

ABOUT AEGIST

The Pooled Fund Study (PFS) titled Applications of Enterprise GIS in Transportation (AEGIST) was initiated by FHWAs Office of Planning in 2018. During the Phase 1, a guidebook was developed focusing on an enterprise geospatial systems approach for Departments of Transportation in the United States. The project objective was to develop guidance defining how spatial and linear referencing system (LRS) data should be managed by these agencies. Phase 2 of this PFS began in October 2019 and finishes late in 2024. This project encompasses working with over 16 States advancing existing practices, standards, tools and systems used for management of spatial data. The focus of Phase 2 is coordination with the participating States and utilizing their collective input to develop and implement solutions, standards, tools and spatial data management and processing algorithms associated with data modeling, quality, integration, engineering, analytics and governance. Based on the inputs and enterprise GIS implementations, an updated version of the guidebook will be published with documented best practices and implementation approaches.

TECHNICAL SERVICES, ANNUAL WORKSHOPS, WEBINARS, PEER EXCHANGES AND QUARTERLY MEETINGS WITH 16+ STATES DURING 2021-2024

Spatial Data Modeling, Integration, Quality, Governance and Standards Compliance, including but not limited to:

- Roads Data Model: Linear Referencing Routes, Centerlines per HPMS, ARNOLD, USRS, NG911
- Intersection Data Model (MIRE and IFC Roads Compliant)
- Routable Network Data Model for Detours, Emergency Vehicle and Trucks Routing
- Roadway Data Model for Highway Safety Analysis
- Bridge and other Structures Data Model for Asset Resiliency Analysis

Data Governance for Building Information Modeling (BIM)

- Managing Data as an Asset using a Data Portfolio: Tool for Data Governance Councils
- Spatial Data Readiness and Use in Business Operations for Diagnostic and Predictive Analytics and Decision Support
 - Traffic Systems Management & Operations
 - Freight Network Modeling
 - Strategic Highway Network (STRAHNET)
 - Highway Economic Requirements Analysis (HERS)
 - HPMS, ARNOLD, NBI, NBE-BME Reporting

- Data Engineering Platform for Integrating and Engineering Data across Enterprise Systems
- Highway Safety Analysis
 - Travel Demand Modeling
 - Asset Performance, Resiliency Analysis
 - Project Selection, Planning and Prioritization
 - As-builts, Asset Inventory and Condition Management





Upcoming Events: Quarter 1 2021

- January 21st-29th, 2021: TRB 2021 Virtual Booth
- February 11th, 2021: Spatial Data Governance
- March 15th, 2021: Quarterly Meeting of PFS States
- April 19th 22nd, 2021: GIS-T Workshops & Presentations
 - Building Information Modeling (BIM)
 - Federal Roads Conflation with DOT LRS
 - DOT & Local Agencies Roads Data Modeling, Exchange and Governance: Best Practices
 - Preparing Data for HPMS and MIRE using Open Standards
 - HSM-based Highway Safety Data Analysis and Importance of MIRE Data Items for HSIP

How Do I Get Involved?

- For more information and version 1.0 of the guidebook, please visit: <u>https://www.gis.fhwa.dot.</u> gov/AEGIST.aspx
- Questions?, Contact Joe Hausman, FHWA. Joseph.Hausman@dot.gov

What does my agency get by getting Involved?

- 750 Hours of Services to Plan and Support Technical Priorities of Pooled Fund Agencies
- Guidance on Agency-Specific Issues & Challenges
- Peer States & Agency Best Practices Information
- Data Modeling, Integration, Engineering, Analysis Tools and Standards

SPATIAL DATA GOVERNANCE FOR BUILDING INFORMATION MODELING AT TRANSPORTATION AGENCIES

Incorporating Findings from FHWA and AASHTO Data Governance and Integration Efforts, such as:

- FHWA, Integrating 3D Digital Data Models into Asset Management
- FHWA, Identifying Data Frameworks and Governance for Building Information Modeling (BIM)
- FHWA, Integrating BIM for Infrastructure Data with Highway Emergency Response
- FHWA, National Strategic Work Plan for Building Information Modeling (BIM)
- AASHTOWare Data Integration Framework (for integrations between Enterprise GIS, LRS, Asset Management, Planning, Design and Construction Systems)





DATA MODELING, QUALITY, INTEGRATION, ENGINEERING AND ANALYTICS FOR BUSINESS USERS AND DATA SYSTEMS

Using Linear and Spatial Referencing Standards for Modeling, Integrating & Analyzing Data in Linear Referencing System, GIS System, Asset Management Systems, Project Management Systems, Design and Construction Systems, Traffic Systems, Safety Analysis, Travel Demand Modeling Systems, Planning and Programming Systems.

Data Modeling and Management Standards Compliance ISO-19850, HPMS 9.0, MIRE 3.0, NBI, NBE-BME, ARNOLD, IFC, OGC GDF, NG911, USRS



Traffic and Safety Data Models for capturing Incidents, Crashes, MIRE FDEs, Intersection Elements, Traffic, Weather and Streaming Traffic Systems Management and Operations data from IoT devices, probes, sensors, traffic systems.

Routable Network Data Model with Topology, Connectivity, Turn Penalties and Restrictions for Emergency Response, Detours Planning, Routing, Travel Demand Modeling, Forecasting Traffic Analysis, CV/AV and UAV Systems.

Asset Inventory, Performance Risk and Resiliency Analysis Data Models Roads and Assets Inventory Operations, Asset Life Cycle (LCP), Transportation Asset Management Plan Development (TAMP), Asset Performance Analysis, Highway Performance Monitoring (HPMS) & Economic Analysis (HERS)

Project Information Model (PIM): Project Funding and Financial data, Project Locations (Assets, Routes, Segments, Right-of-way Assets), Environmental Impact and FMIS data.

Survey and Design Data Models (2D-9D) built using existing asset data models from GIS and LRS data systems. Development and exchange of digital elevation, point cloud, mosaic and imagery data between design, GIS, LRS & Asset systems.

Asset Information Models (AIM): Routes, Bridges, Pavement Sections, HPMS Sections, Tunnels, Retaining Walls, Noise Barriers, Signs, Signals, Guardrails, Interchanges, Roundabouts, Intersections, Guardrails, Medians, Shoulders, Markings, Crosswalks, Sidewalks, Environmental Assets, Utilities, Parcels, Fiber, etc.

Standardizing Spatial Data Development, Quality Assessments, Integrations, Enterprise Dataflows, Predictive, Diagnostic, Prescriptive Data Analytics (Spatial Statistical, Econometric, AI/ML) and Data Governance By Implementing Data Engineering and Business Intelligence Delivery Platforms.