs in managing and preparing their data in line with CEPI-run submissions
- Provide new CEPI quality services (e.g., APIs) to MiDataHub that allow it to support users in running DQ checks on their data across the entire year
- Reduce some of the LEA user friction (process and timeline) around preparing data for collection submission
- Decrease the volume of data quality issues and level of manual effort incurred by the CEPI QA team during open collections and closes

What would this require?

- **Offboarding/sharing Data Quality Support:** Evolve the partnership and what/how data services are provided to LEAs
- **Integrated Architecture:** Aligning on key connections between the CEPI and MiDataHub architecture (e.g., central node facilitated by DTMB)
- **New Build:** Investing in new development and architecture updates (both sides to varying rigor based on the approach)
- **Data Model**: Alignment/coordination on data model
- **LEA Willingness and Adoption:** Gathering input and coordinating with LEAs on planned changes and providing proper data privacy and control assurances

MiDataHub Integration with CEPI Data Collection Data Quality Service

The integration of MiDataHub with the CEPI Data Collection system leverages a unified data quality validation service to ensure consistent, high-quality data collected by CEPI, while eliminating the need for duplicating data quality business rules and code. This approach enhances maintainability and reduces operational overhead. The architecture is designed to accommodate the multi-cloud nature of the two systems, with MiDataHub on AWS and the CEPI Collection system on Azure. It employs an event-driven approach to efficiently transfer, validate, and process data from various student information systems through MiDataHub to CEPI MSLDS.

NOTE

Target Architecture Option. Given the cost and complexity to configure and implement, these options are presented in consideration of the future target architecture, and not to be applied to the current architecture and collections.

Interim Improvement. As an interim improvement, it is recommended that CEPI determine any priority collections to share the validity rules (like done for MSDS) for MiDataHub to replicate within their own ODS Store.

	Option 1. Transfer Data and Validate on CEPI Side	Option 2. Validate Data on MiDataHub Side and Transfer to CEPI	Option 3. Deploy Data Quality Service Locally on MiDataHub and CEPI Systems
Overview	An approach where data from MiDataHub Systems is transferred to Azure before running the data quality checks. This design leverages secure data transfer mechanisms and event-driven processing to ensure efficient data handling. By conducting data quality checks on Azure, this architecture ensures centralized validation, maintaining consistency across the data pipeline.	An integrated approach where the CEPI Data Quality Service, hosted on Azure, is leveraged to validate data stored in AWS before transferring it to the Azure Data Lake. By utilizing secure API calls and an event-driven framework, this design ensures consistent and centralized data quality checks, eliminating the need for duplicative business rules and code across platforms. The benefits include streamlined data validation, improved maintainability, and enhanced scalability. Key considerations involve managing network latency, ensuring robust security, and monitoring cross-cloud operational costs to maintain efficiency and reliability.	Leverages a shared code repository to deploy the CEPI Data Quality Service on both AWS and Azure, ensuring both MiDataHub and CEPI systems utilize the same set of data quality rules without needing to transfer data between platforms for validation. This approach ensures consistent data quality checks while eliminating the need for direct cross-cloud data transfer or cross-cloud service access. Additionally, a separate API is developed to access longitudinal data quality checks from the CEPI SLDS Data Warehouse, enhancing the overall data quality management process.
Advantages	• Centralized Data Quality • Simplified Data Transfer • Event-driven Processing • Scalability • Dedicated Enclave for Uncertified Data	• Centralized Data Quality Service Reduced Duplication Event-Driven Processing • Scalability	• Shared Code Bank and Rules Engine • Reduced Data Transfers (for validation) • Maintained Independence
Considerations	• Data Transfer Latency • Operational Complexity	• Network Latency and Performance • Security • Cost Management • Complexity	• Rules Update Consistency • Separate Longitudinal Checks

6 Table Discussions