



# SPR RESEARCH PROGRAM

## SECOND-STAGE PROBLEM STATEMENT

### FY 2017

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#### I. PROBLEM NUMBER AND TITLE

17-036\_AST Statewide Data Standards to Support Current and Future Strategic Public Transit

#### II. RESEARCH PROBLEM STATEMENT

Effective decision making relies on accurate real-world data. ODOT has taken large steps forward in understanding Oregon transit services by facilitating the creation of General Transit Feed System (GTFS) data used by the Google Transit Partners Program for over 60 Oregon fixed route transit services. ODOT expanded on the GTFS data by investing in the open-source, web-based *Transit Network Analysis* software tool [1]. Despite these efforts, large information gaps still remain.

At the national level, some transit agencies are providing rich and informative data [2]. However, Oregon public transit agencies vary in terms of their level of technical expertise and resources available to provide the data needed by ODOT for statewide investment decisions. Much of the data required for understanding, planning, setting policy, and prioritizing investments in the statewide transit network is not easily available or not available in any standardized format. In particular, available ridership data is meager and data quality varies significantly by transit agency. Some transit agencies have virtually no data, while others have only limited data in a variety of formats, and still other agencies' data are missing important details or are so riddled with errors that it is rendered unusable. This means ODOT lacks real-world data needed to make informed, effective decisions.

#### III. RESEARCH OBJECTIVES

The goal of this research project is to develop a *public transit ridership data standard* for all Oregon public transit agencies to follow for the purposes of improved data collection, storing, sharing, reporting, and analysis. These core functionalities of the standard will be supported with the development of open-source, web-based tools for use by transit agencies, ODOT, regional planners, modelers, and vendors.

#### IV. WORK TASKS, COST ESTIMATE AND DURATION

Successful completion of the proposed project will include the following tasks:

1. **Perform a comprehensive literature review on transit ridership data availability and formats.** Analyze currently available data types and formats and identify possible opportunities with emerging technologies. A white paper report will be prepared to communicate findings. **Estimated cost: \$36,000**
2. **Design and develop a public transit ridership data standard.** Establish critical and desired parameters (i.e., data elements) of the data standard through findings of Task 1 and collaboration with key stakeholders. Determine final data standard syntax, semantics, and degree of flexibility. **Estimated cost: \$63,000**
3. **Develop a recommended ridership data standard implementation plan.** Produce document with recommendations for a tiered implementation approach of the data standard based on the varied abilities of Oregon public transit agencies. **Estimated cost: \$27,000**
4. **Design, develop, and test a web-based software tool to support ridership data standard.** Software tool will help users construct and validate ridership data standard for their transit agency. Different views will be provided to different stakeholders to visualize, analyze, and query authentic data set representative of the Oregon public transit system. **Estimated cost: \$45,000**
5. **Prepare final report.** **Estimated cost: \$9,000**

The project cost estimate is \$180,000 with an estimated duration of 18 months.

**V. IMPLEMENTATION**

Completion of this research project coincides with completion of the Oregon Public Transportation Plan (OPTP). Implementation of the OPTP requires real-world data that is informative and complete across the entire state of Oregon. Therefore, the public ridership data standard identified in this project is fundamental to creating the coherent and complete data set needed to support the OPTP. The *public transit ridership data standard* deliverable will serve as the template for public transit agencies statewide for data reported to ODOT, and ODOT will use this framework to store and maintain all public transit data. The recommended ridership data standard implementation plan will provide guidance for transit agencies to strategically plan for adopting new technologies that can provide the required and recommended data elements contained in the public transit ridership data standard.

**VI. POTENTIAL BENEFITS**

- ODOT and public transit agencies will gain access to data used to formulate information needed to make effective and efficient data-driven decisions;
- ODOT will obtain data necessary for performance metrics and FAST/MAP-21 reporting at lower costs;
- ODOT and public transit agencies will save time and resources through data standardization, gaining more information with less labor hours or data collection costs;
- An open data standard can improve perception of transit agency transparency and public awareness of available transit services [2];
- The data standard will provide clear direction to transit agencies when deciding what equipment technology to include when purchasing new buses. ODOT does not expect transit agencies to immediately implement new technology, but the data standard will make data expectations clear.
- A well-crafted data standard, complemented with supporting open source software tools, has the potential to be adopted broadly by transit agencies, analysis tool vendors, and vendors of passenger information collection systems.
- This work is potentially of interest to the National Transit Database (NTD), which lacks detailed ridership data [3, 4].

**VII. SUBMITTED BY**

<i>Stage 1 Submitter</i>	<i>Stage 2 Submitter</i>	<i>ODOT champions</i>
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**VIII. REFERENCES**

[1] <https://tnasoftwaretool.engr.oregonstate.edu/TNAtoolAPI-Webapp/wiki/#!/index.md>  
 [2] <https://www.apta.com/resources/reportsandpublications/Documents/APTA-Embracing-Open-Data.pdf>  
 [3] <http://www.ntdprogram.gov/ntdprogram/pubs/SmallSystems/2013/pdf/SSW%20Manual.pdf>  
 [4] <http://www.ntdprogram.gov/ntdprogram/pubs/RuralRM/2013/pdf/Rural%20Manual.pdf>