# *Quarterly Progress Report (QPR)*

# *Applications of Enterprise GIS in Transportation*

**Progress Report for Quarter 12 [July 1st, 2022 – Sept 30th, 2022]**

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Map

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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

* 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 September 30, 2024

Total Time, months: 60

Time Expended, months: 36

Percent Calendar Time Expended: 60%

Percent Complete for Tasks & Sub-Tasks:

|  |  |  |
| --- | --- | --- |
| **Base Period** | | |
| **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.   Connecticut - **77%** | **68%** |
| 2.   Idaho - **80%** |
| 3.   Tennessee - **65%** |
| 4. California - 7**2%** |
| 5. Pennsylvania - **65%** |
| 6. Ohio - **54%** |
| Cross-Agency Activities: Guidebook Development - **67%** |
| 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%** |
| Task 5: HPMS 9.0 Recommendations | Road Network Data Architecture  Data Modeling Standards, Use Cases, Topology | **100%** |

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| --- | --- | --- |
| **Performance Period 1** | | |
| **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%** | **5%** |
| 2.   Washington – **5%** |
| 3.   Florida – **0%** |
| 4. North Carolina **– 15%** |
| 5. Kansas **– 15%** |
| 6. Georgia **– 0%** |
| 7. Massachusetts **– 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 | **22%** |
| Task 4: Member State Meetings | 1.  Member State Meeting 1 – 2022  2. Member State Meeting 2 – 2023 | **50%** |

Work Accomplished This Reporting Period: July – Sept, 2022

**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 #11 for the period Apr – June, 2022.
2. Technical services tasks managed for following PFS States: Idaho, Tennessee, California, Pennsylvania, Ohio, Florida, North Carolina, Kansas, Georgia, Washington 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**:

1. **Idaho**
   * Prepare agenda for presentation of AEGIST activities update at the ITD Data Summit in October (26-29)
   * Provided update on activities completed in (a) Base/Original Performance Period and (b) Performance Period 1.
   * Recap of AEGIST Deliverables presented in ITD Data Summit 2021
     + Data Portfolio
       - Review of Inputs from ITD Data Summit 2021
       - Current Status, Updates since 2021 and Next Steps
     + Application Communication Diagram
   * Presented data quality rules created for HPMS data and development of data quality dashboards
   * Updated and delivered roadmap of road network data modeling, data engineering and governance activities. These included:
     + A1: Federal Lands Roads Data Integration with DOT LRS & County Roads
     + A2: Data Quality Rules, Robotic Process Automation ad Data
     + A3: Data Governance Framework, Systems, Data and Tools for Data Life Cycle Management
     + A4: Intersection Modeling
     + A5. Enterprise Data Integration & Data Models Engineering for Provisioning Data to Stakeholders through Data Warehouse, Data Lake, Data Hub and Engineering Platform
     + A6: BIM/CIM: Asset Data Extraction from Design for Pulling Data into Roadway Inventory and Asset Systems
     + A7: Digital Twins Development for Traffic System, Asset Management System, Safety Analysis System and Project Planning System
2. **Tennessee**
   * Task 2.TN.2:Execute following activities as part of Design-GIS data exchange pilot
     + Conducted pilot tests to import data from design files into Roads and Highways LRS
     + Coordinated with Bentley and Esri to determine which software version and features will be key to successful migration of design data to GIS (ArcGIS Pro). Upgraded to latest version of ArcGIS Pro and Bentley Open Roads Design in the AEGIST development environment to setup the pilot.
3. **California**
   * Presented the CaRS deliverables to stakeholders to set expectations on work products being prepared in Base Period and the work products that will be created in Performance Period 1/2 for CaRS using the additional funding that Caltrans has added for AEGIST services.
   * Meeting with 1Spatial to discuss how 1Integrate has been used for Conflation and/or unification of road segments from local agencies and State DOT
   * Review of road geometry and attribute conflation results between Sacramento County and Caltrans All Roads LRS.
   * Discussion on Caltrans 1Integrate Platform: Rules, Results
   * Discussion on Status of CaRS Part I Technical Services Activities scheduled in AEGIST Base Period:
     + Scope for Phases 1 – 3: Develop CaRS Charter, Data and Application Architecture
       - Phase 1: CaRS Program Objectives, Statewide Work Group and Work Group Charter (Phase 1 Scope)
       - Phase 2: Develop CaRS Data Architecture using Proof-of-Concept Pilot at Merced County
       - Phase 3: Develop CaRS Application Architecture using Proof-of-Concept Pilot at Merced County
     + Update on Status of Phase 1, 2 and 3 activities; Pending Action Items and Review of Project Concerns/Issues associated with proprietary data sharing
   * Discussion on Scope and Activities in CaRS Part II that need to be carried out in AEGIST Performance Period 1:
     + Scope of Phase 4: Conducting Additional Pilot(s) to Demonstrate Proposed Data & Application Architecture
     + Development of next steps and action items based on discussion on project concerns/issues associated with proprietary data sharing
       - Reviewing Activities associated with development of Data Supply Chain in Arizona
       - Reviewing Implementation of Massachusetts Tools and Systems for Local Roads Data Integration
4. **Pennsylvania**
   * Task 2.PA.1: Provided status, percent complete, and remaining hours associated with on-going and completed AEGIST Activities

* Task 2.PA.2: Local Traffic Count Site Selection Algorithm Review (100% Complete)
* Task 2.PA.11: LRS Systems Demonstration to support RMS Rewrite (100% Complete)
* Task 2.PA.15: Pavement Construction History (100% Complete)
* Task 2.PA.1: Technical Services Planning (90% Complete)
* Task 2.PA.6: BIM-GIS Data Exchange Pilot to support PennDOT Digital Delivery Plan (25% Complete)
* Task 2.PA.7: Speed Limit Data Modeling & Quality using Routes, Signs, Curves Data & Spatial Rules (75% Complete)
* Task 2.PA.10: NG-911/e911 and PennDOT RMS Road Network Data Modeling Alignment & Maturity (75% Complete)
* Task 2.PA.12: LRS Capability/Administration Levels Model (60% Complete)
  + Discussion on parking lot activities and addition of new activities to AEGIST scope of work
  + Task 2.PA.15: Researched and documented Pavement Construction History data modeling and management practices using linear referencing methods and systems. Analyzed practices in the States of North Carolina, Texas, California.
  + Task 2.PA.10: NG-911/e911, RMS and National Road Network (NRN) Data Modeling Alignment – Updated the report by documenting examples of similarities and differences in road network data modeling between local agencies and PennDOT.
  + Task 2.PA.6: BIM-GIS Data Exchange Pilot to support PennDOT Digital Delivery Plan – Documented asset information requirements for road segments, guardrails, pavement construction history, signs, bridges.

1. **Ohio**
   * ODOT conducted internal review of the strategic roadmap recommendations to identify the stakeholders at ODOT who would conduct the work required to execute the recommended activities.
   * Proposed meetings with OGRIP, Safety and Travel Demand Modeling groups for discussion on roadmap of road data modeling activities
   * Presented alternatives to advance development of Strategic Roadmap while ODOT is working on roles and responsibilities matrix for roadmap activities
2. **Washington**
   * Task 2.WS.1: Technical Services work planning: Prepared and deliver scope of work document to Washington DOT for following tasks:
     + Task 2.WS.4: Best Practices for Managing Road Geometry in the LRS: All/State Roads. It was proposed that as part of this activity WSDOTs existing LRS pilot with Esri R&Hs will be reviewed and feedback would be provided on the configuration of the LRS that WSDOT has done in the context of how other State DOTs have configured their LRSs.
     + Task 2.WS.5: Roads Inventory data modeling and data management (DB modernization). For this task, preliminary scope and requirements were discussed with focus on how WSDOT manages Roads data currently using the TRIPS mainframe linear referencing system.
3. **Florida**
   * Reviewed status of intersection modeling and divided highways modeling tasks
   * Discussed FLARIS intersection model deployed by FDOTs Safety unit using HERE network. Specifically focused on FLARIS data model rules and data schema to assess how much of it needs to be adopted to ensure that the FDOT LRS Roads based intersection model is adopted and utilized by enterprise users (including safety)
   * Identified list of next steps and future discussions on using Roads and Highways for Intersection Modeling.
4. **North Carolina**
   * Task 2.NC.1: Held two technical work sessions with NCDOT GIS, NCDOT Safety and VHB on ongoing Intersection Modeling work. Reviewed data schema created by VHB for NCDOT Safety unit for Intersection Modeling. Reviewed rules used to create intersection model.
5. **Kansas**
   * Integrated Intersection data in the excel spreadsheets that were created by Kansas Safety Unit with the Intersection data in Kansas DOT Roads & Highways ALRS. This involved spatial mapping of ~8000 intersections in Districts 2, 3 and 4 and development of an automated data loading process that takes data from about 100 excel spreadsheets and puts it into the GIS. Demonstrate approach and the integrated intersection data model to Kansas DOT to showcase how Intersection AADT (for each of the approaches/links) can be modelled in LRS-GIS with inputs from Safety, as well as using datasets from LRS
   * Discussed Florida’s FLARIS intersection model, and key take-aways for Kansas from the data model.
   * Prepared Kansas DOTs presentation for Santa Fe Meeting, including configuration of Intersection Data Model in Roads and Highways
   * Identified action items for Kansas DOT to review the Intersection AADT dataset. Communicate decisions to be made before Deployment in Development and Production Environment
6. **Georgia**
   * Development and dissemination of Technical Services Scope for Georgia DOT
   * Review of GDOTs As-Is Process with Regional Commissions, University of Georgia (UGA) for Statewide Road Data Modeling
   * Development of plan for onsite visit schedule, goals and logistics
7. **Massachusetts**
   * Discussion on scope of AEGIST Technical services activities for MassDOT
   * Review of AEGIST Activities being done for various PFS States to present examples of technical services activities that can be conducted for MassDOT
   * Discussion on MassDOTs Local and State DOT Roads Data Integration process, tools and techniques
   * Discussion Massachusetts viewpoint on one vs. multiple route network LRSs
   * Initiated discussion on type of technical services activities that can be performed by AEGIST for Massachusetts

**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 3.1.x – AEGIST Articles**
   * **Task 3.1.5 – Article 4:** At the Santa Fe Peer Exchange meeting, established following scope for developing the article on roads data integration at statewide level, especially between local agencies and State DOTs:
     + Document data supply chain process and administration in States: Georgia, Massachusetts, North Carolina, Arizona. Focus of this activity should be on how multiple agencies and stakeholders in the State coordinate with each other to exchange and integrate roads data.
     + Determine data tools and conflation techniques being utilized in Arizona, Massachusetts.
     + Document any information on data modeling rules being used by DOTs and local agencies for modeling of roads data and/or for checking quality of roads data.
   * **Task 3.1.5 - Article 5:** Updated AEGIST Article 5 on **“***LRS Administration Levels and Maturity Model”*. Incorporate key take-aways from the Santa-Fe Peer exchange meeting. These included:
     + Incorporate road network data model terms and definitions shared by Tom Roff (FHWA)
     + Multiple data modeling levels are needed corresponding to different business use cases. Therefore, different modeling levels of detail need to be developed as standards depending on business needs.
2. **Task 3.2.x – AEGIST Workshops & Presentations**

* IHEEP 2022 AEGIST Presentation (Sept 23): Prepared slides/presentation on AEGIST activities at Tennessee DOT for presentation at the IHEEP Conference

**Task 4: Peer Exchange Meetings**

**Task Objective:** Plan, organize and conduct 5 peer exchanges, one each year between 2019 and 2023.

**Work Accomplished**: Following activities were performed in the reporting period:

* + Held planning meetings with State DOTs and FHWA to finalize agenda, presenters and discussion topics
  + Integrated and posted Santa Fe Meeting slides from all presenting States
  + Published agenda and discussion questions to stakeholders
  + AEGIST Glossary document was developed and posted on the meeting site for review team (from FHWA and State DOTs)
  + Developed detailed session-by-session agenda of the Santa Fe Meeting. Identified presenters and presentation topics.
  + Posted agenda and discussion questions on AEGIST site and shared agenda with all attendees
  + Conducted 3rd planning session with Santa Fe meeting planners, moderators, facilitators and presenters from various State DOTs and FHWA. Discussed open discussion questions, and, review readiness of presentation material

Work Planned for Next Reporting Period: Oct – Dec 2022

**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. Prepare and deliver quarterly report #12 for the period July – Sept, 2022.
2. Prepare and deliver invoices for the year 2022.
3. Conduct backlog grooming, sprint planning and end-of-sprint meetings with following PFS States
4. Update AEGIST Outreach website <https://gisintransportation.com/> by publishing information about AEGIST events and presentations.
5. Conduct AEGIST Quarterly meeting in December 2022

**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**:

1. **Idaho**
   * Deliver the deliverables created in Base Period (a) Data Governance Tools (b) Data Management and Governance Roadmap (c) Data Conflation Tool v0.5 and (d) Data Quality Rules.
   * Deliver AEGIST documents and deliverables for the October ITD Data Summit
   * Develop report of completed base period tasks for Idaho
2. **Tennessee**
   * Task 2.TN.1: Update TDOT Strategic Plan document. Add BIM implementation and BIM-GIS data integration activities to roadmap based on recommendations in following FHWA reports:
     + National Strategic Roadmap for Advancing BIM for Infrastructure
     + Deploying BIM Workflows for Bridges and Structures; and, Implementing National BIM Transportation Library
     + Integrating data from digital design and construction data models into asset management
     + Global benchmarking of BIM practices in the US
3. **California**
   * Update the CaRS Data and Application Architecture report based on findings on practices in local agency roads data exchange at Georgia, Arizona and Massachusetts DOT
   * Coordinate with 1Spatial on conflating Merced roads and Caltrans All Roads using 1Integrate. Review the results of 1Integrate roads data quality assessment and comparison from 1Spatial for Merced County
   * Document findings on 1Integrate data quality checks and rules in the CaRS report. Incorporate 1Integrate results from Caltrans All Roads data comparison with Merced roads data.
4. **Pennsylvania**
   * Complete all technical services activities in the base period and deliver final deliverables
   * Close base period technical services to be delivered to Pennsylvania DOT.
5. **Ohio**
   * ODOT to continue conducting internal review of the strategic roadmap recommendations. ODOT will also finalize the roles/responsibilities of stakeholders who will be incharge of executing various activities in the roadmap.
   * Review Strategic Roadmap recommendations with ODOT and identify the stakeholders at ODOT who would conduct the work required to execute the recommended activities.
   * Based on the approved roadmap activities, identified stakeholders and roadmap validation/update requirements, determine if meetings need to be held with OGRIP, Safety and Travel Demand Modeling groups
   * Update roadmap activity associated with LBRS v2 based on information on ADOTs Data Supply Chain and local-State Roads data integration activities
6. **Washington**
   * Task 2.WS.1: Technical Services work planning: Finalize scope for following technical services tasks.
     + Task 2.WS.4: Best Practices for Managing Road Geometry in the LRS:
     + Task 2.WS.5: Roads Inventory data modeling and data management (DB modernization).
   * Task 2.WS.5: Initiate this task based on finalized scope.
7. **Florida**
   * Communicate status of intersection modeling and divided highways modeling tasks
8. **North Carolina**
   * Task 2.NC.1: Review status of intersection modeling work at NCDOT that VHB and NCDOT Safety Unit have going on. Determine overlaps with AEGIST intersection modeling work and determine next steps for both projects in coordination with NCDOT and VHB
   * Task 2.NC.2: Discuss detailed scope of work with NCDOT.
9. **Kansas**
   * Develop integrated intersection data model based on data from three sources (a) Safety Excel Spreadsheets (b) LRS-Based Intersection Manager and (c) Cyclomedia Lidar Data extract. Utilize updated datasets from all sources and submit final geoprocessing tool and integrated data model to Kansas DOT.
   * Discuss next steps associated with development of the Intersection data model and resolution of conflicts across the three data sources. Review/updates steps for Intersection modeling in AEGIST Technical Plan Appendix and in AEGIST Interim Report.
10. **Georgia** 
    * Plan and conduct onsite workshop with GDOT, GDOT Regional Commissions and University of Georgia.
11. **Massachusetts**
    * Development of final scope of AEGIST Technical services activities with MassDOT

**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 3.1.x – AEGIST Articles:** 
   * **Task 3.1.5 – Article 4:** Document Data Supply Chain practices in Arizona, Massachusetts and Georgia in the white paper and present the key messages in the white paper at the AEGIST Quarterly meeting in December,
   * **Task 3.1.5 - Article 5:** Update AEGIST Article 5 on **“***LRS Administration Levels and Maturity Model”*. Incorporate key take-aways from the Santa-Fe Peer exchange meeting
     + Identify business use cases that require different levels of information or levels of development in the road network data model
     + Review list of 180+ use cases gathered by NCDOT at the enterprise level and determine data modeling requirements identified for the use cases.

**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 | Not Started |
| Task 2\*\* | 2.30 | TASK 2 Technical Services - MONTH 37 - OCT 2022 | 10/30/22 | Not Started |
| Task 2 | 2.31 | TASK 2 Technical Services - MONTH 38 - NOV 2022 | 11/30/22 | Not Started |
| Task 2\*\* | 2.31 | TASK 2 Technical Services - MONTH 38 - NOV 2022 | 11/30/22 | Not Started |
| Task 2 | 2.32 | TASK 2 Technical Services - MONTH 39 - DEC 2022 | 12/30/22 | Not Started |
| Task 2\*\* | 2.32 | TASK 2 Technical Services - MONTH 39 - DEC 2022 | 12/30/22 | Not Started |
| Task 2 | 2.33 | TASK 2 Technical Services - MONTH 40 - JAN 2023 | 1/30/23 | Not Started |
| Task 2\*\* | 2.33 | TASK 2 Technical Services - MONTH 40 - JAN 2023 | 1/30/23 | Not Started |
| Task 2 | 2.34 | TASK 2 Technical Services - MONTH 41 - FEB 2023 | 2/30/23 | Not Started |
| Task 2\*\* | 2.34 | TASK 2 Technical Services - MONTH 41 - FEB 2023 | 2/30/23 | Not Started |
| Task 2 | 2.35 | TASK 2 Technical Services - MONTH 42 - MAR 2023 | 3/30/23 | Not Started |
| Task 2\*\* | 2.35 | TASK 2 Technical Services - MONTH 42 - MAR 2023 | 3/30/23 | Not Started |
| Task 2 | 2.36 | TASK 2 Technical Services - MONTH 43 - APR 2023 | 4/30/23 | Not Started |
| Task 2\*\* | 2.36 | TASK 2 Technical Services - MONTH 43 - APR 2023 | 4/30/23 | Not Started |
| Task 2 | 2.37 | TASK 2 Technical Services - MONTH 44 - MAY 2023 | 5/30/23 | Not Started |
| Task 2\*\* | 2.37 | TASK 2 Technical Services - MONTH 44 - MAY 2023 | 5/30/23 | Not Started |
| Task 3\*\* | 3.1.1 | **Article 1**: Road Network Publication Data Model with Topology, Temporality, Routable Network Rule | 5/30/21 | In-Progress |
| Task 3\*\* | 3.1.2 | **Article 2:** Enterprise GIS Application for Spatial Safety Performance Functions Calibration and HSM-based Safety Analysis | 5/30/22 | In-Progress |
| Task 3\*\* | 3.1.3 | **Article 3:** Engineering, processing and integrating spatial Traffic and Safety Data using Cloud | 12/30/22 | In-Progress |
| 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 | In-Progress |
| Task 3\*\* | 3.1.5 | **Article 5:** LRS Administration Levels and Maturity Mode | 9/30/24 | In-Progress |
| 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 | 3.3.1 | Webinar 1: Data Governance | 2/11/21 | Webinar delivered on Feb 11th, 2021 |
| Task 3 | 3.3.2 | Webinar 2: AEGIST Activities associated with Spatial Data Modeling, Integration and Analysis | TBD | TBD |
| 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)