

Applications of Enterprise GIS in Transportation (AEGIST)



U.S. Department
of Transportation

**Federal Highway
Administration**

Advancing transportation with data modeling, integration, and analytics.

Why AEGIST

Transportation agencies are taking a more integrated approach to data management. Adopting such an approach requires data management policies and standards that address how data is created within various systems, the quality and accuracy of data generated, and how the data from different systems is integrated and utilized for business

decisions across multiple departments, both within and outside the organization. AEGIST is looking at geospatial enhanced data management through the following lens:

- Data and Standards
- Policies and Processes
- Tools and Technology
- People and Skills

AEGIST enables State and Local transportation agencies by helping them create and integrate spatial transportation data in a consistent and systematic manner for use in transportation systems and business processes. Agencies can utilize AEGIST to ensure that their data is governed, quality, accurate, reliable, complete, standards-based, temporal and topologically connected. Preparing and provisioning such data to decision support systems would allow transportation decision makers to achieve the following goals.

Enabling Data Offices/Councils & Geospatial Information System Units at State DOTs to meet Agency Performance Goals and Objectives of Business Units at their Agencies

Project Planning & Programming

Project
Selection &
Evaluation

Highway Economic
Requirements
Analysis

Statewide
Transportation
Improvement Program

Asset Management

Payment
Life Cycle Plan

Bridge Live
Cycle Plan

Maintenance Work
Management

Emergency Response

Asset Inventory & Routine
Inspection Operations

Data Office, Data Governance Council, Data, Analytics Unit, Information
Technology (IT) Unit, Geospatial Information System (GIS) Unit

Design & Construction: Digital Delivery

Survey
(Ground Survey,
Mobile Lidar, Aerial
Imagery & Lidar)

Environmental
Planning, Design &
Fabrication

Construction
Management

Traffic and Safety

Travel Demand
Modeling

Highway Safety
Analysis

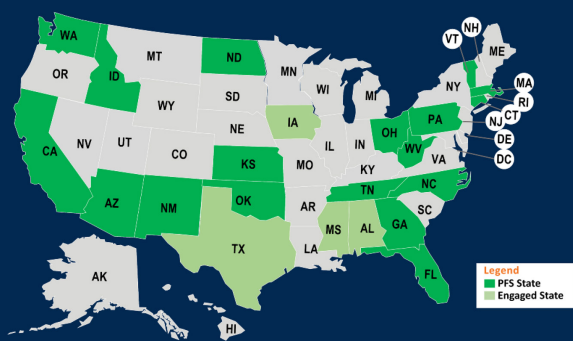
Freight / Truck
Routing

Congestion
Management

Traffic Systems Operations
& Management

Source: AEGIST Interim report

AEGIST Overview



Source: [Pooled Fund Study \(PFS\) State Activities | Outreach for Applications of Enterprise GIS In Transportation](#)

AEGIST is a Federal Highway Administration (FHWA) and States led pooled fund initiative that started in 2018 to address the many core issues that State Departments of Transportation (DOTs) face in the areas of road network data modeling, data integration and interoperability.

During Phase I of this study a Guidebook was developed for transportation agencies in the United States on how spatial and linear referenced data should be managed by States. Currently, in Phase II (2019-2024), over 20 State DOTs are involved in advancing existing practices, standards, tools and systems used for management and governance of spatial data.

What's Next?

As part of Phase 2 of this study, the guidebook created in Phase 1 will be updated to establish standards, best practices and implementation approaches for GIS applications used in Project Planning, Design, Construction, Asset Management, Traffic and Safety business processes. The updates to the AEGIST Guidebook will be based on implementation of spatial data modeling, data engineering, data integration, data governance and data analytics applications at AEGIST PFS States. Planned AEGIST guidebook updates and technical services activities at PFS States include:

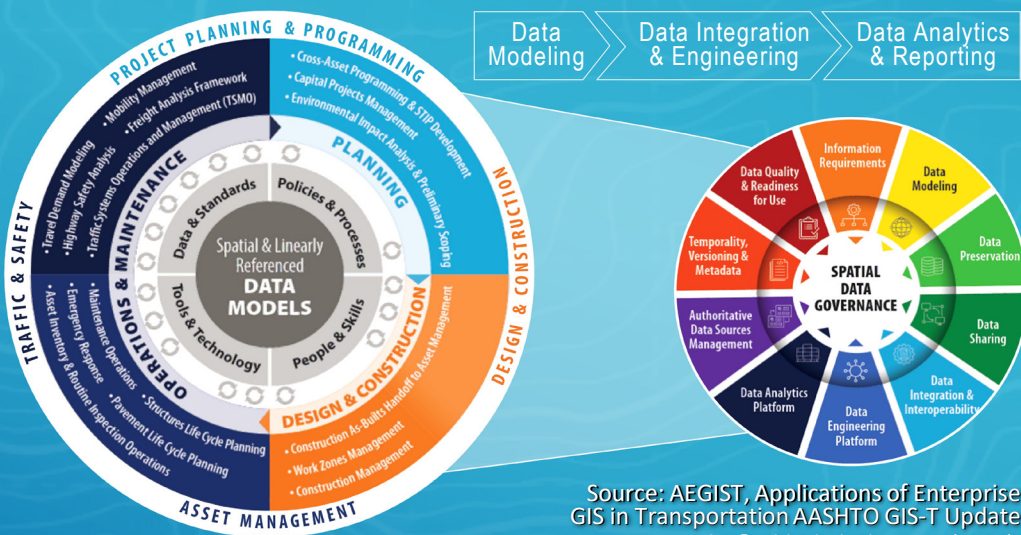
- Development and adoption of spatial data modeling standards and governance systems
- Enabling Building Information Modeling (BIM) processes for road assets and events data management through implementation of best practices in linear and spatial referencing
- Developing Routable, Topologically Connected, Multimodal Route and Intersection Data Models, as well as Roadway Asset and Project Information Models
- Exchanging Roadway Alignment and Characteristics Data between GIS, LRS and Design Systems

Resources Available

As agencies prepare for the future of transportation data and applications management, AEGIST offers guidance through workshops, webinars, peer exchanges and agency-specific dedicated technical services targeted at data modeling, integrating, engineering and analytics.

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

DATA MANAGEMENT AND GOVERNANCE



Source: AEGIST, Applications of Enterprise GIS in Transportation AASHTO GIS-T Update Copyright © Abhishek Bhargava (2021).

Get Connected

For more information and version 1.0 of the guidebook, please visit: <https://www.gis.fhwa.dot.gov/AEGIST.aspx>

AEGIST Interim Report and available presentation decks: <https://gisintransportation.com/presentations/>

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