# *Quarterly Progress Report (QPR)*

# *Applications of Enterprise GIS in Transportation*

**Progress Report for Quarter [October 1st, 2023 – December 31st, 2023]**

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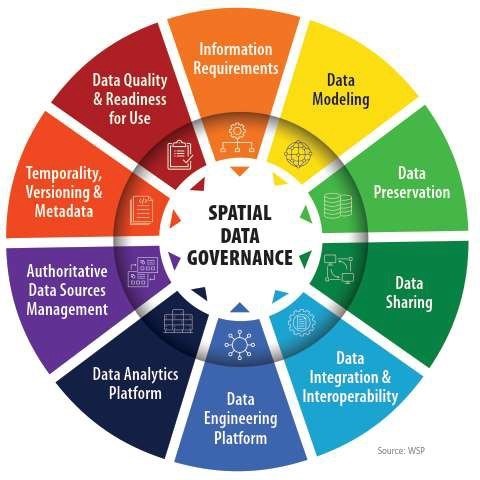
Map

Description automatically generatedWSP Technical Lead: Abhishek Bhargava (abhishek.bhargava@wsp.com)

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

* 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:
  + Spatial Data Modeling
  + Spatial Data Integration and Engineering
  + Spatial Data Analytics

Completion Status and Summary

Time Frame: October 1, 2019 to December 30, 2024

Total Time, months: 60

Time Expended, months: 51

Percent Calendar Time Expended: 85%

Percent Complete for Tasks & Sub-Tasks:

|  |  |  |  |
| --- | --- | --- | --- |
| **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.   Tennessee - **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 | **99.5%** | |
| **Performance Period 1 and 2: CLIN0002 and CLIN0003** | | | |
| **Tasks** | **Sub-Tasks** | | **Percent Complete** |
| Task 1: Project Management | 1.  Quarterly Meetings & Technical Tasks Planning | | **55%** |
| 2.  Quarterly Status Reports | |
| Task 2: Technical Services | 1.   New Mexico – **0%** | | **30%** |
| 2.   Connecticut – 60**%** | |
| 3.   Florida – 2**%** | |
| 4. North Carolina **– 15%** | |
| 5. Kansas **– 7%** | |
| 6. Idaho **– 61%** | |
| 7. Massachusetts **– 7%** | |
| 8. North Dakota – 0% | |
| 9. Arizona – 0% | |
| Cross-Agency Activities: Guidebook Development **- 0%** | |
| 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%** |

Work Accomplished This Reporting Period: Oct – Dec, 2023

**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 #17 for the period October – December 2023.
2. Technical services tasks managed for following PFS States: Wisconsin, California, North Dakota, Massachusetts, North Carolina, and Idaho. 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**:

* **Wisconsin**

**[Task: AEGIST Guidelines and Recommendations Presentation]**

* + Scheduled second work session on AEGIST recommendations with Wisconsin DOT
  + Road network and intersection data modelling discussion prep based on specific questions from Wisconsin DOT
  + Scheduled presentation on AEGIST with Wisconsin
  + Established presentation agenda, discussion topics and guidebook sections that would be reviewed
* **California**

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

* Delivered 5-page article on CaRS Program to FHWA
* Prepared CaRS announcement flyer for CGIA December meeting
* Delivered presentation on CaRS California Geographic Information Association (CGIA) December meeting
* Identified potential local county and agency partners
* Established CaRS Phase 4 activities, timeline, roles and responsibilities for Caltrans, CalOES, local Counties and Agencies, 1Spatial
* Reviewed options and approaches that will be taken to utilize 1Spatial’s 1Integrate solution to conduct the additional pilots
* Discussed forms and processes that need to be followed to create the California Road Sharing working group as per the charter
* Kicked-off Phase 4 of California Road Sharing Program
* **North Dakota**

**[Task 2.ND.1: Road Data Extraction from Imagery]**

* + Discussion on AI model for extracting information about roads and pavement
  + Established data needs for development of AI Model
  + Discussed task work approach, feasibility investigations that would be carried out and potential risks associated with AI model accuracy
  + Investigation on AI/ML Models for extracting information about roads and pavement surface from aerial imagery
  + Evaluation of sources of aerial imagery data and the quality/resolution of these data sources
* **Massachusetts**

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

* + Developed python script to extract information from road network for interchange features modeling
  + Assessed feasibility of programming the traffic circle and round modeling rules to automatically generate road segments from routes and nodes
  + Interchange model development using open standards
  + Architecture of automated geoprocessing tool (python scripts) for developing interchange model using route network data
* **North Carolina**

**[Task 2.NC.2] LRS Data Governance**

* Created a Data Dictionary to track tables and fields contained within the NCDOT Data Governance System.
* Updated Business Domain within the NCDOT Data Governance System to accurately capture NCDOT department organization. Each user story’s data steward was used to map to a business domain and enable grouping of user stories and data assets according to business domain.
* Created an Application Catalog with a list of NCDOT applications in-use and updated Analysis App column utilizing NCDOT GIS Unit Announcement documents through cross referencing process with current data assets.
* Updated Data Catalog and mapped to related object types, properties, and data stewards.
* Conducted data quality analysis on data entered in the data governance system
* Developed a “How To Guide” for NCDOT Data Governance System utilizing the Consolidated Reference Model structure.
* Intersection Data Dictionary and Data Management System development
* Review of ISO Standards for documentation of use cases, information requirements, data assets catalog and data objects
* Developed Performance and Business Reference models within the NCDOT Data Governance System
* **Idaho**

**[Task Data Governance System, Road Network Data Conflation and Strategic Roadmap]**

* + Reviewed all deliverables created as part of the technical services
  + Demonstrated BLM and ITD roads conflation tool and discussed future work opportunities
  + Developed flyer to summarize services and recommendations on data management and road network data governance
* **Kansas, New Mexico and Florida**

**[Task Intersection Data Model]**

* + Developed rules for intersection data modeling
  + Created data schema in Snowflake web-based data warehouse for building intersection data model as per the MIRE standards.
  + Continued development of tool to build intersection data mo
* **All States: AEGIST Guidebook**
  + Identified sections of the Guidebook that need to be updated based on the inputs/feedback received during the AEGIST meeting of the States in San Diego
  + Updated Guidebook to incorporate the input/comments received during the meeting of the States.
  + Updated Chapter 2 – Road Network Data Modeling, section on Road network data publication, Nodes, Match Points, Connectors, Road Segments. Additionally, updates were made to document description about the road network administration levels.
  + Reviewed National Road Network documents and report to identify key take-aways and recommendations and align AEGIST guidebook recommendations with the National Road Network findings and data model (particularly, match points and connectors)
  + Development of matrix of LRM administration levels as a tool for use by DOTs
  + Review of State DOT practices and mapping of practices to LRS administration levels for validation of the administration tool
  + Updated Intersections Data Modeling chapter to capture information about interchanges, roundabouts, traffic circles
  + Updated Project Information Modeling chapter to capture information about project and asset information model
  + Updated figures in Chapter 1 – Enterprise GIS and Chapter 2 – Road Network Data Model
  + Identified topics that need to be discussed further related to modelling of road network, so that the corresponding sections of the Guidebook can be finalized
  + Recreated figures for enterprise GIS chapter 1, to account for inputs on spatial data modelling and data integration/engineering sections

**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**
     + Documented lessons learned from the AEGIST meeting to enhance future planning processes
     + Assisted with the submission of invoices and receipts of attendees
     + Reviewed meeting recordings and notes for information needed in the Guidebook
     + Developed agenda for follow-up meetings on 1) Enterprise Road Network Publication Model. 2) Intersection Types, 3) Nodes Modeling
   * **Transportation Research Board**
     + Developed AEGIST updated slides for TRB Committee Meetings
   * **GIST-T Workshop**
     + Finalized and published abstract and presenters list
     + Presented abstract at GIS-T

**Complete List of AEGIST Deliverables**

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

| 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. |
| 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 |
| 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. |
| 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 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 forModeling 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 on Jun 23rd. FHWA NRN Presentation on Aug 31st. 4. Presentation Slides for FHWA Safety Group on AEGIST-MIRE activities. 5. 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 2. USDOT Mobility Plan Business Group Update (Feb 1st) 3. AASHTO GIS-T Conference – AEGIST Updates (April 21st) 4. Presentation for Gloria Shepherd 5. Spatial Data Governance presentation to NC, TN, ID, PA (April 1st, 2022) 6. RDIP Conference in Rhode Island (April. 2022) 7. NaTMEC 2022 in June, 2022 8. CTPP Conference in June, 2022 9. RDIP Conference in West Virginia (June 2022) 10. 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. |

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

\*\*Tasks in Performance Period 1 (CLIN 0002)