Advancing Education through the Community of Innovation

Higher Education Policy Conference
Introductions

Community Stewards

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Participant Goals

- **Become familiar with the P-20W+ Community of Innovation** including its mission and goals, as well as current and future projects.

- **Learn about current efforts** to align data infrastructure, toolsets, and practices across postsecondary education, K-12, and the workforce.

- **Learn how to engage and connect** their own work to the Community’s work.
Develop reusable solutions and approaches to accelerate progress of state P-20W+ modernization efforts, align the market to enable innovation and scale, and share the experience to enable “fast followers.”

**Vision**
Enable cost-effective, efficient, and accessible P-20W+ systems to derive actionable data insights to **reduce time to value, lower risk and cost** for P-20W+ modernization efforts.

**Mission**
Leverage deep experiences from states and expertise from solution providers to develop **capabilities, artifacts, and products** around common P-20W+ **use cases** to support modern P-20W+ data pipelines.

**Outcomes**

1. Accelerate progress of core states’ modernization efforts.
2. Align the market around common language, methodologies, and technical approaches to enable innovation and scale for states.
3. Structure and document the modernization experience to inspire and enable other states to be “fast followers.”
Community Goals

**Get Smart**
Improved understanding among states and solution providers about common P-20W+ challenges and current efforts to address them.

**Drive Alignment**
Improved alignment of modernization practices across states, solution providers, and data consumers through adoption of best practices.

**Strengthen Capability**
Improved capability through access to relevant and reusable playbooks and tools to advance current/future modernization efforts.

**Develop Capability**
Development of P-20W+ capabilities and shared solutions available for states to pilot/implement that support common P-20W+ use cases.
How We Achieve Our Community Goals

Prioritize innovation and explore new solution frontiers, that may inform new policy.

Focus on generating “public good” products and tools in high-priority areas for the core states.

Take a product orientation and focus on strengthening / developing capabilities, across process, technology, and policy.

Elevate importance of communicating this work to influence other states, funders, and P-20W+ partners.
Core Group Members

- State California
- State Indiana
- State New Mexico
- State Ohio
- State North Carolina
- State South Carolina
- State Texas

Solution Providers
- AWS
- Google
- Microsoft
Community Governance and Gathering Model

**STEWARD**
(CCSSO)

**STEWARD PARTNER**
(AEM)

**SOLUTION PROVIDERS**
Google • Microsoft • AWS

**CORE GROUP**
California
Indiana
New Mexico
Ohio
North Carolina
South Carolina
Texas

**PROJECT GROUP**
Project Lead
State Agency Staff
Solution Provider Staff
Achievement Partners

**ADVISORY GROUP**
Funders
Edu. Advocates/Partners

**ACHIEVEMENT PARTNERS**
Data Consumers
Technical Solution Experts
SMEs

**KEY STAKEHOLDERS**
Key Constituents
Other CoPs
Public Consumers
Other States
Other Data Consumers
Advocacy Organizations

**Scope**
The Capability Model provides a business-centric approach to setting the scope, context, and requirements for the P-20W+ Reference Architecture. It serves as the foundation for all architecture recommendations developed by the COI team.

**Intent and Usage**
Designed to assist P-20W+ leaders and stakeholders responsible for shaping their organization’s data strategy, the Capability Model serves as a guiding tool to assess, plan, and improve data management capabilities. It facilitates the identification of gaps and establishes a common language for discussions and planning.

**Key Points**
- The Capability Model provides a holistic view of the key capabilities required for successful data management and utilization within the P-20W+ ecosystem. It is a flexible framework that can be adapted to the specific needs and context of each organization.
- By assessing and enhancing capabilities in areas such as data governance, data quality management, analytics, privacy and security, organizations can strengthen their foundation for policy, research, and analytics.
Don’t duplicate effort.

Make, find, and share easily usable products.

Create tools that solve problems state organizations encounter during data and technical work.

Invent materials that break down user silos.

Support creation of coherence in the innovation process.

Guide others in finding and using tools to modernize.
## 2023 Roadmap Objective: Coherence Building

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td><strong>Governed Wiki, Accelerator Map, Data Dictionary Optimization</strong>&lt;br&gt;Governed Wiki invites participation, leverages community knowledge, provides gathering point. Map provides scaffolding to deploy each part of the reference architecture and guides users through modernization supports stewarded in Resource Library. Data Dictionary guides design and implementation of sustainable data dictionaries for longitudinal data systems.</td>
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<tr>
<td>2.</td>
<td><strong>Reference Architecture Blueprint</strong>&lt;br&gt;Foundational exercise to define and scope P-20W+ Reference Architecture framework; this will guide the trajectory of all following projects.</td>
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<td>3.</td>
<td><strong>P-20W+ automatic data suppression solution</strong>&lt;br&gt;Write logic to apply suppression algorithm based on the structure of 3-5 required tables. Post in Accelerator Map as first COI reference architectural product.</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Prototype visualizations (December launch):</strong>&lt;br&gt;Build on previous project work and products, implement suppression code (logic) on dummy data in the 3-5 required tables, build visualizations in Power BI, post code to build the visuals in Accelerator Map as second COI reference architectural product.</td>
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Reference Architecture

A “City Plan” for Your Data Landscape
Why do we need a Reference Architecture?

Reference Architecture provides a vision to the community—agencies, standards organizations, vendors, etc.—and ultimately supports timely analysis of data that results in evidence-based improvements.
What is the P-20W+ Reference Architecture?

**Blueprint for modern P-20W+ data systems**
A blueprint doesn’t define features like what color to paint walls or what sink to purchase, but the Reference Architecture does indicate where to build things—like data lakes or other systems.

**Foundation for making architectural decisions**
The Architecture Principles function like building codes that guide choices without being prescriptive about commitments to software or vendors.

**A plan setting scope, context, requirements**
As in urban planning, the Capability Model ensures optimal placement of infrastructure to support a community’s needs.
P-20W+ Capability Model

Scope
The Capability Model provides a business-centric approach to setting the scope, context, and requirements for the P-20W+ Reference Architecture. It serves as the foundation for all architecture recommendations developed by the COI team. The scope includes all major types of data workflows required by any P-20W+ organization.

Intent and Usage
Designed to assist P-20W+ leaders and stakeholders responsible for shaping their organization's data strategy, the Capability Model serves as a guiding tool to assess, plan, and improve data management capabilities. It facilitates the identification of gaps, establishes a common language for discussions and planning, and supports the prioritization of investments in data-related initiatives.

Key Points
• The Capability Model provides a holistic view of the key capabilities required for successful data management and utilization within the P-20W+ ecosystem. It is a flexible framework that can be adapted to the specific needs and context of each organization.
• By assessing and enhancing capabilities in areas such as data governance, data quality management, analytics, privacy and security, organizations can strengthen their foundation for policy, research, and analytics.
• The P-20W+ Reference Architecture is a best practice template for delivering or enhancing the capabilities defined in the Capability Model.
Architecture Principles

Business Principles
- Common Use Applications
- Compliance with Law

Data Principles
- Data is an Asset
- Data is Shared
- Data must be Accessible
- Data Providers should use Common Vocabulary and Data Definitions
- Data Security is paramount

Application Principles
- Technology Independence

Technology Principles
- Control Technical Diversity
- Interoperability
**P-20W+ Reference Architecture Model**

**Scope**

This reference architecture (RA) and its framework are designed to help P-20W+ organizations migrate to modern data infrastructure throughout their data pipeline. It provides a standardized blueprint that enables consistency, interoperability, and scalability across different systems and organizations.

**Intent and Usage**

Developed for P-20W+ leaders responsible for charting the course of their data and technical infrastructure, this RA can help guide design decisions and ensure alignment of technical solutions. It promotes the use of industry-standard technologies, architectural patterns, and integration approaches to facilitate seamless data exchange, to ensure data quality and security, and support efficient data use.

**Key Points**

- This reference architecture provides a reusable, standardized, and comprehensive framework for designing, implementing, and managing longitudinal data collection and use platforms within the P-20W+ ecosystem. It does not prescribe specific technologies or implementations.

- The Reference Architecture advocates for the adoption of standardized APIs. By starting the work of data standardization at the point of data provision, organizations not only engage in data quality efforts as near to their source as possible, but the community takes a powerful step in unifying practices at the very beginning of the data lifecycle.

- This design, based on documented, open architecture principles, moves data quality feedback loops as close to the point of the data’s origin as possible.

- This reference architecture accommodates multiple data storage approaches, from Relational Database Management Systems (RDBMS) to Data Lakes, but one important recommendation is the adoption of data standards.
P-20W+ Reference Architecture Model

**DATA PROVIDER**
- **DATA APPLICATION**
  - Data Quality Layer
    - Business Rules Engine
    - Standardized Business Rules Representation

**DATA AGGREGATOR**
- Longitudinal Identity Resolution
- API PUT
- API GET

**DATA CONSUMERS**
- Federal Reporting
- Reporting / Analytics
- Operational Systems
- Consumer Application
- Data Sharing

**API STANDARDS BY P-20W+ DOMAIN**
- **EARLY CHILDHOOD**
  - Gap
- **K12**
  - EdFi
  - A4L/SIF
  - OneEdTech
- **POSTSECONDARY**
  - PESC
- **WORKFORCE**
  - Gap
- **ADULT EDUCATION**
  - Gap

**Data Quality Layer**
- Business Rules Engine
- Standardized Business Rules Representation

**VALUATION LEVEL**
- Schema Level
- Unit Level Comparison
- Statistical Analysis
- Business Rule Specific

**STORAGE TYPE**
- Archived Storage
- CEDS Data Warehouse
- Curated
- Operational
- Standardized
- Landing
More to Come...

Phase II

COI Modernization Map
Provide concrete reference materials for each part of the reference architecture to support implementation.

30-Minute Interactive Webinar Series
COMING THIS FALL
1. With a Capability Model, You Can: Introduction to the COI Capability Model
Thank you!

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