



# AASHTOWARE OpenAPI

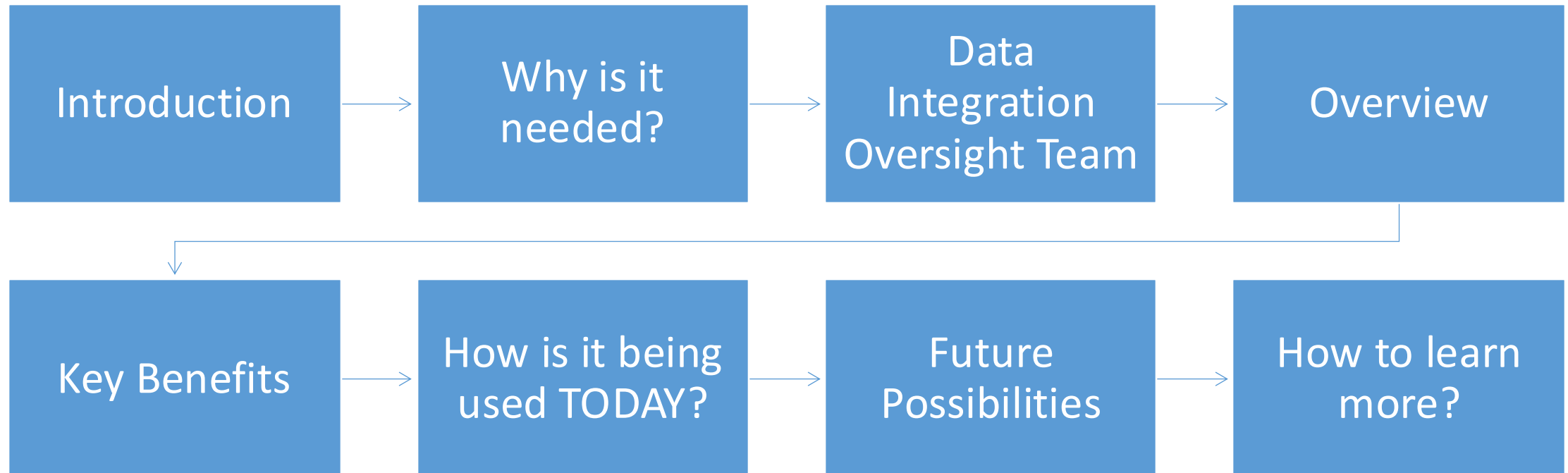
Framework to Improve Data Integrations

**BrMUG 2024 | Long Beach, CA | September 17-18**





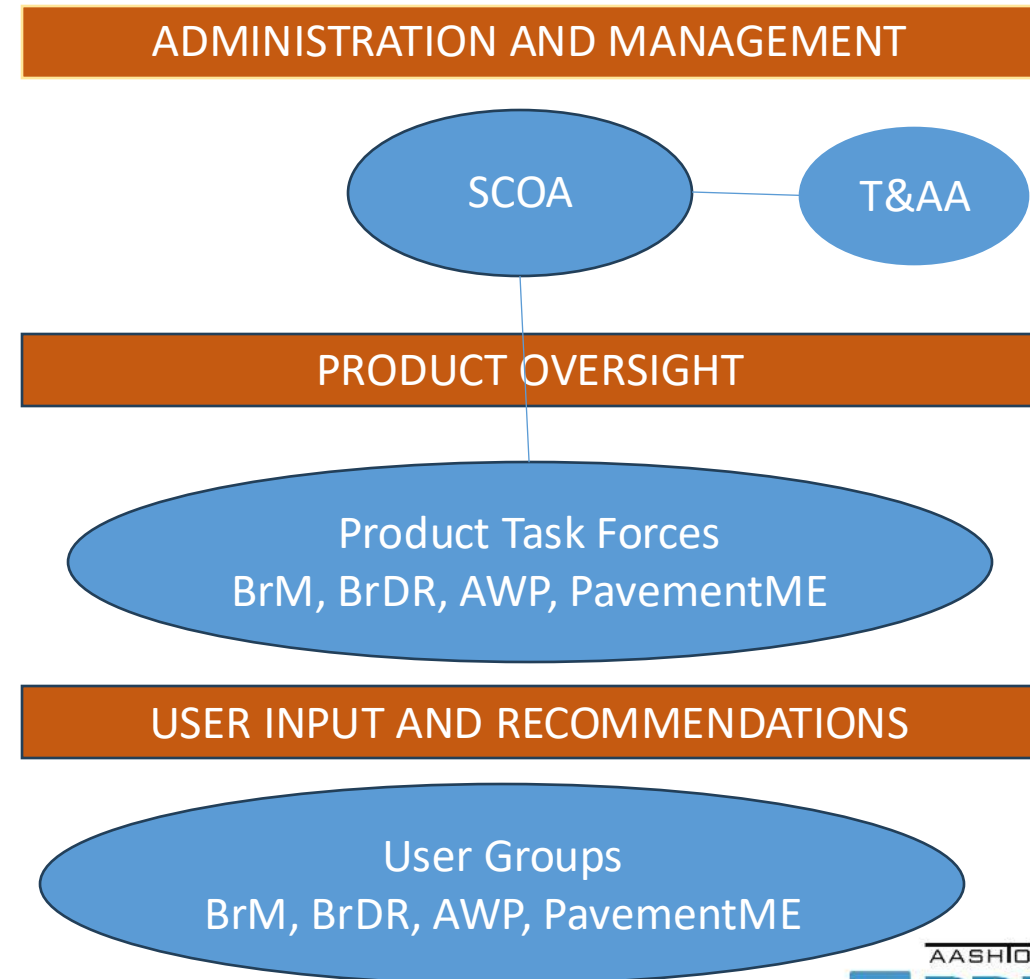
## Presentation Outline





## Technical & Application Architecture (T&AA)

- Chair - Brian Guerrette, Maine
- Vice Chair – Kyle Perkins, Iowa
- Joe Bruewer, Michigan
- Ryan Hilton, Washington
- Lou Anne Daugherty, Nebraska
- James Remsey, South Carolina
- Yosef Teferi, Minnesota
- Yueming Wu, West Virginia







## Intro to Data Integration

- Data Integration is the process of combining data from different sources to provide a complete, accurate and up-to-date dataset for BI, data analysis and other applications and business processes.
- Challenges in Data Integration
  - Multiple diverse data sources
  - Inconsistent formats and structures
  - Large data volumes / Scalability
- Importance of Data Integration
  - Improved Decision-Making
  - Increased Efficiency
  - Enhanced Customer Experience



## Intro to Application Programming Interface (API)

An API is a way for different applications and systems to communicate with each other over the internet. An API defines the rules and formats for exchanging data and information requests.

- Allows apps to access data and services from different sources and platforms
- Enables apps to reuse existing code and functionality without reinventing the wheel
- Facilitates interoperability and integration among different systems and devices
- Enhances security and privacy by limiting the access and exposure of sensitive data





## Why do we need AASHTOWare OpenAPI?

Siloed products: Limited data connections between product suites

Limited data connections with other DOT enterprise products (GIS, Design, Financial Systems, etc.)

Data integrations are expensive customized efforts at each DOT

“...to make it easier to implement AASHTOWare products within the ecosystems of the DOTs’ enterprise application landscapes.”

In response, AASHTO’s Special Committee on AASHTOWARE (SCOA) commissioned a two-phase AASHTOWare Standard Data Integration project in 2018





## Data Integration Oversight Team (DIOT)

- Chair – T&AA - Joe Bruewer (Michigan)
- Bridge Task Force – Craig Nazareth (Rhode Island)
- Project Task Force – Janet Treadway (Ohio)
- PavementME Task Force – Nair Harikrishan (Virginia)
- SCOA – Devin Townsend (Nebraska), Todd Bergland (Minnesota) and Margaret Pridmore (Idaho)
- WSP – Sedrick Bouknight and Jag Mallela
- AASHTO Staff – Shakita Battle-Morrow, Tim Jennings, Brian Korschgen, Maria Robinson, Lexi Berkley, Jake Jenson and Keith Platte
- Rest of T&AA



## Overview of AASHTOWare OpenAPI

- Runs on a modern cloud foundation
- Incorporates the full suite of AASHTOWare products
- A web-delivered, standards-based, data service framework
- Extends agencies' existing AASHTOWare investment
- Adds new integration capabilities to existing AASHTOWare features
- Modernizes AASHTOWare as an open platform
- Allows secure and private connection of data between all DOT enterprise applications







## Benefits of AASHTOWare OpenAPI?

- Establishes standards for accessing and managing AASHTOWare data and its connections over the web
- Eliminates traditional barriers by making AASHTOWare an open platform allowing for faster and more efficient Third-Party integrations.
- Allows for cheaper and quicker maintenance on data integration points
- Low-effort implementations of data integration
- Leveraging existing API-based integrations; build once, use often!
- Resources available to make use of the system with little to no training
- Immediate cross-platform, cross-stack, and language compatibility



## How is AASHTOWare OpenAPI is being used?

- PavementME – MERRA climatic data
- AWP - Nebraska and HaulHub e-ticketing (Virginia was also able to leverage and get things running quickly)
- AWP - Wisconsin – Working with census data and now census bureau wants to leverage it to use with many other states
- AWP – joint construction project on bridge between Ohio and Kentucky – sharing data so Ohio reports to Feds and pays contractors, as of August 2024 they can connect
- AWP – Quantimate – Minnesota leading effort and 14 other states joined. Effort is to automate quantities and cost estimation between Bentley & AWP products.



## Platform use – 90 Day Overview

13 states / 44 people connected

Connecticut	Active
Kansas	Active
Kentucky	Active
Louisiana	Active
Minnesota	Active
Mississippi	Active
Nebraska	Active
Ohio	Active
Oklahoma	Active
South Carolina	Active
Virginia	Active
West Virginia	Active
Wisconsin	Active
New Mexico	Pending

# of Successful Requests

/apis/aashtoware-eticketing-service	12
/apis/aashtoware-openapi	3.819 K
/apis/aashtoware-project-ams	23.732 K
/apis/aashtoware-project-ams-lab	10
/apis/AOAPICopilot	14
/apis/aw-api-demo	15
/apis/awapidiagnostic	647
/apis/AWBridgeBrDR	1
/apis/brm-6-7-public-api	2
/apis/brm-api	5

Average Response Time

/apis/aashtoware-eticketing-service	4.92 ms
/apis/aashtoware-openapi	2.08 s
/apis/aashtoware-project-ams	1.01 s
/apis/aashtoware-project-ams-lab	2.51 s
/apis/AOAPICopilot	2.03 s
/apis/aw-api-demo	31.17 ms
/apis/awapidiagnostic	93.05 ms
/apis/AWBridgeBrDR	24.47 s
/apis/brm-6-7-public-api	1.07 s
/apis/brm-api	2.69 s





## Future Possibilities – AASHTOWare Products



### **AWP to DOT Financial Systems**

Support Contractor Payments



### **All AW Products to DOT Enterprise DW**

Fuse AW data with other DOT data sources



### **DOT Project Mgmt Systems to AWP**

List of projects to support estimation and preconstruction processes



### **DOT Doc Mgmt Systems to AW Products**

Access/save documents



## Future Possibilities – BrM related



### **AWP Construction to AW BrM**

Completed Project Data



### **AW BrM to DOT Asset Mgmt Systems**

Inventory, Condition,  
Projects (Planned, Maint,  
Rehab)



### **Inspection Systems to AW BrM**

Structure Inspection Data

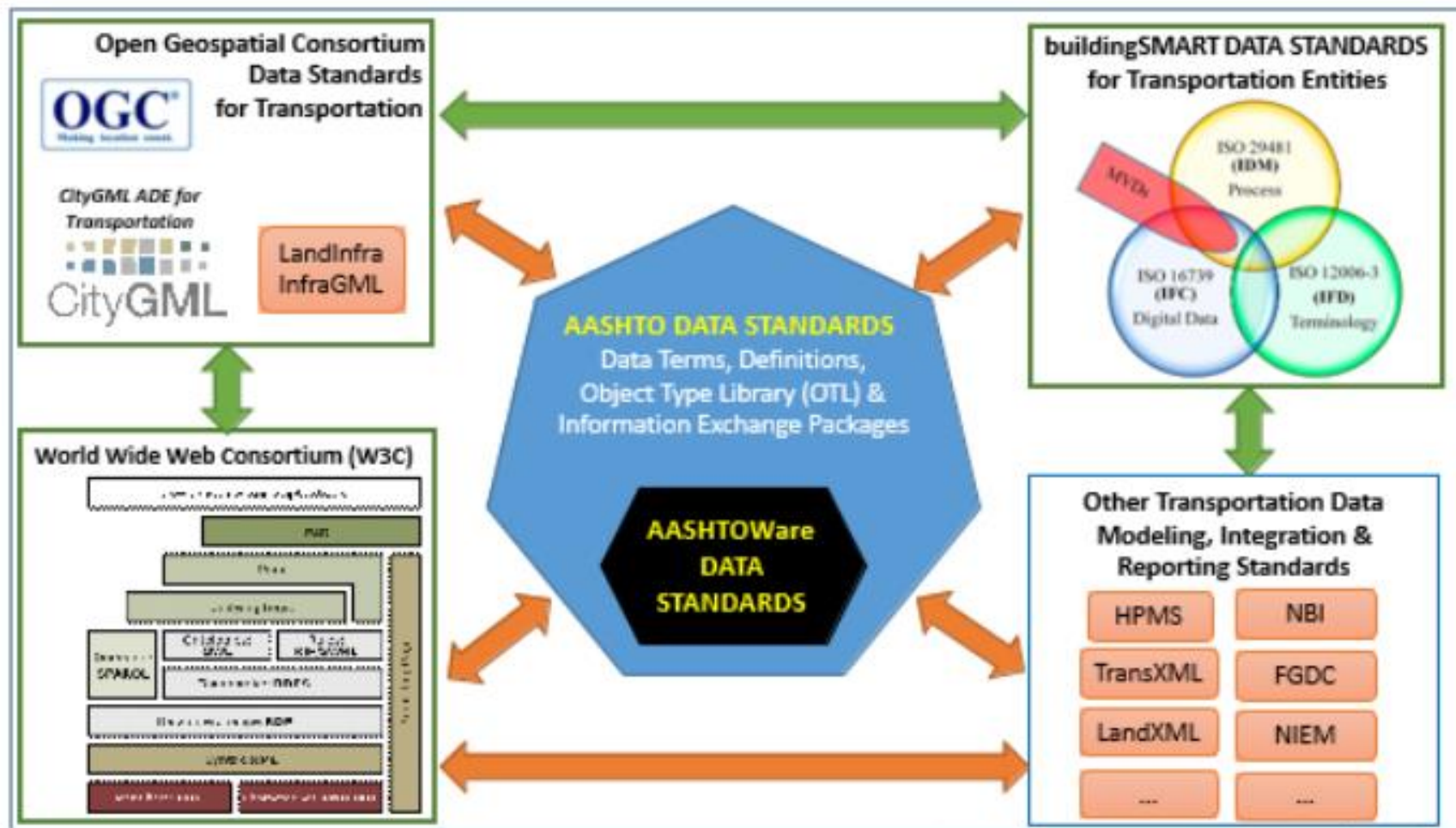


### **DOT LRS to AW BrM**

Route Network and  
Structure Locations



## Future Possibilities with OpenBIM







## AASHTOWare OpenAPI: How to learn more?

- <https://www.aashtoware.org/openapi/>
- <https://developer.aashtoware.org/> (Developers)
- Webinars:
  - November TBD – How groups are using AW OpenAPI today
  - January or February TBD – Future uses of AW OpenAPI
- AASHTOWare Connect – April / May - TBD



# 2024 BrMUG Annual Meeting

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# Questions?

