

2017 PORTAL SCOPE - DRAFT

**Work Order Contract #8
For
Intergovernmental Agreement #27085**

PORTAL Data Archive Sustainability Funding

Updated: May 8, 2017



1. INTRODUCTION

PORTAL is the official Archived Data User Service (ADUS) for the Portland Metropolitan region as specified in the Regional ITS Architecture. PORTAL provides a centralized, electronic database that facilitates the collection, archiving, and sharing of data and information for public agencies within the region. The data stored in PORTAL includes 20-second granularity loop detector data from freeways in the Portland metropolitan region, arterial signal data, travel time data, weather data, incident data, VAS/VMS message data, truck volumes, transit data and arterial signal data. Many of these data feeds are received by PORTAL in real time or on a daily basis and for most, the retrieval and archiving process is fully automated. The 20-second volume, occupancy and count data for Portland and Vancouver, WA-area freeways from ODOT is received in real-time and has been archived since July 2004. Weather data is retrieved from NOAA and is archived automatically. The collection and archival process for the arterial signal, travel time data and VAS/VMS message sign data is also automated.

The PORTAL project is a multi-modal transportation data archive that aims to support Metro's Regional Transportation Plan, the production of regional performance measures, support for regional transportation agencies and their consultants and researchers at PSU and elsewhere. Project objectives include producing tools and performance measures useful to local transportation professionals, exploring new and innovative uses of the data, and making the PORTAL data and system more accessible to agency personnel. PORTAL is developed in collaboration with partners at the Southwest Washington Regional Transportation Council (RTC), the Transportation and Research Consortium (TREC) at PSU.

The PORTAL data archive is a valuable resource for both researchers and practitioners. PORTAL data is used by consultants, planners and researchers for projects, system monitoring, system performance evaluation and long-term planning. Studies include bottleneck identification, data quality, development of Arterial Performance measures, and freeway travel time evaluations. Local consultants used PORTAL data to analyze reliability and design performance in the Highway 217 Corridor study. This two-year study evaluated alternatives for improving travel in the Highway 217 corridor. In addition, PORTAL provided data to support development of the 2035 Regional Transportation Plan, Regional Transportation System Management and Operations Plan and the Regional Freight and Goods Movement Plan. PORTAL, and related research projects at Portland State, increase the visibility of the Portland region, provide good "marketing" for local agencies and provide national visibility. PORTAL will be a necessary tool for implementing the region's Congestion Management Process and will add valuable information to the development of transportation system plans, corridor planning, and system management and operations.

From 2008-2012, TransPort funded PORTAL at a level of \$100,000 per year through the MTIP program. This funding has supported maintenance, training, sustainability and small enhancements of PORTAL. In 2013-2014 and 2014-2015, the funding level was \$125,000 per year, with PSU providing match of \$14,500 each year. For 2015-2016, the funding level was \$272,254 of funding from the Metro Regional Flexible Fund Allocation to the Transportation System Management and Operations (TSMO) Program, plus \$31,161 local match from Transportation Research and Education Consortium (TREC) at Portland State University for a total project of \$303,415. The funding for 2017 is \$200,000 of funding from the Metro Regional Flexible Fund Allocation to the Transportation System Management and Operations (TSMO) Program, plus \$22,890 local match from Transportation Research and Education Consortium (TREC) at Portland State University for a total project of \$222,890.

Local match consists of GRA tuition and staff programming time. A PORTAL Technical Advisory Committee (TAC) consisting of representatives from public transportation agencies and private firms has been established and meets approximately once a quarter to review progress and to determine future direction. Additional funding from Transportation and Research Consortium (TREC) and Southwest Washington Regional Transportation Council (RTC) helps support PORTAL.

This project provides one year of funding (with anticipated additional years of support) to sustain and enhance PORTAL. The TAC determines what features will be added to PORTAL each year. Advances in PORTAL will be communicated to the transportation community through presentations and publications.

Projects that will use PORTAL in the course of this work plan include:

- 2018 Regional Transportation Plan Performance
- Congestion Management Process - System Monitoring (federal requirement)
- I-84 Multimodal Integrated Corridor Management Deployment Plan
- Traffic Incident Management Coalition
- Update to the "Portland Region 2013-2015 Traffic Performance" report
- Region 1 Traffic Flow Maps (Update)
- Corridor Bottleneck Operation Study (Update)

The project will be spearheaded by the Portland State University, under the management of Dr. Kristin Tufte. Deliverables have been identified for each task.

2. WORK PLAN

This contract is intended to cover the period 8/15/17-6/30/18. The following is a description of the work required to carry out this research and development effort during that term.

Key goals of the 2017 work plan include:

1. Maintain the functionality of the PORTAL web site.
2. Implement targeted enhancements as requested by users.
3. Increase user engagement and usability of the PORTAL web site.
4. Increase training and support for the PORTAL project.

The work plan is broken into five parts: 1) Maintenance, 2) Enhancements, 3) Usability and User Engagement, 4) Training, Support & Result Dissemination, and 5) Project Management & Reporting. Maintenance includes tasks required to keep existing PORTAL functionality active. Enhancements include new additions to PORTAL - either new data sources or new interface components. Enhancements are further broken down by type of data and by agency and each enhancement has an associated set of users who will benefit from that enhancement. Usability and User Engagement is a new task aimed at the goal of increasing user engagement with PORTAL and the Usability of the PORTAL web site

The funding in this work order provides close to a day and a half a week of time from the PI/Project Manager, Kristin Tufte, as well as approximately one full-time programming staff split between Morgan

Harvey and Hui Zhang and a student Graduate Research Assistant (GRA). Kristin Tufte handles the role of technical lead and performs project management and outreach. The tasks below are described and a level of effort in terms of percent of total project cost is provided.

This contract is for \$200,000 in federal funds and \$22,890 non-federal local match for a total project of \$222,890. Detailed task descriptions are provided in the following sections. At a high level, these funds break down as follows:

Task Number	Task Name	Level of Effort
Task 1	Maintenance	21%
Task 2	User Engagement Training & Support	20%
Task 3	Enhancements	49%
Task 4	Results Dissemination	5%
Task 5	Project Management & Reporting	5%

Task 1. Maintenance

Note: Costs for maintenance are very variable. They depend on factors outside of the team's control - number and type of feed issues, number of security patches and upgrades required.

Time Frame: This task will extend throughout the life of the contract.

Task Name	Description	Comments	Deliverable	Level of Effort
1A. Data Feed Maintenance	Handle any changes to data feeds feeding into PORTAL and handle any feed outages. Feeds included are: ODOT Freeway, ODOT Travel Time, ODOT Incident, Weather, City of Portland TransCore/Arterial Signal.	Note: Cost is variable depending on feed stability.	Work done on this task will be described in the quarterly reports and in project updates at TAC meetings.	5%
1B. Internal system changes, etc.	Internal system patches, network upgrades, etc. that impact PORTAL. Need to evaluate and update backup plan. Need to evaluate storage needs and priorities due to increasing size of newer data sources (i.e. transit, freight, arterial).	Note: Cost is variable depending on software updates.	Work done on this task will be described in the quarterly reports and in project updates at TAC meetings.	5%

1C. Code Upgrade	Ongoing upgrade of PORTAL web site code to support updated libraries, modernization, browser compatibility, security.	Required to keep up to date with latest web libraries.	Work done on this task will be described in the quarterly reports and in project updates at TAC meetings.	8%
1D. Documentation of Existing Features	Some existing features in the PORTAL web site are under-documented. This task will produce documentation for these features. To include descriptions of calculations, example use cases and descriptions of how to use the web site. (Note: for new enhancements, documentation will be included in the enhancement task.)	Requested by PORTAL Users.	Documentation will be published on the web site or posted to the user group.	3%
Total:		Costs are variable and depend on factors outside of the team's control.		21% (Cost estimate \$46,807)

Task 2. User Engagement, Training & Support

A key takeaway from PORTAL users - both from the PORTAL workshop at the Fall 2016 TREC Communities Summit and the PORTAL User group meetings is the need for improved usability of the PORTAL web site. This task addresses that and other feedback from PORTAL Users.

Time Frame: This task will extend throughout the life of the contract. Workshop is expected to be Fall 2017.

Task Name	Description	Comments	Deliverable	Level of Effort
2A. User Engagement & Communication	Continue to establish User Groups with regional partners and conduct outreach to Portland State researchers. User	User groups to be formed around data & features. Groups will serve as form	Formalize user groups: description, membership, frequency of meeting. Formalize communications. Meeting minutes to be posted	3%

	Groups to meet regularly; frequency of meeting to be determined by the group.	for distribution of PORTAL information and receipt of requests.	where accessible by the TAC and PORTAL Users. Outreach to be documented in quarterly reports and TAC meeting updates.	
2B. Support & Usability	PORTAL staff will provide support to regional partners. on an ongoing, on-demand basis.	Level of effort varies with number of support requests.	PORTAL staff will respond to support requests from Users. Support requests are received from users via the feedback form.	15%
2C. Training	PORTAL team will offer one workshop during the year to provide updated training about Portal's capabilities.		At least one workshop to train PORTAL users. Target location for the workshop is the TREC Transportation and Communities Summit. Writeup of workshop to be produced provided to users and TAC.	2%
Total:				20% (\$44,578)

Task 3. Enhancements

Enhancements will be approved by PORTAL's Technical Advisory Committee. Based on TAC meetings held in January and March 2017 and feedback from PORTAL Users from PORTAL User Meetings and the Fall 2017 PORTAL Workshop, a set of enhancements were selected for the 2017-2018 period.

Task Name	Description	Comments	Deliverable	Level of Effort
3A. Data Availability	Improve information about data availability in the PORTAL user interface.	High level of user requests.	Modifications to PORTAL User Interface and API.	10% (\$22,289)
3B. Vehicle Length Data - Map	Make vehicle length data accessible via a map.	High level of user requests.	Modifications to PORTAL User Interface. Includes move to new framework.	7% (\$15,602)
3C. Ramp Data	Update PORTAL User Interface to include Ramp Data	High level of user requests.	Modifications to PORTAL User Interface and API.	9% (\$20,060)

3D. Selected Road Facility Segments for Analysis	Update PORTAL API and User Interface to view and download data from pre-selected road facility segments. This task will support download and viewing of data for regionally and/or locally-defined road segments, enabling easier querying annually, or quarterly as new data is populated.	High level of user requests.	Modifications to PORTAL User Interface and API.	5% (\$11,145)
3E. Regional Performance Reporting.	Regional Performance Reporting	Medium level of user requests.	Implementation of PORTAL elements contributing to regional multimodal performance measures for system monitoring, taking into account other data sources such as NPMRDS, BikePed Portal and third parties.	9% (\$20,060)
3F. Travel Time Interface	Enhance the travel time interface to support comparisons for use in before and after studies and to add information about capture rate.	Medium level of user requests.	Modifications to PORTAL User Interface and API.	9% (\$20,060)
Total:				49% \$109,216

3A. Data Availability - Freeway, Vehicle Length, Arterial Count Stations, Arterial Signal, Travel Time

Currently there is limited information in PORTAL about availability of data. This task would enhance the PORTAL User Interface to communicate to a when data is and is not available. In addition, this task will review data quality metrics and, where appropriate, provide limited suggestions for providing information about data quality to the user.

Users: PORTAL Users Group

3B. Vehicle Length (a.k.a.Freight) Data - Map

Currently the vehicle length data is searchable only by station name and not location. Design, develop and implement a map to easily display locations for the vehicle length data. A map will be added to the vehicle length page.

Users: ODOT (Operations and Planning), Port of Portland, PORTAL Users Group.

3C. Ramp Data:

Ramp data is not visible in PORTAL. When ODOT switched from ATMS to the DAC, the ramp feed changed (ramp data used to come in the same feed with the mainline VOS data); the PORTAL User Interface needs to be modified to display ramp data. This task will update the Update Portal UI to make ramp data viewable and downloadable.

Users: PORTAL Users, especially planners.

3D. Selected Road Facility Segments for Analysis

PORTAL User Interface currently displays data at a station and a freeway level. Modify the PORTAL interface to allow a user to display data at a level below a full freeway. This task will enhance PORTAL to support API access to and viewing of data for pre-defined “fixed” road segments. That is, the PORTAL system will be enhanced with a set of predefined “fixed” corridors; for example, the segments shown in Metro mobility corridors. Users will be able to access data for those pre-defined corridors.

Users: Metro - Performance Measures; RTP; ODOT Planning.

3E: Regional Performance Reporting

Work with regional stakeholders to ensure that PORTAL data complements other sources such as NPMRDS, Bike-Ped Portal and third party data and that the PORTAL data is suitable for use in regional performance reporting. The outcome is a deliverable that enables use of multiple sources by experts and allows for comparison to support MAP-21 and other measures.

Users: Metro, ODOT, FHWA regional reporting.

3F. Travel Time Interface:

This task will enhance the PORTAL Regional Travel Time interface to support comparisons for use in before and after studies and to add information about capture rate. To support comparisons for before and after studies, users will be able to select a travel time segment to compare as well as before and after time periods, with the ability to select start and end dates and days of week to be included in the analysis.

Users: City of Portland planners, Metro Planners.

Task 4. Results Dissemination

The PORTAL team will disseminate results of this project through a variety of mechanisms including conference presentations or papers. Conferences to be considered for presentation and papers include the Transportation Research Board, the North American Traffic Monitoring Exposition and Conference (NATMEC), Transportation Research Board, ITS America, Regional ITE and IMSA Conferences, the Corvallis Transportation Summit or other opportunities that arise during the course of this contract. The project manager will attend TransPort meetings and will provide TransPort with regular updates. TransPort is a subcommittee of the regional Transportation Policy Alternatives Committee (TPAC). TransPort is the regional Intelligent Transportation Systems (ITS) coordinating committee for the Portland region.

Time Frame: Ongoing throughout the contract.

Deliverable: Dissemination activities are to be reported in quarterly project reports and are subject to approval of the PORTAL TAC. Activities may include participation in Transportation Research

Board workshops, presentations to local and regional groups, papers published at workshops and conferences.

Level of Effort: 5%

Cost Estimate: \$11,144

Task 5. Project Management & Reporting

The project manager will submit quarterly progress reports and a final report at the project's conclusion. The TAC will once a quarter for progress briefings. The quarterly reports will include achievements of the past quarter, objectives for the upcoming quarter and any current challenges or issues. Documentation such as before and after screen shots will be included as appropriate. The final end-of-contract report will be comprehensive summarizing the accomplishments under this work order.

The quarterly reports will be accompanied by invoices showing expenses and local match.

Time Frame: Due quarterly and at project end.

Deliverable: Quarterly progress reports; Final summary report

Level of Effort: 5%

Cost Estimate: \$11,145

3. BUDGET

The project is cost-reimbursable. All costs are billed only when and if incurred. See attached budget spreadsheet