

Applications for Enterprise GIS in Transportation

***Quarterly Progress Report (QPR) Applications of Enterprise GIS in Transportation***

**Progress Report for Quarter [July 1st, 2024 – September 30th, 2024]**

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**Background**

The Pooled Fund Study (PFS) on Applications of Enterprise GIS in Transportation (AEGIST) was initiated by FHWA in 2018. During Phase 1 of this study a guidebook was developed for transportation agencies in the United States, with the primary objective of documenting guidance on how spatial and linear referenced data should be managed by States. Phase 2 of this PFS was initiated in October 2019. This phase will span over 5 years (October 2019 – September 2024), during which the objectives outlined below would be accomplished.

**Objectives**

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Establish a standard for managing and governing

data in spatial and linear referencing systems at transportation agencies, including but not limited to routes, intersections, interchanges, roundabouts, road segments, roadway characteristics, infrastructure assets, model inventory of roadway elements (MIRE), HPMS data items and

ARNOLD road network.

Develop guidance for States for modeling spatial transportation data, especially linear referencing system (LRS) data. Importing, exporting & conflating road network and roadway characteristics data across DOT LRS and Federal, State and Local data systems.

Conduct a series of webinars, workshops, peer exchange meetings and provide consulting services to the States participating in the pooled fund to develop national standards in data modeling and management; enhance existing enterprise GIS systems at these agencies.

Update the AEGIST Guidebook that was prepared in Phase 1 by documenting best practices, patterns and similarities across agencies in managing spatial data using enterprise data systems, including but not limited to Asset Management Systems, Traffic and Safety Systems, Project Planning and Programming Systems, Design and Construction Systems, and GIS and Linear Referencing Systems (LRS).

Collaborate with States to enhance and develop spatial data management systems, processes, platforms to establish a structured and systematic approach for management of spatial data. This would involve establishing spatial data governance systems, business rules, applications, tools and platforms for:

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Spatial Data Modeling

Spatial Data Integration and Engineering Spatial Data Analytics

Quarterly Project Report

*This report is a representation of the project status as of September 30th, 2024*

1

Applications for Enterprise GIS in Transportation

**Completion Status and Summary**

Time Frame:

Total Time, months:

Time Expended, months:

Percent Calendar Time Expended: Percent Complete for Tasks & Sub-Tasks:

October 1, 2019 to December 30, 2024

63

60

95%

Quarterly Project Report

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2

**Base Period: CLIN0001**

**Tasks**

**Sub-Tasks**

**Percent Complete**

Task 1: Project Management

1. Quarterly Meetings & Technical Tasks Planning

**100%**

2. Quarterly Status Reports

Task 2: Technical Services

1. Washington **- 100%**

**100%**

2. Georgia **- 100%**

3. Idaho - **100%**

4. California - **100%**

5. Pennsylvania **- 100%**

6. Ohio - **100%**

Cross-Agency Activities: Guidebook Development - **100%**

Task 3: Workshops, Webinars, Presentations

1. Webinar 1: Data Governance
2. Workshops: GIS-T 2019 and GIS-T 2021
3. Presentations 2020 and 2021
4. Flyers, Events Site Updates

**100%**

Task 4: Member State Meetings

1. Member State Meeting 1 – 2019
2. Member State Meeting 2 – 2020

**100%**

**HPMS 9.0 Data Architecture: CLIN0005**

**Tasks**

**Sub-Tasks**

**Percent-Complete**

Task 5: HPMS 9.0

Recommendations

Road Network Data Architecture

Data Modeling Standards, Use Cases, Topology

**100%**

**Performance Period 1 and 2: CLIN0002 and CLIN0003**

**Tasks**

**Sub-Tasks**

**Percent Complete**

Task 1: Project Management

1. Quarterly Meetings & Technical Tasks Planning

**90%**

2. Quarterly Status Reports

Task 2: Technical Services

1. New Mexico – **100%**

**95%**

2. Connecticut – **100%**

3. Florida – **100%**

4. North Carolina **– 100%**

5. Kansas **– 95%**

6. Tennessee **– 100%**

7. Massachusetts **– 100%**

8. North Dakota – **80%**

9. Arizona – **100%**

Cross-Agency Activities: Guidebook Development **- 95%**

Task 3: Workshops, Webinars, Presentations

1. Workshops: GIS-T 2022 and GIS-T-2023
2. Presentations 2022 and 2023
3. Flyers, Events Site Updates

**100%**

Task 4: Member State Meetings

1. Member State Meeting 1 – 2022
2. Member State Meeting 2 – 2023

**100%**

Applications for Enterprise GIS in Transportation

**Work Accomplished This Reporting Period: July – September 2024**

**Task 1: Project Management**

**Task Objective**: Perform project management activities, which include conducting monthly status meetings, developing quarterly status reports, creating project work plan, managing project resources, schedule, deliverables and communication with all stakeholders.

**Activities**:

1. Prepared and delivered AEGIST Quarterly Report #20 for the period July – September 2024.
2. Technical services tasks managed for following PFS States: Arizona California, Connecticut, Kansas, North Carolina North Dakota, and Massachusetts. Details provided in the section below on Task 2.

**Task 2: Technical Services**

**Task Objective:** Provide technical services associated to PFS States by completing various agency-specific and cross-agency activities identified in the work plan.

**Activities**:

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**Arizona**

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Identified and scheduled discussions with business units: travel demand modeling, design – to establish road ID data architecture requirements of these users

* Held meeting with ADOT Fiber Management team to investigate how/what kind of fiber assets are referenced on state and local roads.
* Held follow up meeting with ADOT’s Traffic Monitoring group to investigate intersection traffic data (turn movements), Tracking of managed lane information, Traffic data integration into LRS system

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Identified applications that can be integrated with Roads and Highways for management of business data on route network using the intelligent route ID

Gap analysis on enterprise application integrations for development of recommendations on geospatial enterprise data integration. Analysis of route ID data architecture inputs from business groups. Updates to matrices and charts associated with use of Route ID for linear referencing of business data by different business groups

Development of Application Communication Diagram to identify ADOT systems that need to be integrated with LRS and/or systems that need updates to Route ID use and exchange with ADOT LRS

Developed matrices for how roads identifiers are used by (a) business groups and (b) software applications. Matrices used to help visualize the requirements for Route ID data architecture from the interviews of business users in planning, safety, pavement management, maintenance

Developed systems matrices to present the findings on road ID use in business systems across – planning, safety, pavement management, maintenance management, asset inventory management, finance and travel demand modeling, fiber management, planning and programming.

Development of graphics, charts and visuals to present the findings on road ID use in business systems across – planning, safety, pavement management, maintenance management, asset inventory management, finance and travel demand modeling

Analysis of findings from discussions with business stakeholders on route ID data architecture. Established guidelines for building intelligent route ID based on inputs and feedback from business groups Development of report to document business unit requirements on information they need to reference business data on roads

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**California**

**[Task 2.CA.1] California Roads Sharing (CaRS) report**

* Held monthly CaRS Task Force meetings with 12 California counties, CalOES and Caltrans

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Held bi-weekly CaRS Core Group meeting with Caltrans, CalOES, Merced County, and Shasta County to discuss next steps for CaRS monitor ongoing action items

Held bi-weekly CaRS 1Integrate meetings with Caltrans and 1Spatial to review 1Integrate process and monitor ongoing action items

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Quarterly Project Report

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3

Applications for Enterprise GIS in Transportation

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Preparation for discussion with CaRS Working group on committee structure and reporting approach/plan to CCISDA

Development of ArCGIS Hub Configuration plan for collaboration and coordination between California counties and local agencies

* Architected design for ArcGIS Hub platform to plan how it would be used by California counties, Emergency management agency (CalOES) and Caltrans to coordinate, communicate and coordinate on the California road sharing initiative
* Ingested Placer and Merced counties data into Caltrans ArcGIS Hub through the published roads feature services of these counties to demonstrate how ArcGIS hub could be utilized.

Coordinated numerous working sessions with Caltrans and 1Spatial to configure 1Integrate

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Configuration of 1Integrate platform with data quality rules that will be used for validating county data before it is integrated with Caltrans data

Held working sessions with Caltrans and IIntegrate to review the configuration process for 1DataGateway. Topics covered were deployment and configuration of essential geometry and essential networks, and configuration of database and feature service connections.

Held a working session with Caltrans and 1Integrate to set up NG911 Road Centerline event in Caltrans All Roads LRS in order to publish a feature service that can be connected to and from tools like 1 Data Gateway/1Integrate to add/update event data.

1Integrate platform configuration to ingest Caltrans All Roads LRS data from Roads and highways into 1Integrate using feature service

ArcGIS Online and ArcGIS Hub Configuration planning for exchanging roads data across agencies Held final 1Integrate and 1Data Gateway Configuration session with Caltrans and 1Spatial to review change detection

* Collaborated with 1Spatial to determine the architecture and workflow of the California roads data integration solution that will allow counties to upload shapefiles of roads data for integration with Caltrans All Roads data
* Scheduled 1Integrate configuration sessions for setting up roads data validation rules and for preparation of 1Data Gateway platform for allowing submission of county roads data

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Held meeting with the California CCISDA counties on Road sharing and identified the counties who would share information about how roads data is being compiled in coordination with cities.

Established how the California road sharing task force could be setup under the CCISDA GIS Working group and the kind of transportation project initiatives that can be driven by the task force

Planned activities necessary to review/update the California Road Sharing working group charter over next few months in coordination with various California agencies.

Collaborated with Merced County, Shasta County, and Marin County to develop presentations for CaRS Working Group meeting regarding engagement between cities and counties. Developed questions to guide conversations with counties surrounding their engagement with jurisdictions

Presentation of California Road Sharing (CaRS) program vision, objectives to Los Angeles (LA) County. Discussion on use of 1Integrate and 1Data Gateway tools and roads data change management processes at LA county.

* Contacted LA County to discuss when the use of 1Spatial solutions can be discussed
* Extended invite to LA county to attend monthly CaRS working group meetings

Met with Placer and Merced County to understand how they are leveraging their ArcGIS Hub Premium and Hub basic sites to share data across their respective counties.

Provided Shasta County the latest CaRS Task Force deck for use to debrief at next CCISDA working group meeting on Sept 11th

Contacted CalOES to discuss access to NG911 database or data snapshop for Caltrans

1Integrate and 1Data Gateway software configuration to ingest counties data and generate change proposals based on CalTrans All Roads LRS data

Held virtual working sessions with Caltrans and 1Integrate to review Marin County data results and proposals generated

Held virtual working sessions with 1integrate to identify logic issues stemming from wrong class being selected in a comparison

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Quarterly Project Report

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4

Applications for Enterprise GIS in Transportation

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**Connecticut**

Developed architecture for Functional class web application

Programmed the functional class web application to display CTDOTs functional class feature layer and the routes layer.

Added a form to the functional class route application to allow users to request a change to the functional class.

Development of the web application for updating road functional class.

Unit testing of the features developed in the web application including testing with editable feature services from Connecticut DOT

Updated functional class updates web application code to add features that would allow updates to be saved to a separate feature class for review/approval

Prepared presentation to Connecticut for demonstration of the web application

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**Florida**

Updated intersection data model tool to generate intersection data model features: nodes, intersection/junction points, intersection leg, road elements, intersection polylines

Executed updated intersection data model tool to regenerated intersection features using Florida routes data as input

Updated geoprocessing tool to create Florida intersection/junction points using route centerlines Identified issues with results on intersection modeling features generated using the geoprocessing tool and established what changes need to be made to the algorithms to address issues.

Used structures layer to identify grade separated intersections. Incorporated function in geoprocessing tool Created intersection polyline features using road elements that meet at the intersection

Updates to intersection data model development script to account for Florida specific road network data schema

Re-run of the intersection data model script to generate nodes, intersections, and intersection legs.

Next steps: Generate Road elements, intersection polylines. Flag points that are not nodes (e.g. flyover routes intersection with underlying routes)

Continued development of the intersection data model using the geoprocessing tool for generating intersections, nodes, road elements, intersection legs.

Incorporated structures feature class to flag points where flyover routes intersect routes associated with roads under the flyover. Flagged these points as ‘Non-Decision Nodes’, as there is only one decision to be made.

Extracted updated routes, arcs and nodes data from Florida DOTs feature service and set it up as input into the geoprocessing tool

Performed geometry assessment checks on routes and arcs data to prepare the new dataset for use in the intersection modeling tool

Continued development of intersection model using Florida Routes, Arcs and Nodes data. Updated logic for development of intersection points using nodes

Continued updates to the intersection modeling tool based on routes, arcs, structures layers. Regenerated intersections data – intersection points, intersection legs, road elements, nodes.

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**New Mexico**

* Downloaded new route network data from NMDOT to execute intersection model tool and generate intersection legs, intersection points, nodes, and road elements.
* Performed data quality checks on route network data that was downloaded. Looked for locations with overshoots, undershoots, non-monotonic measure values. Assessed readiness for generating the intersection model

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**Massachusetts**

**[Task 2.MA.1] Interchange Data Modeling**

* Updates to geoprocessing tool to build intersection model – Addition of parameters to the tool and replacement of hard-coded inputs
* Testing of the modified tool to regenerate the intersections data and resolution of errors. Cataloged additional errors to be fixed.

Quarterly Project Report

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5

Applications for Enterprise GIS in Transportation

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**Tennessee**

Development of geoprocessing tool to extract information from the exported digital as-built model. Geoprocessing tool can be used to extract road width and shoulder width information from a geospatial file that was exported from design system

Prepared instructions for TDOT to implement the BIM-GIS integration pipeline for configuring the design system as per the LRS road network modeling requirements and extract information from such a design system for delivery to road data managers

Configured Open Roads Design workspace to enable it to capture information about roads for export to the LRS system. Design workspace configuration to add information about road assets in the asset configuration file for export of roadway data from design to construction

Processing of IFC file for data extraction from the exported digital as-built prototype model from Bentley Open Roads

Documented history of design workspace updates and laid out the proposed modifications to the workspace for generating road geometry and attributes data for dissemination to the linear referencing system Developed package to deliver final deliverables: design files, extracted geospatial layers, design workspace, geoprocessing tools

Prepared presentation to Tennessee for final delivery of all deliverables that would help establish how the DOT could migrate data from design systems to GIS/LRS systems

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**North Dakota**

* Processed Statewide Lidar data to classify the data and prepare it for use in Artificial Intelligence (AI) algorithm to extracts from Lidar data
* Developed and evaluated AI models to extract roads from the classified Lidar data

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**All States: AEGIST Guidebook**

Developed AEGIST Guidebook: Chapters on Routes Modeling, Intersection Modeling, Asset Information Modeling, Project Information Modeling,

Prepared executive summary based on updates to routes modeling, intersections modeling and asset modeling chapters

Developed glossary of terms with ISO-19148, ISO-20524 and NCHRP 20-27.

Scheduled and conducted Guidebook review sessions with FHWA office of safety to discuss (a) modeling of conflict points (b) types or road network data model and their requirements (c) discuss modeling of intersection geospatial relationships to address use cases such as traffic signal coordination.

Scheduled Guidebook review office hours with AEGIST PFS States to allow anybody to come in and ask questions, make suggestions on any of the sections related to the guidebook. Held weekly review meeting with the AEGIST PFS to discuss comments on the Guidebook

Created a Teams Channel for AEGIST PFS States to communicate with each other and share inputs/thoughts on guidebook

States continued to review Guidebook and document comments. Review period for technical comments on Guidebook from States is active from July 23rd – Sept 30thScheduled work sessions with FHWA Office of Safety to review the guidebook and discuss sections related to Intersection Modeling

Incorporated findings from MIRE 2.1 publication (last month) on Nodes, Data Points into the guidebook and developed reference points between AEGIST and MIRE 2.1

Updated guidebook figures and formatting for 508 compliances

* Replaced non-compliant figures in the text
* Reviewed figures that pass/fail compliance.

Addressed comments received on guidebook from States during first week of September. Editorial review and updates to Guidebook

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Quarterly Project Report

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6

Applications for Enterprise GIS in Transportation

**Task 3: Marketing and Communication**

**Task Objective:** Webinars and Workshops will be held, and Articles will be presented in conferences and other industry forums to communicate information about the activities of the project, especially the technical work products developed as part of the project.

**Activities**

**1.**

**Task 3.2.x: Workshops and Presentations**

* **AEGIST Meeting of the Pooled Fund States**

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Development and publication of the agenda for the Meeting of the States in August

Prepared instructions and homework assignments for participants so that facilitated discussion of the guidebook can be conducted during the meeting

Shared AEGIST Guidebook v2 for review with AEGIST States attending the meeting of the States in Arizona

Shared slides and spreadsheets that summarize the recommendations on building the three types or road network data models for different business users and use cases: (a) Planning Level model, (2) Intelligent Routable model, (3) Multimodal, Digital Twin road network data models Road Network data model

Developed and printed handouts and agenda for the participants attending the meeting of the States

Held the meeting of the States in Arizona from Aug 6-8, to discuss modeling guidelines documented in AEGIST Guidebook v2.0

Established consensus on modeling route centerline geometry, nodes, road elements, intersection/junction, conflict points, intersection legs, assets and projects for planning level road network model, intelligent routable road network model and multi-dimensional road network model

Discussed topological connectors and centerline modeling rules at intersections and interchanges and established that topological connectors do not need to be used for modeling turns (right, left, u-turn). They would be rather modeled as events.

Discussed next steps with Guidebook Review through engagement on Teams Channel, Weekly Walk-in review meetings, and, comments in Guidebook and web-based feedback tool

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* **IHEEP Conference**
  + AEGIST Presentation on “Why GIS is Important for BIM” at the IHEEP conference
  + Discussions on BIM-GIS integration and use of ISO-19650 Information Management standards for management of enterprise geospatial data.

Quarterly Project Report

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7

Applications for Enterprise GIS in Transportation

**Complete List of AEGIST Deliverables**

**Note:** Deliverables on which work is complete (in green) and work is in progress (in light yellow).

Quarterly Project Report

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8

Task **D# Deliverable Name Due Date** Status

**Task 1\***

1.1.0

Kick-off Meeting

10/30/19

Completed.

**Task 1\***

1.2.0

Work Plan Version 1: Cross-Agency Tasks, Deliverables & Schedule

4/30/20

Completed. Submitted to FHWA and PFS States.

**Task 1\***

1.3.1

Quarterly Progress Report - 1 (incl. 3 monthly reports and quarterly meetings)

12/31/19

Completed. Submitted to FHWA. Email sent to PFS States.

**Task 1\***

1.3.2

Quarterly Progress Report - 2 (incl. 3 monthly reports and quarterly meetings)

3/31/20

Completed. Submitted to FHWA. Email sent to PFS States.

**Task 1\***

1.3.3

Quarterly Progress Report - 3 (incl. 3 monthly reports and quarterly meetings)

6/30/20

MPR for April, May, June published. QPR-3 (April-June) published.

**Task 1\***

1.3.4

Quarterly Progress Report - 4 (incl. 3 monthly reports and quarterly meetings)

9/30/20

MPR for July and August prepared. QPR- 4 Prepared.

**Task 1\***

1.3.5

Quarterly Progress Report - 5 (incl. quarterly meetings)

12/31/20

QPR-5 report prepared. QTR meeting held in Dec 2020

**Task 1\***

1.3.6

Quarterly Progress Report - 6: Jan-Apr 2021 (incl. quarterly meet)

4/31/21

QPR-6 prepared. QTR Meeting (Mar 2021)

**Task 1\***

1.3.7

Quarterly Progress Report - 7: May-July 2021 (incl. quarterly meet)

7/30/21

QPR-7 Completed and Submitted. Quarterly meeting held.

**Task 1\*\***

1.3.8

Quarterly Progress Report - 8: Aug-Sept 2021 (incl. quarterly meet)

9/30/21

QPR-8 Completed and Submitted. Quarterly meeting held.

**Task 1\*\***

1.3.9

Quarterly Progress Report - 9: Oct-Dec 2021 (incl. quarterly meet)

12/30/21

QPR-9 Completed and Submitted. Quarterly meeting held.

**Task 1\*\***

1.3.10

Quarterly Progress Report - 10: Jan-Mar 2022 (incl. quarterly meet)

3/31/22

QPR-10 Completed and Submitted. Quarterly meeting held.

**Task 1\*\***

1.3.11

Quarterly Progress Report - 11: Apr-Jun 2022 (incl. quarterly meet)

6/30/22

QPR-11 Completed and Submitted. Quarterly meeting to be held in July 2022.

**Task 2\***

2.1

TASK 2 Technical Services (incl. Work Plan v1.1 with State Tasks) - MONTH 8 - MAY 2020

5/30/20

Work Plan v1.1 has Caltrans Tasks. May 29th PFS States Presentation.

**Task 2\***

2.2

TASK 2 Technical Services (incl. Work Plan v1.2 with State Tasks) - MONTH 9 - JUN 2020

6/30/20

Work Plan v1.2 has CA, GA, ID Tasks. June 16th PFS States Presentation.

**Task 2\***

2.3

TASK 2 Base Period Technical Services (incl. Work Plan v1.3 with State Tasks) - MONTH 10 - JUL 2020

7/30/20

Work Plan v1.3 with ID Task updates. Weekly work planning with Idaho.

**Task 2\***

2.4

TASK 2 Technical Services (incl. Work Plan v1.4 with State Tasks) - MONTH 11 - AUG 2020

8/30/20

Work Plan v1.4. Tasks 2.1, 2.2, 2.ID.1

**Task 2\***

2.5

TASK 2 Technical Services (incl. Work Plan v1.5 with State Tasks) - MONTH 12 - SEP 2020

9/30/20

Work Plan v1.5 with ID Task updates. Tasks 2.1, 2.2, 2.ID.2 and 2.ID.3

**Task 2\***

2.6

TASK 2 Technical Services - MONTH 13 - OCT 2020

10/30/20

Work plan activities at ID, TN, CA and Tasks 2.1 and 2.2.

**Task 2\***

2.7

TASK 2 Technical Services - MONTH 14 - NOV 2020

11/30/20

Work plan activities at ID, TN, CA and Tasks 2.1 and 2.2.

**Task 2\***

2.8

TASK 2 Technical Services (incl. Work Plan v1.6 with State Tasks) - MONTH 15 - DEC 2020

12/30/20

Work Plan v1.6 with updates for ID, CT, TN and CA. Continued Tasks 2.1 and 2.2

**Task 2\***

2.9

TASK 2 Technical Services - MONTH 16 - JAN 2021

1/20/21

Technical Services to ID, TN, CA, PA, CT, OH and Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.10

TASK 2 Technical Services - MONTH 17 - FEB 2021

2/28/21

Technical Services to ID, TN, CA, PA, CT, OH and Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.11

TASK 2 Technical Services - MONTH 18 - MAR 2021

3/20/21

Technical Services to ID, TN, CA, PA, CT, OH and Cross-agency Tasks 2.1 & 2.2.

Applications for Enterprise GIS in Transportation

Quarterly Project Report

*This report is a representation of the project status as of September 30th, 2024*

9

Task **D# Deliverable Name Due Date** Status

**Task 2\***

2.12

TASK 2 Technical Services - MONTH 19 - APR 2021

4/30/21

Technical Services to ID, TN, CA, PA, CT, OH and Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.13

TASK 2 Technical Services - MONTH 20 - MAY 2021

5/30/21

Technical services to PFS States and for Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.14

TASK 2 Technical Services - MONTH 21 - JUN 2021

6/30/21

Technical services to PFS States and for Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.15

TASK 2 Technical Services - MONTH 22 - JUL 2021

7/30/21

Technical services to PFS States and for Cross-agency Tasks 2.1 & 2.2.

**Task 2\***

2.16.1

TASK 2 Technical Services - MONTH 23 - AUG 2021

8/30/21

Technical Services to 8 States as listed in the quarterly report.

**Task 2\*\***

2.16.2

TASK 2 Technical Services - MONTH 23 - AUG 2021

8/30/21

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2\***

2.17.1

TASK 2 Technical Services - MONTH 24 - SEP 2021

9/30/21

Technical Services to 6 Base Period States as listed in the quarterly report.

**Task 2\*\***

2.17.2

TASK 2 Technical Services - MONTH 24 - SEP 2021

9/30/21

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2\***

2.18.1

TASK 2 Technical Services - MONTH 25 - OCT 2021

10/30/21

Technical Services to ID, PA, CA and OH.

**Task 2\*\***

2.18.2

TASK 2 Technical Services - MONTH 25 - OCT 2021

10/30/21

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2\***

2.19.1

TASK 2 Technical Services - MONTH 26 - NOV 2021

11/30/21

Technical Services to ID, PA, CA, NC, KS and OH, as summarized in this report.

**Task 2\*\***

2.19.2

TASK 2 Technical Services - MONTH 26 - NOV 2021

11/30/21

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2\***

2.20.1

TASK 2 Technical Services - MONTH 27 - DEC2021

12/30/21

Technical Services to ID, PA, CA, NC, KS and OH, as summarized in this report.

**Task 2\*\***

2.20.2

TASK 2 Technical Services - MONTH 27 - DEC2021

12/30/21

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.21.1

TASK 2 Technical Services - MONTH 28 - JAN2022

1/30/22

Technical Services to PFS States in Base Period as listed in QTR Report #10.

**Task 2\*\***

2.21.2

TASK 2 Technical Services - MONTH 28 - JAN2022

1/30/22

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.22.1

TASK 2 Technical Services - MONTH 29 - FEB2022

2/30/22

Technical Services to PFS States in Base Period as listed in QTR Report #10.

**Task 2\*\***

2.22.2

TASK 2 Technical Services - MONTH 29 - FEB2022

2/30/22

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.23.1

TASK 2 Technical Services - MONTH 30 - MAR 2022

3/30/22

Technical Services to PFS States in Base Period as listed in QTR Report #10.

**Task 2\*\***

2.23.2

TASK 2 Technical Services - MONTH 30 - MAR 2022

3/30/22

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.24.1

TASK 2 Technical Services - MONTH 31 - APR 2022

4/30/22

Technical Services to PFS States in Base Period as listed in QTR Report #11.

**Task 2\*\***

2.24.2

TASK 2 Technical Services - MONTH 31 - APR 2022

4/30/22

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.25.1

TASK 2 Technical Services - MONTH 32 - MAY 2022

5/30/22

Technical Services to PFS States in Base Period as listed in QTR Report #11.

**Task 2\*\***

2.25.2

TASK 2 Technical Services - MONTH 32 - MAY 2022

5/30/22

Technical Services to NC and KS, with FL, NM requirements considered as well.

**Task 2**

2.26.1

TASK 2 Technical Services - MONTH 33 - JUN 2022

6/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.26.2

TASK 2 Technical Services - MONTH 33 - JUN 2022

6/30/22

Technical Services to NC, KS, GA, WA, NM, MA

**Task 2**

2.27.1

TASK 2 Technical Services - MONTH 34 – JUL 2022

7/30/22

Technical Services to ID, TN, CA, PA

Applications for Enterprise GIS in Transportation

Quarterly Project Report

*This report is a representation of the project status as of September 30th, 2024*

10

Task **D# Deliverable Name Due Date** Status

**Task 2\*\***

2.27.2

TASK 2 Technical Services - MONTH 34 – JUL 2022

7/30/22

Technical Services to NC, KS, GA, WA, NM, MA

**Task 2**

2.28.1

TASK 2 Technical Services - MONTH 35 – AUG 2022

8/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.28.2

TASK 2 Technical Services - MONTH 35 – AUG 2022

8/30/22

Technical Services to NC, KS, GA, WA, NM, MA

**Task 2**

2.29.1

TASK 2 Technical Services - MONTH 36 - SEPT 2022

9/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.29.2

TASK 2 Technical Services - MONTH 35 – AUG 2022

8/30/22

Technical Services to NC, KS, GA, WA, NM, MA

**Task 2**

2.30

TASK 2 Technical Services - MONTH 37 - OCT 2022

10/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.30

TASK 2 Technical Services - MONTH 37 - OCT 2022

10/30/22

Technical Services to NC, KS, GA, WA, MA

**Task 2**

2.31

TASK 2 Technical Services - MONTH 38 - NOV 2022

11/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.31

TASK 2 Technical Services - MONTH 38 - NOV 2022

11/30/22

Technical Services to NC, KS, GA, WA, MA

**Task 2**

2.32

TASK 2 Technical Services - MONTH 39 - DEC 2022

12/30/22

Technical Services to ID, TN, CA, PA

**Task 2\*\***

2.32

TASK 2 Technical Services - MONTH 39 - DEC 2022

12/30/22

Technical Services to NC, KS, GA, WA, MA

**Task 2**

2.33

TASK 2 Technical Services - MONTH 40 - JAN 2023

1/30/23

Provided technical services to States listed in this report.

**Task 2\*\***

2.33

TASK 2 Technical Services - MONTH 40 - JAN 2023

1/30/23

Provided technical services to States listed in this report.

**Task 2**

2.34

TASK 2 Technical Services - MONTH 41 - FEB 2023

2/30/23

Provided technical services to States listed in this report.

**Task 2\*\***

2.34

TASK 2 Technical Services - MONTH 41 - FEB 2023

2/30/23

Provided technical services to States listed in this report.

**Task 2**

2.35

TASK 2 Technical Services - MONTH 42 - MAR 2023

3/30/23

Provided technical services to States listed in this report.

**Task 2\*\***

2.35

TASK 2 Technical Services - MONTH 42 - MAR 2023

3/30/23

Provided technical services to States listed in this report.

**Task 2**

2.36

TASK 2 Technical Services - MONTH 43 - APR 2023

4/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.36

TASK 2 Technical Services - MONTH 43 - APR 2023

4/30/23

Provided technical services work for Connecticut and North Carolina.

**Task 2**

2.37

TASK 2 Technical Services - MONTH 44 - MAY 2023

5/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.37

TASK 2 Technical Services - MONTH 44 - MAY 2023

5/30/23

Provided technical services work for Connecticut and North Carolina.

**Task 2**

2.38

TASK 2 Technical Services - MONTH 45 - JUNE 2023

6/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.38

TASK 2 Technical Services - MONTH 45 - JUNE 2023

6/30/23

Provided technical services work for Connecticut and North Carolina.

**Task 2**

2.39

TASK 2 Technical Services - MONTH 46 - JULY 2023

7/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.39

TASK 2 Technical Services - MONTH 46 - JULY 2023

7/30/23

Provided technical services work for Connecticut and North Carolina.

**Task 2**

2.40

TASK 2 Technical Services - MONTH 47 - AUG 2023

8/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.40

TASK 2 Technical Services - MONTH 47 - AUG 2023

8/30/23

Provided technical services work for Connecticut and North Carolina.

**Task 2**

2.41

TASK 2 Technical Services - MONTH 48 - SEPT 2023

9/30/23

Provided technical services to Ohio, Washington, Georgia, California,

**Task 2\*\***

2.42

TASK 2 Technical Services - MONTH 48 - SEPT 2023

9/30/23

Provided technical services work for Connecticut and North Carolina.

Applications for Enterprise GIS in Transportation

Quarterly Project Report

*This report is a representation of the project status as of September 30th, 2024*

11

Task **D# Deliverable Name Due Date** Status

**Task 2**

2.43

TASK 2 Technical Services – MONTH 49 – OCT 2023

10/30/23

Provided technical services work for North Carolina, California, North Dakota, Massachusetts. Developed intersection model for Kansas, New Mexico and Florida.

**Task 2**

2.44

TASK 2 Technical Services – MONTH 50 – NOV 2023

10/30/23

Provided technical services work for North Carolina, California, North Dakota, Massachusetts. Developed intersection model for Kansas, New Mexico and Florida.

**Task 2**

2.45

TASK 2 Technical Services – MONTH 51 – DEC 2023

10/30/23

Provided technical services work for North Carolina, California, North Dakota, Massachusetts. Developed intersection model for Kansas, New Mexico and Florida.

**Task 2**

2.46

TASK 2 Technical Services – MONTH 52 – JAN 2024

1/31/24

Provided technical services work for North Carolina, California, Arizona, Kansas, North Dakota, Massachusetts.

**Task 2**

2.47

TASK 2 Technical Services – MONTH 53 – FEB 2024

2/29/24

Provided technical services work for North Carolina, California, Arizona, Kansas, North Dakota, Massachusetts.

**Task 2**

2.48

TASK 2 Technical Services – MONTH 54 – MAR 2024

3/31/24

Provided technical services work for North Carolina, California, Arizona, Kansas, North Dakota, Massachusetts.

**Task 2**

2.46

TASK 2 Technical Services – MONTH 52 – APR 2024

4/30/24

Technical Services to PFS States

**Task 2**

2.47

TASK 2 Technical Services – MONTH 53 – MAY 2024

5/30/24

Technical Services to PFS States

**Task 2**

2.48

TASK 2 Technical Services – MONTH 54 – JUN 2024

6/30/24

Technical Services to PFS States

**Task 3\*\***

3.1.1

**Article 1**: Road Network Publication Data Model with Topology, Temporality, Routable Network Rule

5/30/21

No longer in scope. Information prepared for this article to be merged in Guidebook.

**Task 3\*\***

3.1.2

**Article 2:** Enterprise GIS Application for Spatial Safety Performance Functions Calibration and HSM-based Safety Analysis

5/30/22

No longer in scope. Information prepared for this article to be merged in Guidebook.

**Task 3\*\***

3.1.3

**Article 3:** Engineering, processing and integrating spatial Traffic and Safety Data using Cloud

12/30/22

No longer in scope. Information prepared for this article to be merged in Guidebook.

**Task 3\*\***

3.1.4

**Article 4:** Enterprise GIS Application for Modeling and Conflating Federal Lands Management Agency, DOT LRS and Local Agency Roads data

12/30/23

No longer in scope. Information prepared for this article to be merged in Guidebook.

**Task 3\*\***

3.1.5

**Article 5:** LRS Administration Levels and Maturity Mode

9/30/24

No longer in scope. Information prepared for this article to be merged in Guidebook.

**Task 3**

3.2.1

Workshop 1 - GIS-T 2021

4/30/21

GIS-T Workshop 2021 Delivered

**Task 3\***

3.2.2

AEGIST Presentations (2020)

12/30/20

**Following Presentations Delivered:**

NY (Apr); TRF (Aug); KS (Jun); National Roads Symposium (Sep); Esri RHUG (Oct), AEGIST Modeling & Standards (Dec).

**Task 3\*\***

3.2.3

Workshop 2 – GIS-T 2022

5/30/22

Delivered Workshop in April 2022.

**Task 3\***

3.2.4

AEGIST Presentations (2021)

12/30/21

Completed delivery of following 2021 Presentations:

1. USDOT Presentation on April 2nd.
2. Presentations to new PFS States: WV, DC
3. Provided AEGIST Overview to Colorado. Presentation at NaTMEC

Applications for Enterprise GIS in Transportation

\* Tasks in Base/Original Period (CLIN 0001)

\*\*Tasks in Performance Period 1 and 2 (CLIN 0002 and CLIN0003)

Quarterly Project Report

*This report is a representation of the project status as of September 30th, 2024*

12

Task **D# Deliverable Name Due Date** Status

on Jun 23rd. FHWA NRN Presentation on Aug 31st.

1. Presentation Slides for FHWA Safety Group on AEGIST-MIRE activities.
2. FLMA Presentation on Nov 9th.

**Task 3\*\***

3.2.5

AEGIST Presentations (2022)

12/30/22

Following presentations have been delivered in 2022, as of this quarter:

1. TRB AEGIST Update at AED40

Committee Meetings

1. USDOT Mobility Plan Business Group Update (Feb 1st)
2. AASHTO GIS-T Conference – AEGIST Updates (April 21st)
3. Presentation for Gloria Shepherd
4. Spatial Data Governance presentation to NC, TN, ID, PA (April 1st, 2022)
5. RDIP Conference in Rhode Island (April. 2022)
6. NaTMEC 2022 in June, 2022
7. CTPP Conference in June, 2022
8. RDIP Conference in West Virginia (June 2022)
9. IHEEP Conference Presentation Preparation (Sept 2022)

**Task 3**

3.2.6

GIS-T Workshop 2023

4/10/23

Workshop on April 11th, 2023. Georgia and Arizona teams presented their data supply chain processes.

**Task 3**

3.3.1

Webinar 1: Data Governance

2/11/21

Webinar delivered on Feb 11th, 2021

**Task 4**

4.1.0

Peer-Exchange 1 - 2019

12/30/19

Completed.

**Task 4**

4.2.0

Peer-Exchange 2 - 2020

12/30/20

Aug 25th-26th Peer Exchange Conducted.

**Task 4**

4.3.0

Peer-Exchange 3 – 2022

08/30/22

Conducted Santa Fe Peer Exchange Meeting

**Task 5**

5.0

HPMS 9.0 Remodeling Report/Article Database Design

5/30/21

Delivered report on Road Network Publication Data Model for FHWA and PFS States Review completed between July-Sept. Comments Addressed.

Coordinate with FHWA to determine next Steps on publication to be determined.