

MDE's Approach to Modernizing Legacy Systems



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VISION

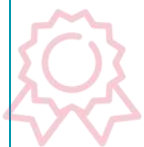
To create a world-class educational system that gives students the knowledge and skills to be successful in college and the workforce, and to flourish as parents and citizens



MISSION

To provide leadership through the development of policy and accountability systems so that all students are prepared to compete in the global community

State Board of Education Goals



1

ALL Students Proficient and Showing Growth in All Assessed Areas



2

EVERY Student Graduates from High School and is Ready for College and Career



3

EVERY Child Has Access to a High-Quality Early Childhood Program

EVERY School Has Effective Teachers and Leaders

4



EVERY Community Effectively Uses a World-Class Data System to Improve Student Outcomes

5



EVERY School and District is Rated "C" or Higher

6



#1: Time



WHICH IS WHAT A FOUR YEAR LIFESPAN.

Problem: Time constraints are a fail-safe against modernization (election cycles, grant terms, and leadership changes, etc.)

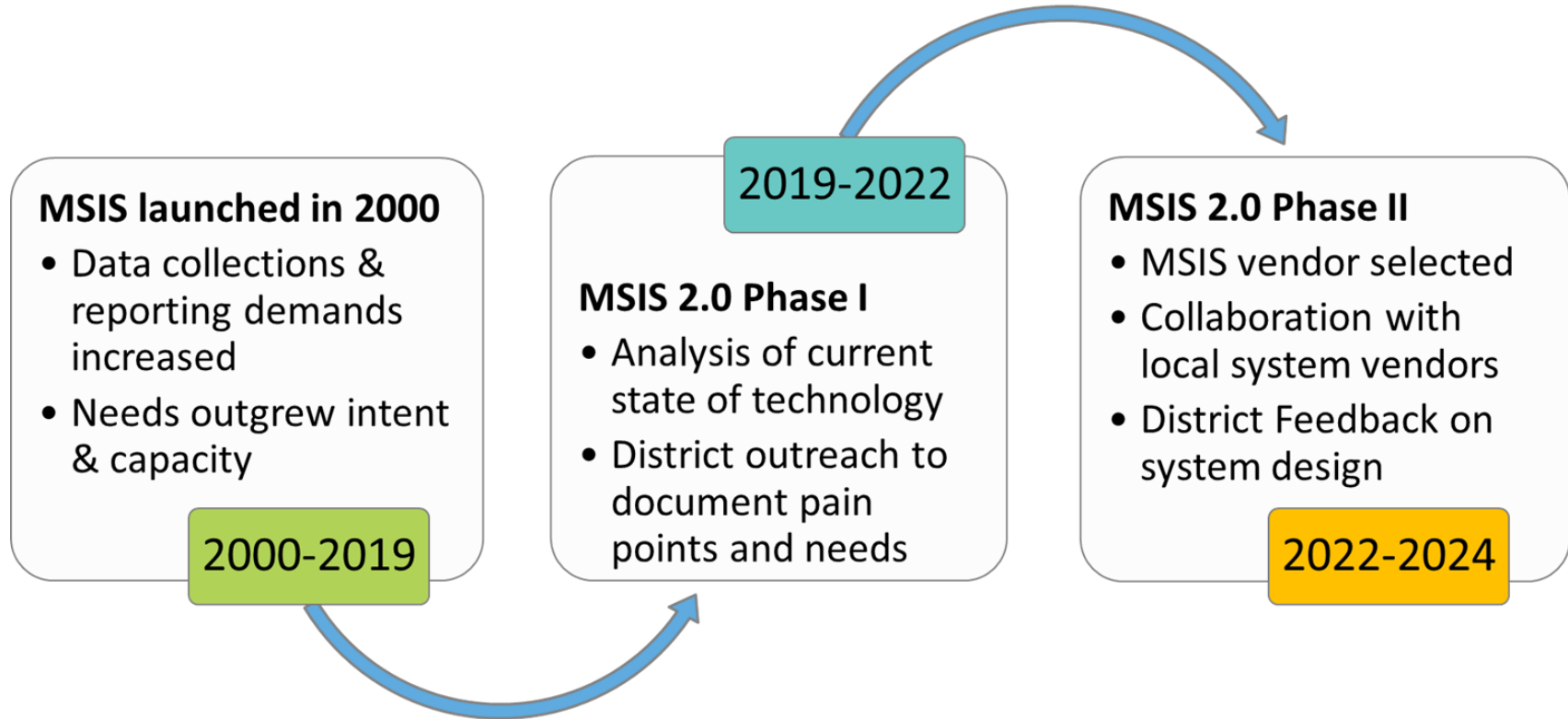
A detailed black and white illustration of a snail moving across a computer keyboard. The snail's shell is large and spiraled, with a dark band around its middle. Its body is covered in a bumpy, textured pattern. Two long eye stalks are extended forward. The keyboard keys are visible beneath the snail, with some numbers like '6', '5', '4', '3', '2', '1' and letters like 'Q', 'W', 'E', 'R', 'T', 'Y' visible. The background is a solid dark gray.

**Problem: The pace of
incrementalism across a
bureaucratic landscape**

History of MSIS: From 1.0 to 2.0



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#2: Technology

A map of Western Europe, specifically the region of Belgium, Luxembourg, and Northern France. The map shows the borders of these countries. A red dotted line represents 'Weak fortifications' and a solid red line represents 'Strong fortifications'. The solid red line runs along the border of France and Luxembourg, and then turns south towards Strasbourg. The dotted line runs along the border of Belgium and Luxembourg, and then turns west towards Lille. Major cities like Lille, Brussels, Liège, Namur, Frankfurt, and Strasbourg are marked. The text 'Problem: K12 dominated by legacy technology, bad habits, limited approaches' is overlaid in white, with a white underline under 'limited approaches'.

Problem: K12 dominated by legacy technology, bad habits, limited approaches

"Generals are always prepared to fight the last war"

..... Weak fortifications

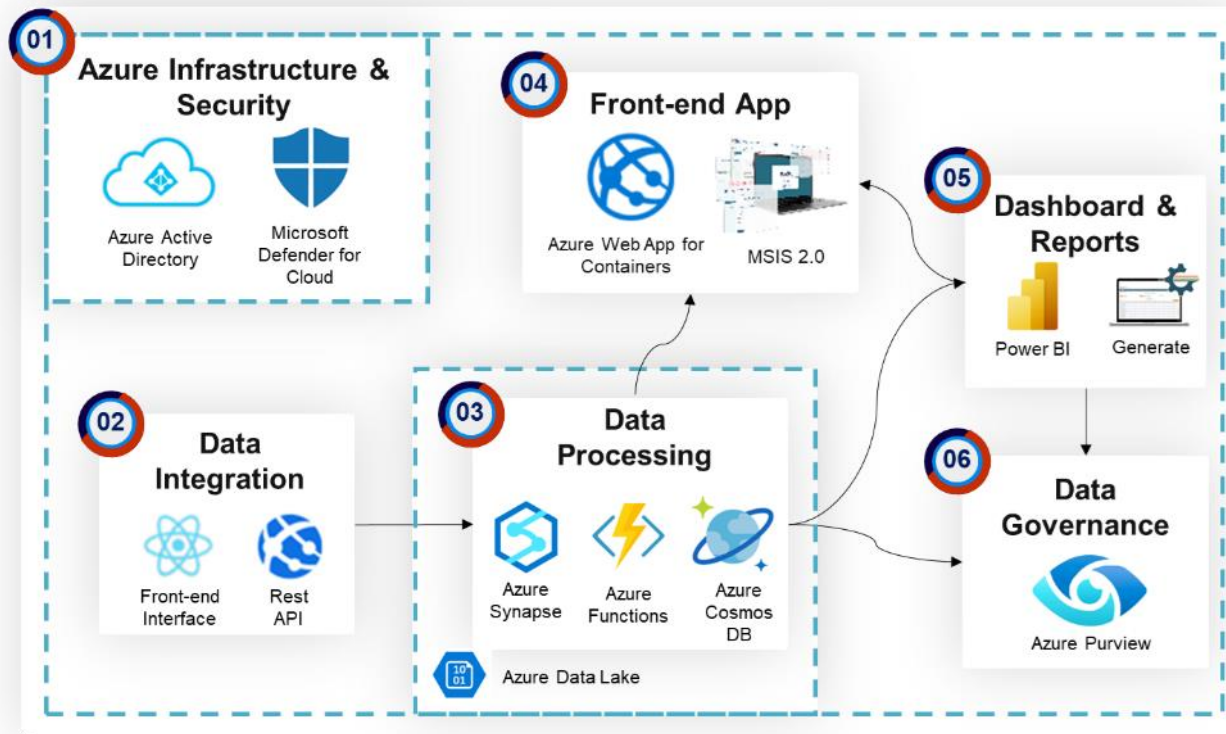
— Strong fortifications

MSIS 2.0 High-Level Solution Architecture



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- 01 Azure Infrastructure**
Cloud automation & optimization through terraform, with robust security through Azure native solutions
- 02 Data Integration**
API Integration of formerly siloed data sources from Districts, Schools, and Vendors
- 03 Data Processing**
Extract, Transfer, & Load (ETL) process to store and transfer data securely across zones through synapse pipeline
- 04 Front-end Application**
End-user application for districts, schools, and MDE to visualize and manage data
- 05 Power BI & Generate**
Embedded dynamic Power BI reports with drill downs to student level details, leveraging Generate for Federal Reports
- 06**



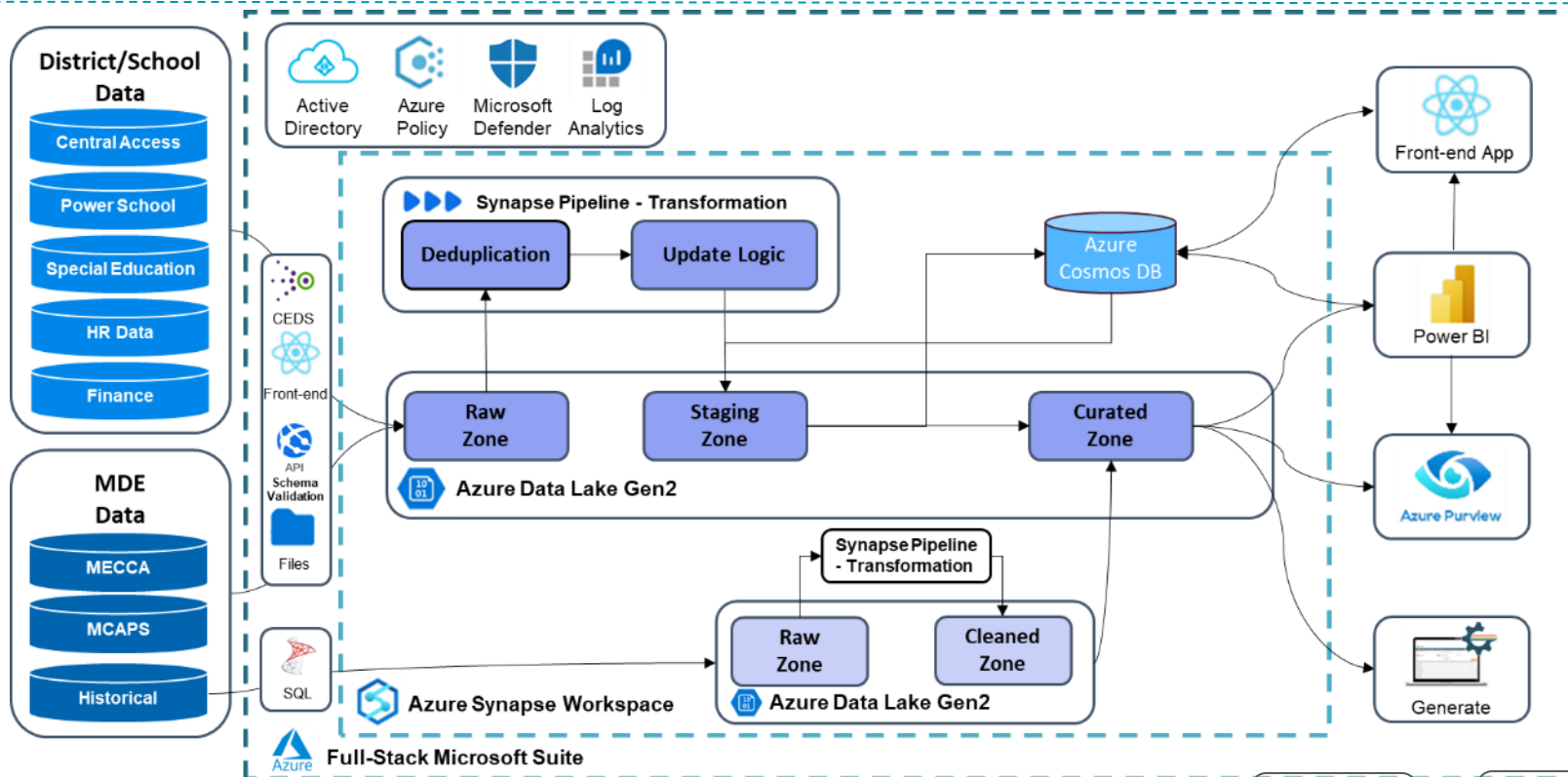
Principle: Leveraging full-stack Azure-native solutions



MSIS 2.0 High-Level Solution Architecture



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District Data Integration v. State and Federal Reporting



Lake Area – 33,000 acres
Deepest Point – 50 feet

Evolving Infrastructure: The Cloud Journey



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Cloud Adoption Framework

Building the foundation of governance, team structure, skills, procedures, and tools to support an efficient and secure cloud environment. Implementing Landing Zone (w/Dave Newman)

Fabric & AI

Designing with platform as a service components such as Synapse and Power BI has positioned us to easily incorporate Fabric in the future

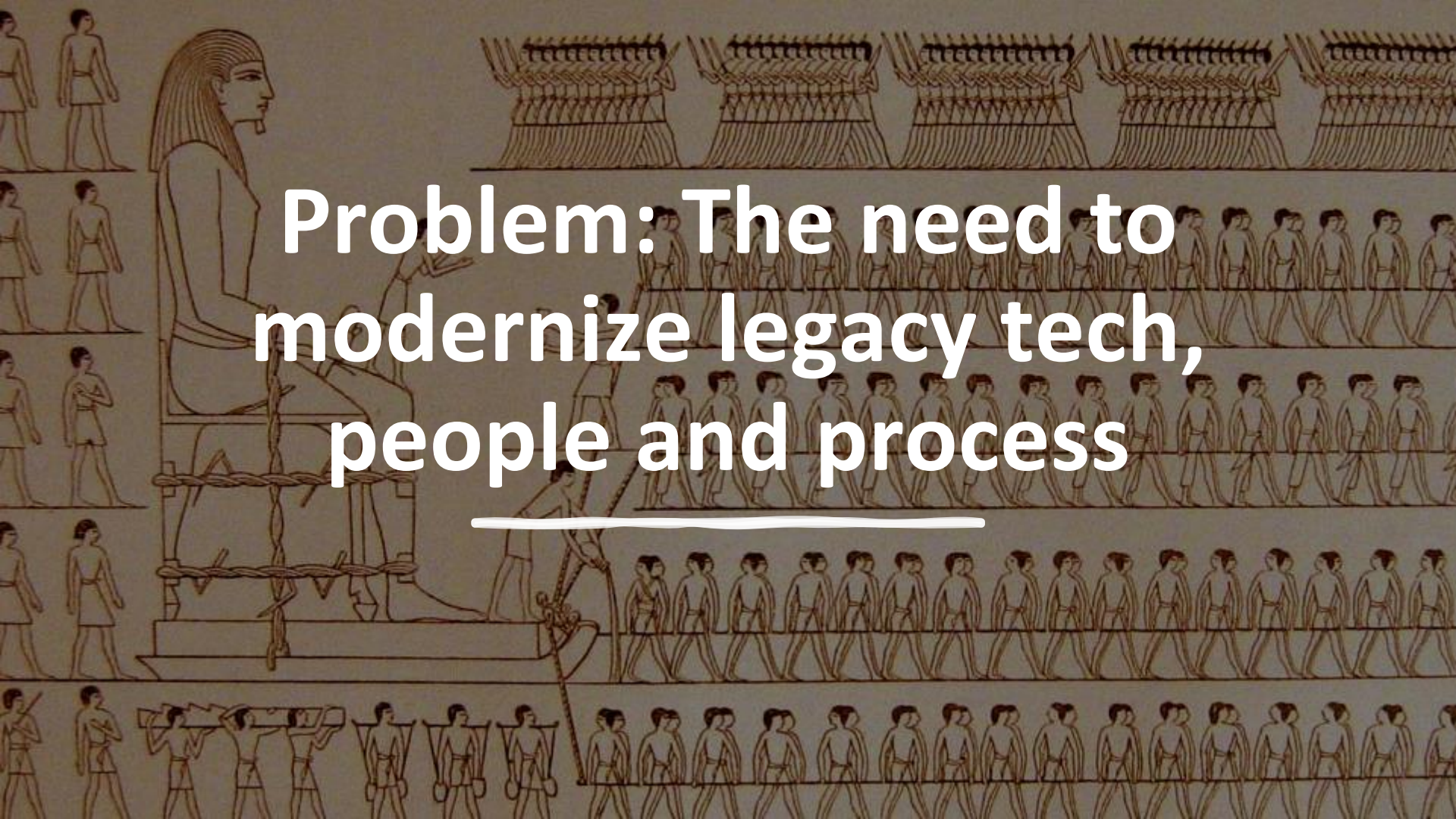
Well Architected Framework

Focusing on pillars of cost optimization, operational excellence, performance efficiency, reliability, and security to get the most out of moving applications to Azure

Future

Remaining flexible and planning for change to ensure an application that can take advantage of products that have yet to be released

#3: People & Process

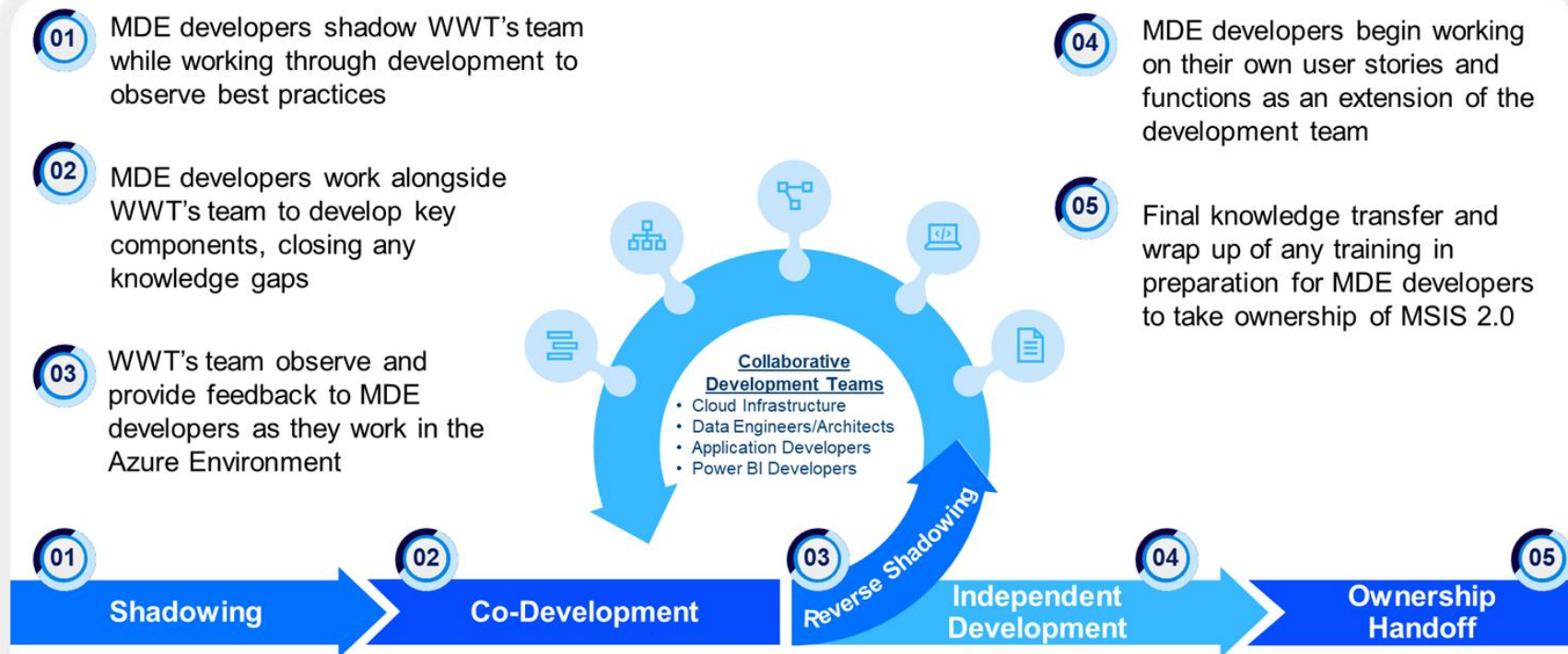
The background is a sepia-toned illustration of an ancient Egyptian scene. On the left, a large seated figure, likely a deity or pharaoh, is shown in profile. To the right, there are several large, tiered structures resembling haystacks or granaries. Below these, there are multiple rows of small, stylized human figures. Some are walking in lines, while others are carrying loads on poles balanced across their shoulders. The overall style is that of an ancient Egyptian wall painting.

**Problem: The need to
modernize legacy tech,
people and process**

Principle: Co-Development to Grow Capacity



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Principle: CMM / Mature Key Process Areas



KPA 1:
Project
Management

KPA 2:
Performance
Management

KPA 3:
Change
Management

KPA 4:
Customer
Support &
Training

KPA 5:
Stakeholder
Engagement /
Communications

KPA 6:
Data Governance

KPA 7:
Security and
Data Privacy

KPA 8: Software
Development
Life Cycle (SDLC)

KPA 9:
Service
Management

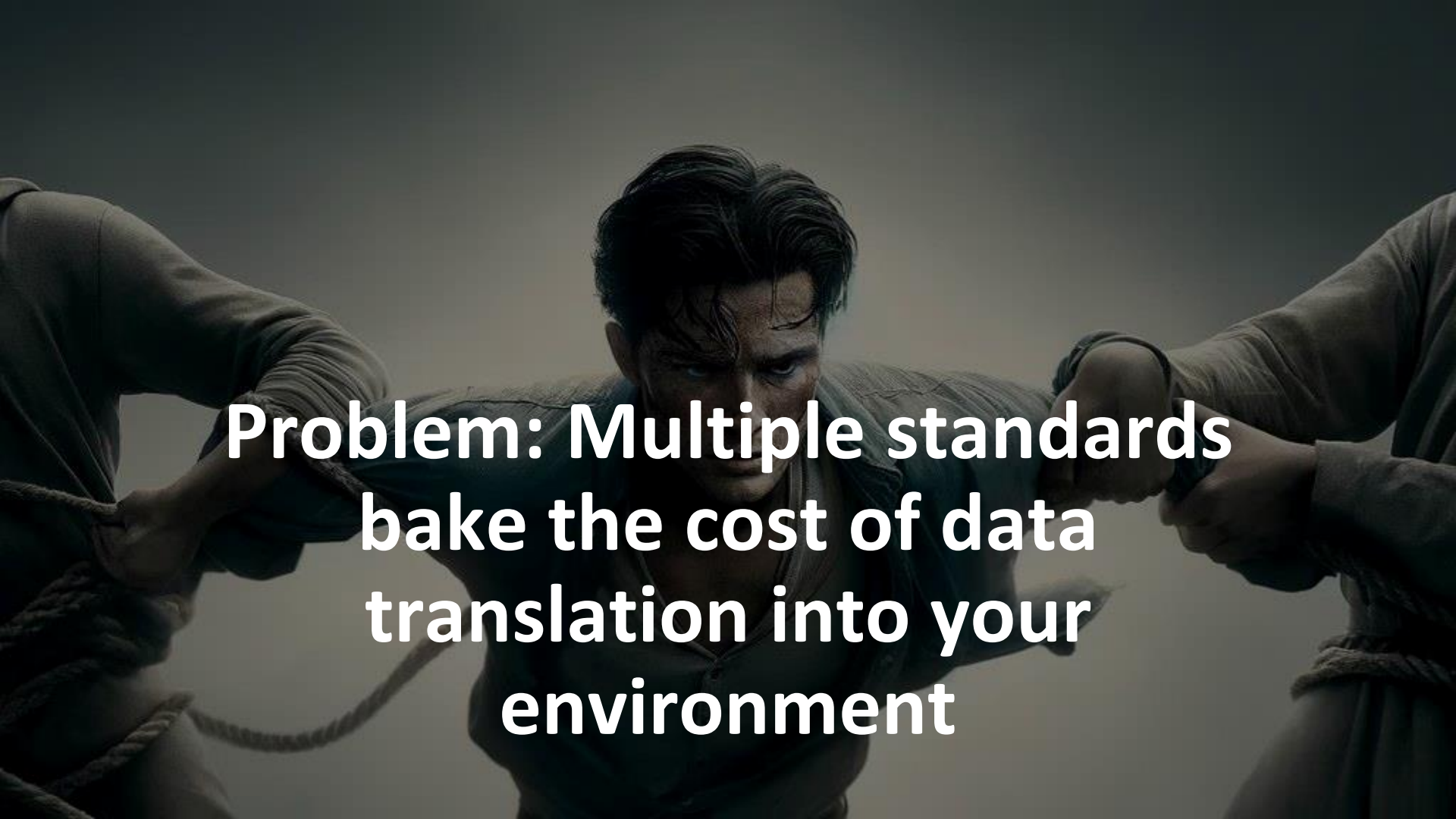
KPA 10:
Prof. Dev. &
Capacity

KPA 12:
Data & Reporting

KPA 14: Data Use

KPA 16: Data
Management

#4: Data Standards United

A man in a blue shirt is being pulled in two opposite directions by two other people, one on the left and one on the right. They are holding ropes, suggesting a tug-of-war or a struggle. The background is a plain, light-colored wall.

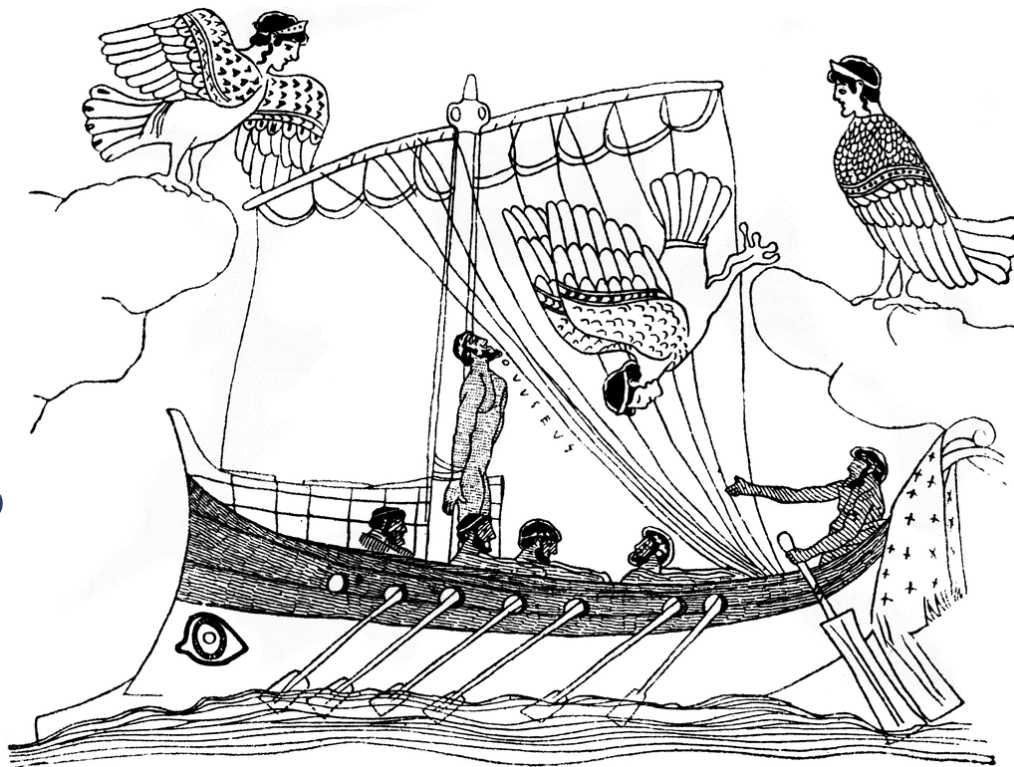
**Problem: Multiple standards
bake the cost of data
translation into your
environment**

Principle: CEDS End-to-End without Extensions



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- Verify why/how a data element needs to be collected
- Change the law or regulations as necessary
- **Don't be tempted into making extensions**
- Work with the CEDS Community



**Principle: True Data
Standardization
through the
consolidation of all
P20W operational
data standards**

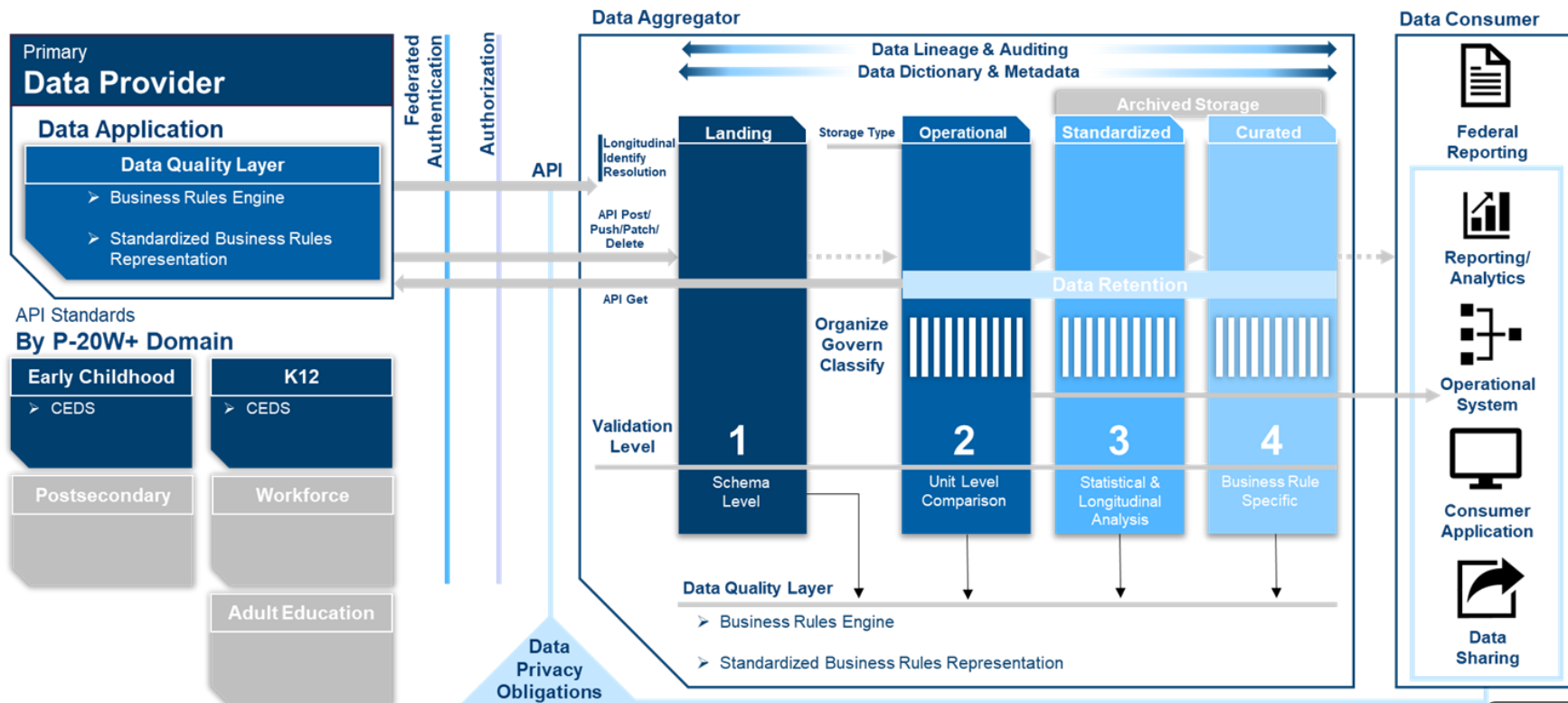


#5: Reference Architecture & Collaboration

P-20W+ Reference Architecture & MSIS Alignment



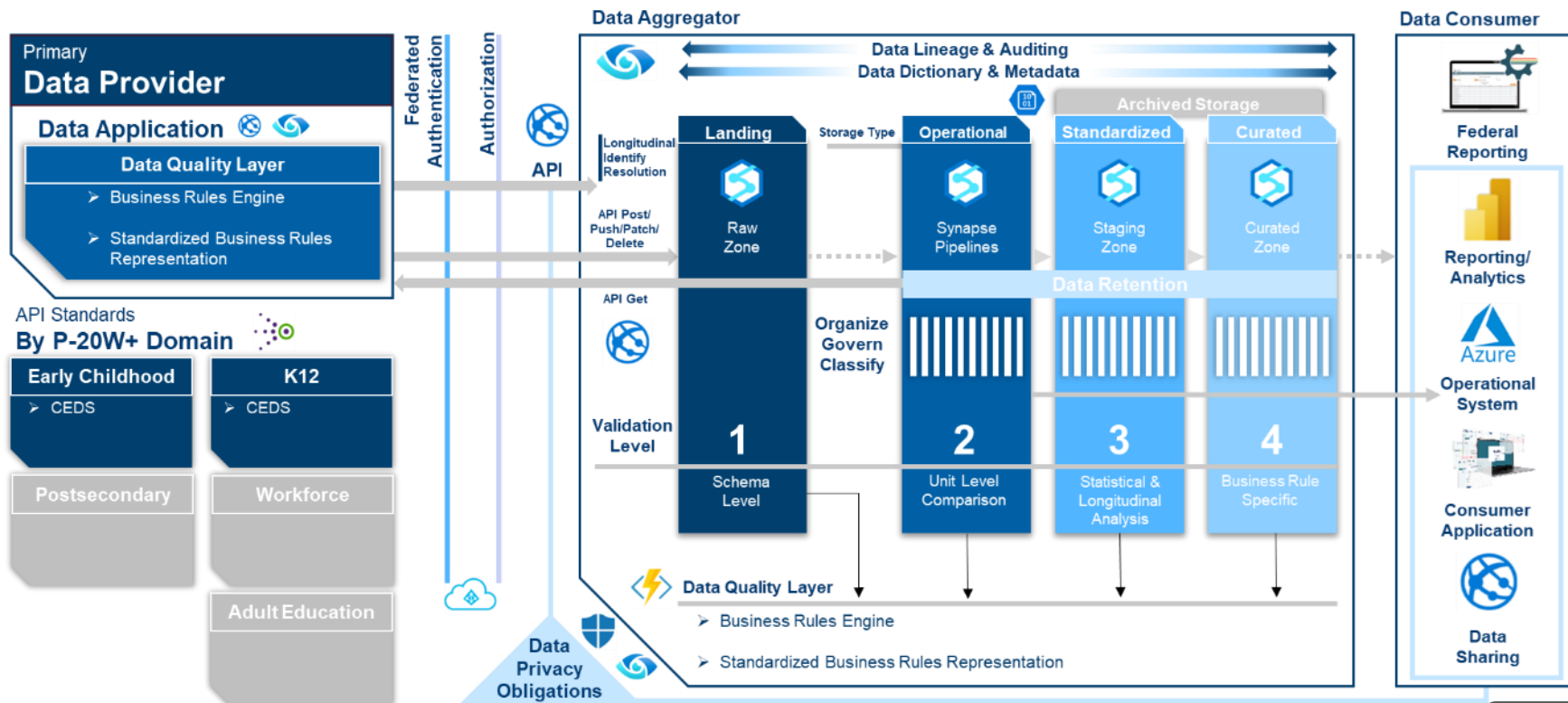
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P-20W+ Reference Architecture & MSIS Alignment



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SIS Modernization is Cloud and Vendor Agnostic



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	Data Integration	Data Processing	Business Logic	Lakehouse/ Warehousing	Transitional Databases	BI & Data Visualization	Front-end User Interface	Data Governance	Access & Security
Microsoft (Azure)	 Front-end Interface  Rest API	 Azure Synapse	 Azure Functions	 Azure Data Lake  Azure Blob Storage	 Azure Cosmos DB	 Power BI	 Azure Web App for Containers	 Azure Purview	 Azure Active Directory  Microsoft Defender for Cloud
Amazon (AWS)	 Amazon API Gateway  AWS Amplify	 Amazon EMR  Amazon Glue	 AWS Lambda	 AWS Lake Formation  Amazon S3	 Amazon DynamoDB	 Amazon QuickSight	 AWS App Runner	 Amazon Glue	 Directory Services  IAM  Amazon Inspector  Config
Google (GCP)	 Apigee	 Dataflow  Cloud Dataproc	 Cloud Functions	 BigQuery  Google Cloud Storage	 Cloud Spanner	 Looker  Data Studio	 App Engine	 Data Catalog	 Security Scanner  Cloud IAM  Security Command Center
Cloud Agnostic	 CEDS  EdFi  SIF	 Databricks  Snowflake		 Databricks  Snowflake		 Generate  Tableau  EdFi  Cognos		 Unity  Collibra  Alation	

MDE wants to share MSIS with other states



MSIS

The MSIS logo graphic consists of a blue graduation cap with three red stars above it, all enclosed within a red circular outline.

- MDE owns all IP produced from our development project
- MDE is publishing all materials from project on website
- MDE is moving towards open source

<https://www.mdek12.org/msis2.0>

MSIS 2.0 Full-Stack Walkthrough by the Numbers



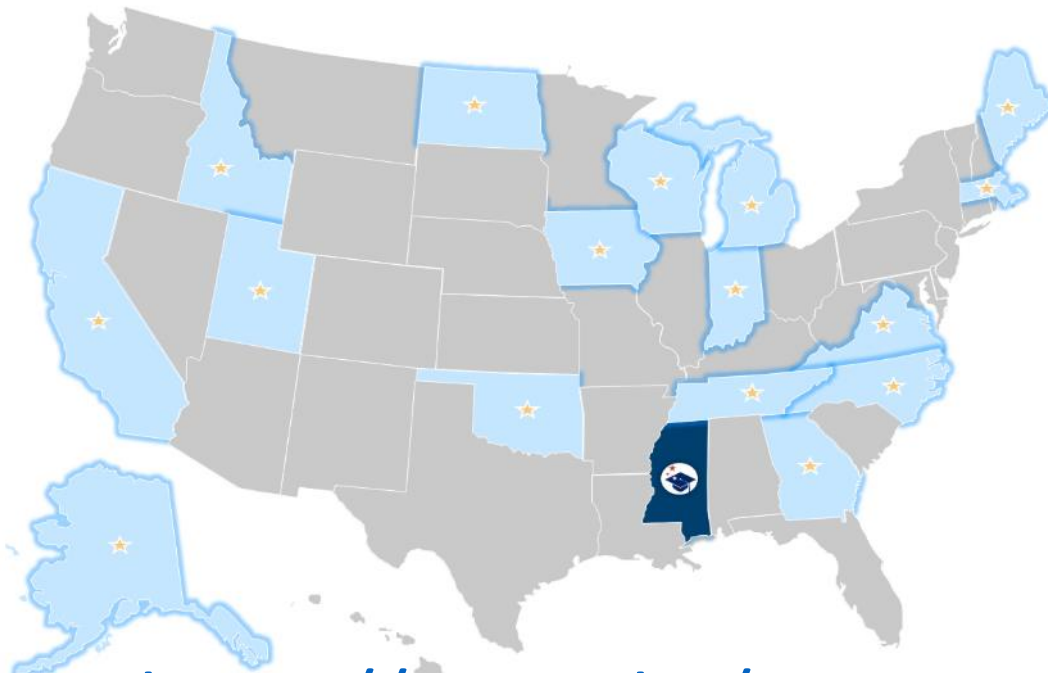
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122+ Total Attendees

**16 State Education
Agencies**

14 State IT Executives

**1 Federal Program
Officer**



<https://youtu.be/e5TxO1vU4I4>



Shared Roadmap/Shared Resources



Questions?