



OTP SUM: OTP Integration of Transit with Shared-Use Mobility Real-Time and Data
Enhancements

Mobility on Demand Sandbox Program

Quarterly Report Q3 2017

July 1 - September 30, 2017

Published October 24, 2017

TABLE OF CONTENTS

Project Summary	3
Project Scope and Budget Status	4
Task 1: Project Management	6
Task 2: Evaluations and Reports	6
Task 3: Application Development Status	6
Task 4: Geocoder Development	8
Task 5: Data Improvements	9
Task 6: Integrated Payment Plan	9
Meetings and Events	9
Upcoming Highlights	9
Appendices	10

Project Summary

A project dashboard is available at www.trimet.org/mod. It provides more comprehensive information about the project and up-to-date status reports.

Challenges Addressed by Project

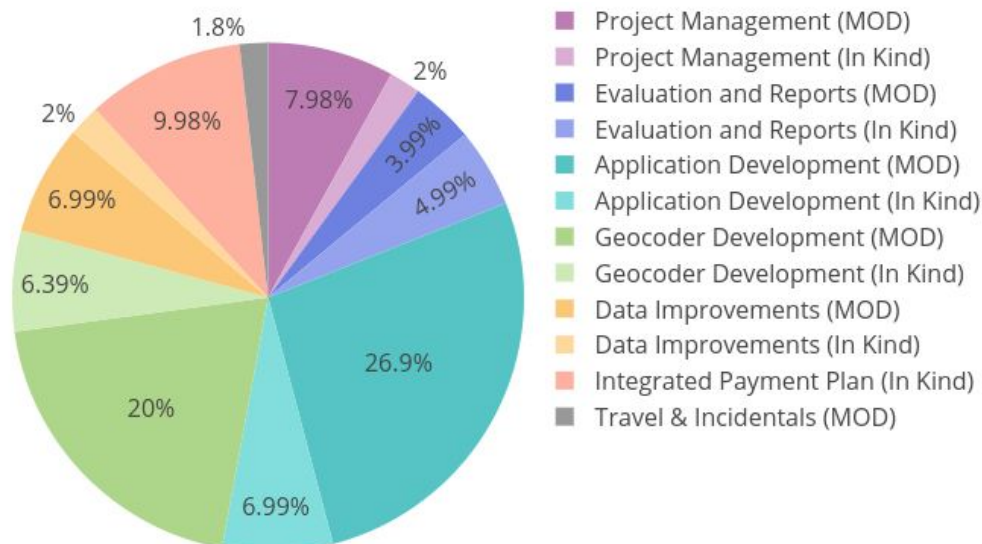
- OpenTripPlanner (OTP) does not currently incorporate shared-use modes.
- Address location for trip origins and destinations are a main requirement for trip planning, however, existing options are inadequate or cost prohibitive for government.
- Accessible trips are a challenge due to the lack of data available on the accessibility of pedestrian infrastructure and the absence of these features in a trip planner.

Anticipated Outcomes, Benefits, Impacts

- Extend the OpenTripPlanner code base to support the integration of transit trip planning with shared-use mobility modes, such as bike share and transportation network companies (TNCs), as well as updated real-time transit information.
- Implement a fully functional and comprehensive open geocoder built off the existing Mapzen Pelias geocoder. A non-proprietary and non-restrictive option for address locating would substantially lower the barrier to entry for many transit systems to offer trip planning and can achieve significant cost savings for transit agencies, government agencies, and the public.
- TriMet, in collaboration with the OpenStreetMap community, established best practices for representing accessibility information and will build out this accessibility information in the OSM network and provide a model for replicating this work in other regions.

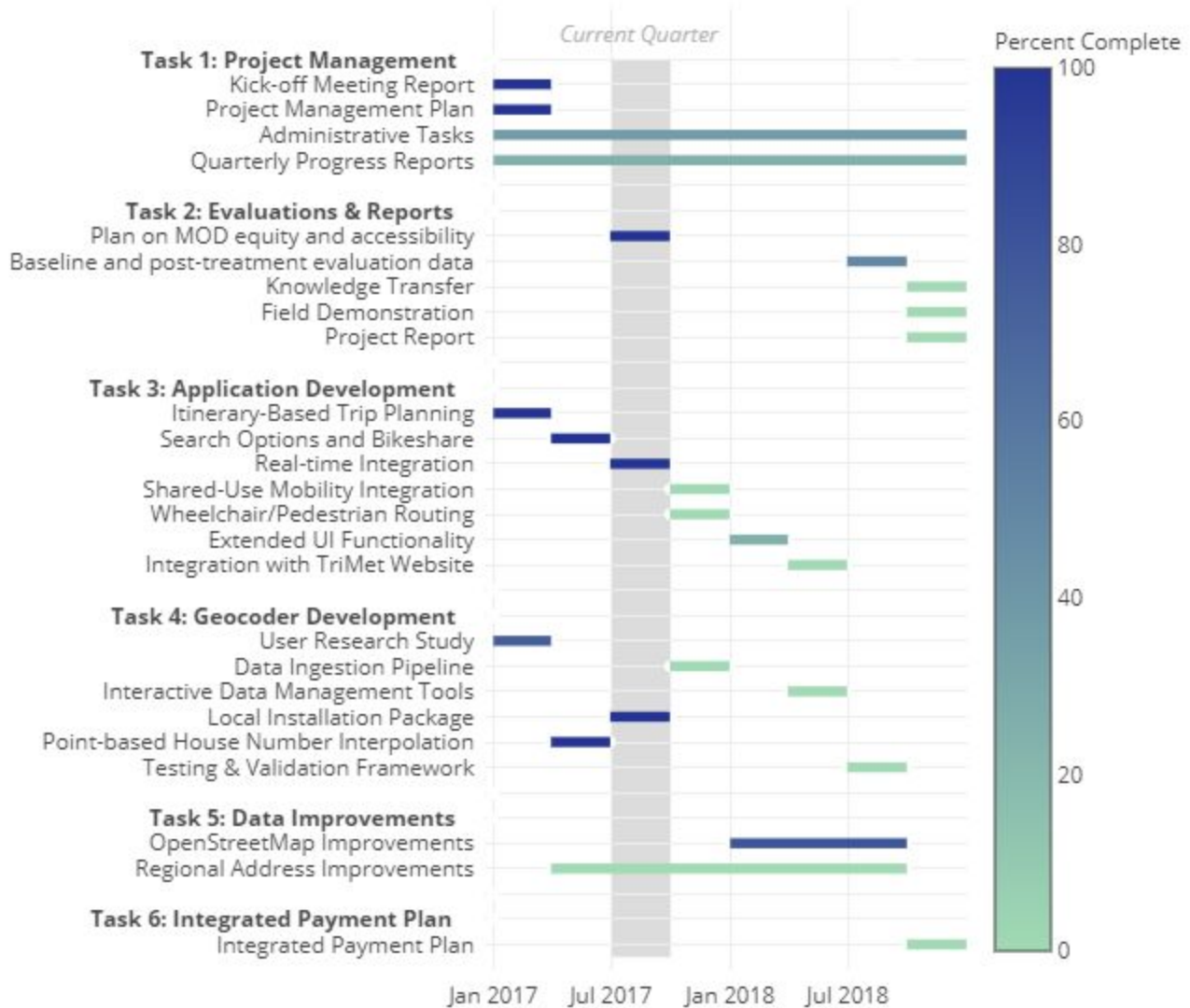
Grant Budget Allocations

TriMet's funding allocation from the FTA of \$678,000 is matched with 32% of in-kind contributions, totaling over \$1 million.



Project Scope and Budget Status

The MOD Sandbox project is divided into six main tasks: Project Management, Evaluations & Reports, Application Development, Geocoder Development, Data Improvements and an Integrated Payment Plan. The project is on schedule and in budget. Progress is as follows:

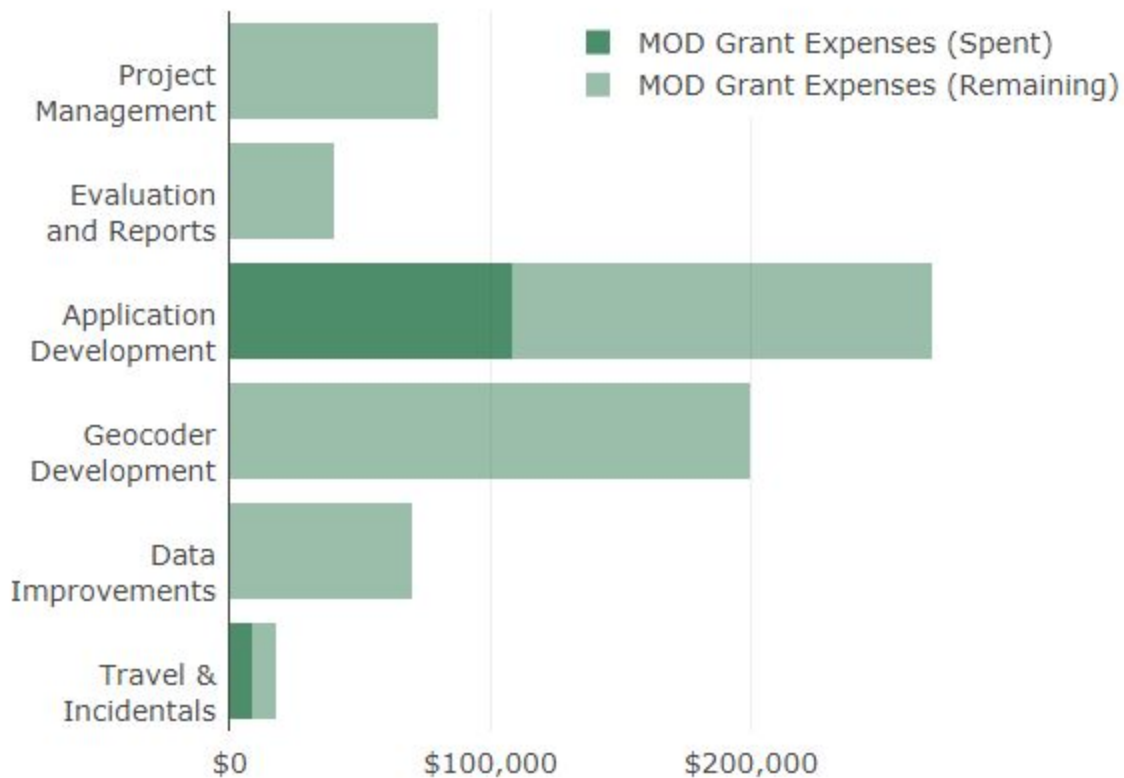


The above gantt chart illustrates the tasks and status of deliverables in Quarter 3.

Of the \$678,000 that TriMet received, \$116,648 (17.2% of allocated grant funds) has been spent thus far. The cleared expenditures through Q3 2017 are as follows:

- \$0 spent toward Project Management;
- \$108,000 (40% of allocated grant funds) spent toward Application Development;
- \$0 spent toward Geocoder Development;
- \$0 spent toward Data Improvements;
- \$8,648 (48% of allocated grant funds) spent toward Travel & Incidentals.

MOD Grant Spent and Remaining Funds



The above bar chart shows the current amount spent for each of the tasks in Quarter 3.

Task 1: Project Management

TriMet's OTP Integration of Transit with Shared-Use Mobility Real-Time and Data Enhancements have been underway since January. All milestones and deliverables have been met and we are on schedule.

Quarterly Deliverables

Deliverables for this quarter are in the form of ongoing tasks that include scheduled weekly meetings and administrative tasks.

Quarterly Progress

Task progress includes:

- weekly scheduled meetings (slack or webinars) to ensure continued communications;
- use of Trello for project management;
- a dedicated and open TriMet MOD Project Google drive for project management;
- use of InVision for application interface development and review;
- continued update of the online project dashboard available to the public at TriMet.org/MOD to ensure transparency;
- and RealTime Board for live, remote whiteboarding sessions.

Task 2: Evaluations and Reports

The FTA requires the following project evaluations and reports: Evaluation Plan and Report, Equity and Accessibility Plan, Knowledge Transfer, Field Demonstration, Final Project Report.

Quarterly Deliverables

Equity and Accessibility Report (**Appendix A - Equity and Accessibility Report**).

Quarterly Progress

In addition to the finalized report, work continues on the following drafts:

- Evaluation Logic Model located on the TriMet MOD Project Google Drive:
https://docs.google.com/spreadsheets/d/1YIhKyHAYLr_f9ttwgSlnR_uw57npR-lC00EzKEKxMgs/edit#gid=1886309523
- Evaluation Plan and Report located on the TriMet MOD Project Google Drive:
https://drive.google.com/open?id=17Ok54d4-IqYNdY0dw96Soy1Lc05u_jjpi0G-yOvhukQ

Task 3: Application Development Status

A live demo of the application is now available at <https://trimet-mod-dev.conveyal.com/>

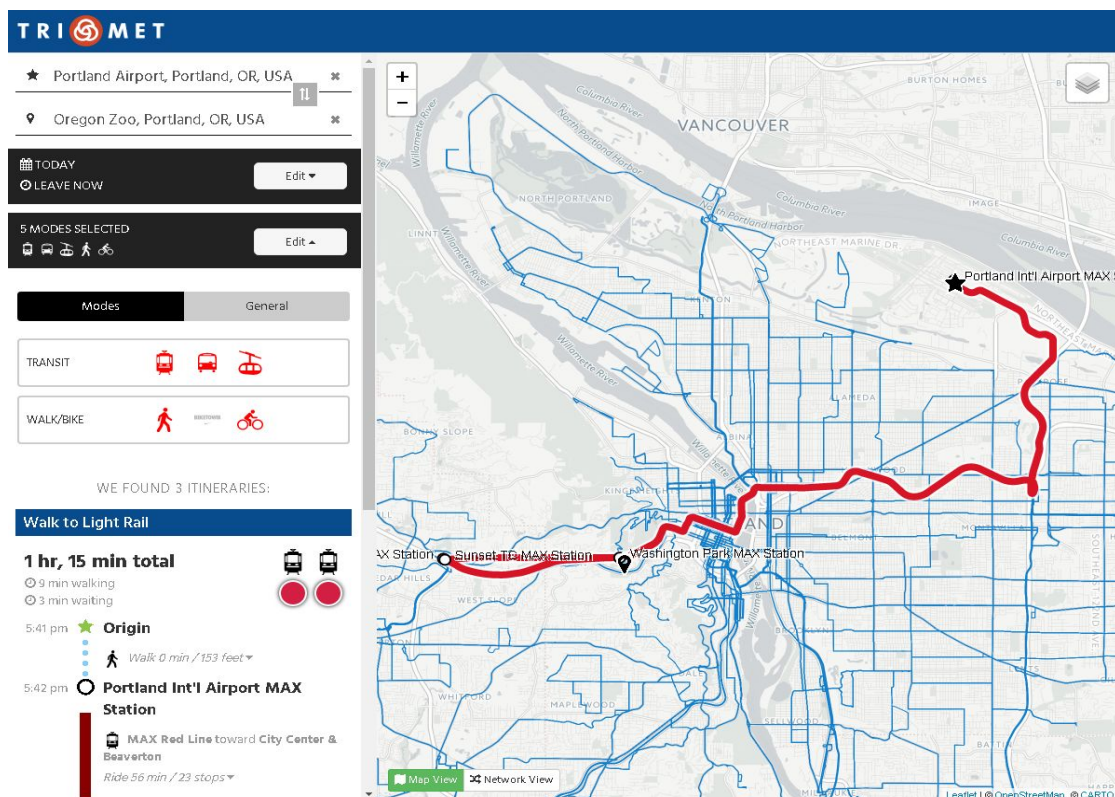
Quarterly Deliverables

Search Options and Bikeshare (**Appendix B - Task 3 Milestone 3 Real Time Integration Documentation**). It was delivered and signed off on Thursday, September 28, 2017. The code for this deliverable is available on a private GitHub site until production. In summary, the work includes the following features:

- **UI/UX Design:** Refinement of designs of M3 tasks; preliminary mockups for M4 tasks
- **Schematic Transit Mapping:** Visualization of trip plan in schematic/diagrammatic format similar to stylized transit maps, and ability to toggle between schematic network and map views
- **Display of Real-time Results:** Display of GTFS-RT alerts for affected service in itinerary results, and explanation of any reroutes / detours based on real-time information
- **Stops Overlay:** Overlay of transit stops on map (derived from GTFS) with ability to select stop as start/end location
- **Routes Overlay:** Overlay of labeled transit routes (autogenerated from GTFS)

Quarterly Progress

In addition to the completed milestone, the user interface design continues to be refined in InVision and the live demo.



Screen capture of demo version of application.

Task 4: Geocoder Development

Pelias is a non-proprietary and non-restrictive option for address locating that is an important requirement for trip planning. This task includes the implementation of a reference framework for government agencies to auto-feed their authoritative address data into a publicly accessible geocoding service.

Quarterly Deliverables

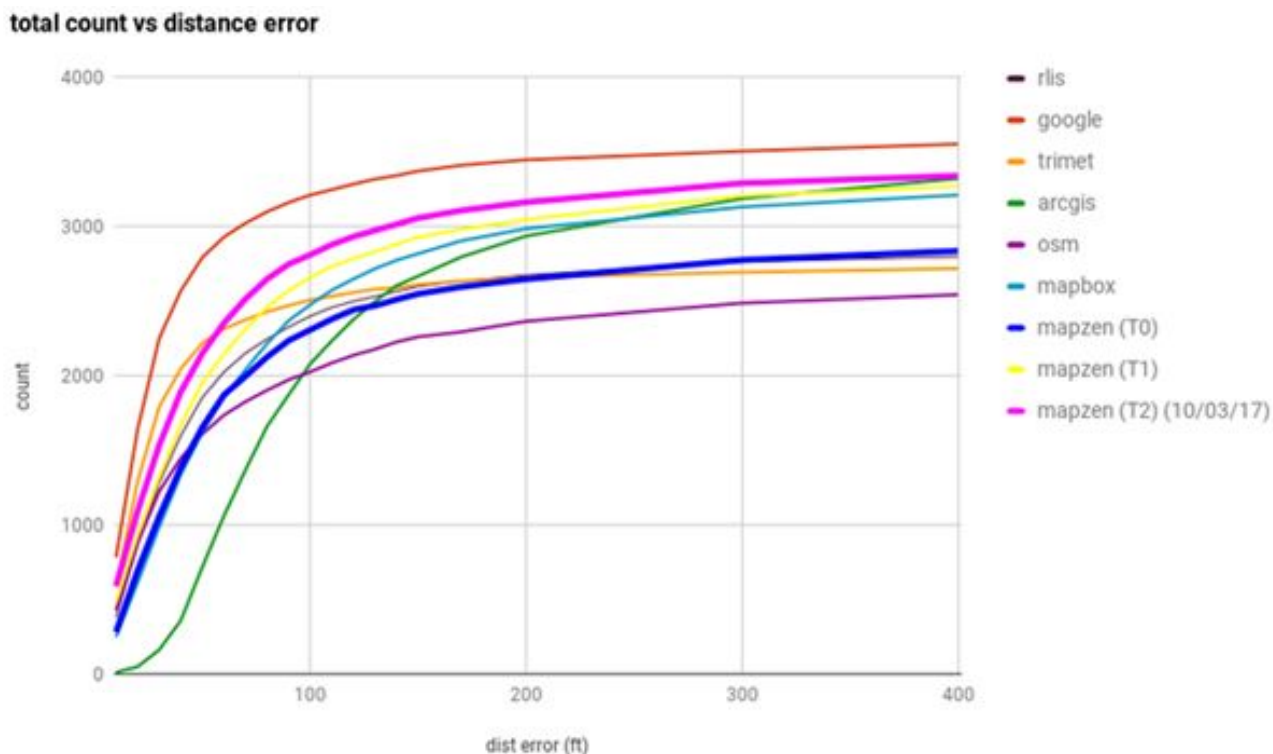
The User Research Survey (**Appendix D - Task 4 Milestone 1 User Research Survey**).
Local Installation Package (**Appendix C - Task 4 Milestone 4 Local Install Package Code**).

Quarterly Progress

The User Research Survey was released this quarter as planned to gather information from local jurisdictions regarding OpenAddresses data contributions. It is available at: <https://www.surveymonkey.com/r/open-data-contributions>.

The Pelias Local Installation Package is a simple setup for agencies wanting to install a local instance of the search engine. The package was released last quarter and testing, revisions and final signoff for the install package was completed this quarter.

Testing of the data results from Pelias also continues and progress improves. The following chart demonstrates improvements benchmarked against other geocoders and previous versions:



Task 5: Data Improvements

Improve OpenAddresses and OpenStreetMap (OSM) in support of comprehensive trip planning and geocoding (address matching).

Quarterly Deliverables

There were no scheduled deliverables for this task during this quarter.

Quarterly Progress

Updates to OSM continue as planned.

Task 6: Integrated Payment Plan

As a partner on this project, moovel will facilitate compatibility with their planned booking and payment features so customers can plan and pay for their trips in one app.

Quarterly Deliverables

There were no scheduled deliverables for this task during this quarter.

Quarterly Progress

A meeting was held at moovel on August 25th. Those in participation were moovel, TriMet and IBI project teams. The deliverable and plan was further refined for continued progress.

Meetings and Events

This quarter, TriMet presented on the project at the following conferences:

- July 20, Association for Commuter Transportation (ACT) 2017 International Conference
- August 18, International Conference for Free and Open Source Software for Geospatial (FOSS4G)

TriMet conducts weekly project meetings on the following rotating Slack channels every Thursday at 10am PST.

- Geocoder Meetings (<https://trimet-mod-sandbox.slack.com/messages/geocoding/>)
- Application Development Meetings (<https://trimet-mod-sandbox.slack.com/messages/general/>)

Upcoming Highlights

October 11-12, 2017 Atlanta, GA

Mobility on Demand Workshop “How to Deploy MOD: Lessons from Leading Cities”

Appendices

Appendix A - Equity and Accessibility Report

Appendix B - Task 3 Milestone 3 Real Time Integration Documentation

Appendix C - Task 4 Milestone 4 Local Install Package Code

Appendix D - Task 4 Milestone 1 User Research Survey

OpenTripPlanner – Shared Use Mobility Integration Project Equity and Accessibility Plan

Tri-County Metropolitan Transportation District of Oregon (TriMet)

09/20/2017

Introduction

As part of the Mobility on Demand (MOD) Sandbox Program, the Federal Transit Administration (FTA) has awarded TriMet a \$678,000 grant to extend the OpenTripPlanner (OTP) platform to integrate transit and shared-use mobility options into one comprehensive application for multi-modal travel comparisons. The purpose of this memorandum is to provide an overview of the Tri-County Metropolitan Transportation District of Oregon (TriMet)'s programs, policies and resources to address accessible and equitable mobility service for all travelers, including communities such as people of color, those with low income, limited English proficient persons, the aging population, and persons with disabilities, including wheelchair users. In addition, it describes how these programs and policies will be implemented as part of the OpenTripPlanner Shared Use Mobility (OTP SUM) enhancements project.

Project Background

The OpenTripPlanner (OTP), initially released as an open source project by TriMet in 2009, was the first to introduce multiple modes in one trip with the original focus on incorporating biking and walking networks with transit. Adoption of OTP has been strong, with implementation in dozens of cities and countries worldwide. TriMet now proposes to build upon the core of OTP to incorporate shared-use mobility (SUM) options.

TriMet's proposed project includes the development and expansion of two core data frameworks that current and future collaborative OTP initiatives can be built upon, producing replicable software and results for communities across the country. These two core project elements are to:

- Extend the OTP code base to integrate into transit trip planning shared-use mobility modes, such as bike share and TNCs, as well as updated real-time transit information.
- Implement a fully-functional and comprehensive open source geocoder built off the existing open source Mapzen Pelias geocoder.

In addition to core elements on the foundation frameworks, the project will also include:

- Development of a comprehensive new web-based user interface that will allow users to make intermodal trip plans including shared-use modes. The new web-based user interface will also display real-time information and report impacted itineraries to users.
- Improvements to basemap data so the trip planner can support enhanced pedestrian accessibility information and improvements to regional address data that will make location search and geocoding more effective and user-friendly.
- Design and implementation of compatibility for future booking and payment options in moovel's RideTap product so customers can plan and pay for their trips in one app.

TriMet's OTP SUM project will create a complete open platform for the integration of transit and SUM options. The open data, software and user interfaces, responsive on both web and mobile, will help all TriMet customers understand the multi-modal options to meet their mobility needs, including for the critical first and last miles of transit trips where a bus or train alone doesn't directly serve their origin or destination. TriMet recognizes the importance of ensuring equitable functionality and accessibility to the information provided through OTP SUM.

Equity and Accessibility at TriMet

The following sections detail the programs, frameworks, and policies that TriMet uses to consider equity and accessibility in all service and programs provided by the agency within its service area. Equity is a key consideration in the provision of public transportation service, facilities and programs. To that end, TriMet has adopted an Equity Lens framework to guide planning, analysis and decision-making. For more information on these programs and policies, please visit the Equity and Access page of TriMet's website (<https://trimet.org/equity/>) or contact TriMet's Title VI and Equity Programs Administrator at 503-238-5711.

What is an Equity Lens?

- A practical tool that helps to ensure policies and programs result in equitable outcomes for all residents.
- A tool that helps public agencies to consider equitable treatment of diverse communities and workforce when planning, developing and evaluating policies, programs and services.

The Equity Lens Process

The Lens leads employees through the following stages:

- Assessing current organizational capacity for equity work;
- Describing current direction and strategies;
- Identifying inequities and injustices;
- Reflecting and understanding strengths and challenges;
- Enhancing what is leading to equity and empowerment; and
- Eliminating strategies and root causes leading to inequities and injustices.

Examples of Equity Lens Questions

- Are there equity and inclusion concerns related to this issue? (e.g., accessibility, affordability, safety, culture, gender identity)
- Are the groups most affected by the policy consulted from the early stages of the policy development?
- What human and financial resources are required to address equity and inclusion in the implementation of this policy?
- Can we develop innovative solutions that draw upon the contributions and assets of those people most affected?

Title VI

The United States has a long history of unjust treatment towards people of color. Although we have made great progress over the past few centuries, we still see disparities throughout our society along the lines of race and ethnicity – even in cases where decisions are made with the best of intentions.

The Civil Rights Movement of the mid-1950's and 60's brought the issues of segregation and racial injustice to the forefront of our national consciousness. The movement resulted in the historic passage of the Civil Rights Act of 1964, which included eleven "Titles" outlawing several types of race-based discrimination. One of these "Titles" – Title VI – included the following provision:

No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

The intent of Title VI is to remove barriers and conditions that prevent minority, low-income, and persons with limited English proficiency (LEP) from equal access to public goods and services. In effect, Title VI promotes fairness and equity in federally assisted programs and activities. Title VI is rooted in the Constitutional guarantee that all human beings are entitled to equal protection of the law, and specifically addresses involvement of impacted persons in the decision-making process.

There are many forms of illegal discrimination based on race, color, or national origin that can limit the opportunity of underrepresented communities to gain equal access to services and programs. In operating a federally assisted program, a recipient cannot, on the basis of race, color, or national origin, either directly or through contractual means:

- Deny program services, aids, or benefits;
- Provide a different service, aid, or benefit, or provide them in a manner different than they are provided to others; or
- Segregate or separately treat individuals in any matter related to the receipt of any service, aid, or benefit.

What does this mean for TriMet?

As a recipient of federal financial assistance through the Federal Transit Administration (FTA), TriMet is subject to the rules and regulations provided through FTA Circular 4702.1B “Title VI Requirements and Guidelines for Federal Transit Administration Recipients” effective October 1, 2012 (“Circular”).

TriMet’s Director of Diversity and Transit Equity is chiefly responsible for administering and monitoring Title VI requirements, but it is the duty of every employee, vendor and contractor of the agency to ensure compliance with nondiscrimination and to further civil rights protections. The TriMet Board of Directors must also approve the agency’s Title VI program prior to its submittal to FTA.

TriMet’s commitment to equity can be seen across our agency, the transportation system it manages, and the community it serves. It is embedded in the policies and practices we develop and implement. It is embedded in the investments we make and partnerships we build, our workforce, our approach to contracting and our ever growing connections to our community.

Environmental Justice

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was signed by President Clinton on February 11, 1994. Subsequent to issuance of the Executive Order, the U.S. Department of Transportation (DOT) issued a DOT Order for implementing the Executive Order on environmental justice (EJ). The DOT Order (Order 5610.2(a), “Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” 77 FR 27534, May 10, 2012) describes the process the Department and its modal administrations (including FTA) will use to incorporate EJ principles into programs, policies, and activities.

The US Department of Transportation has adopted three fundamental environmental justice principles to guide transportation justice efforts:

- Avoid, minimize, or mitigate disproportionately high and adverse health and environmental effects, including social and economic effects, on communities of color and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by communities of color and low-income populations.

TriMet makes environmental justice a priority by identifying and addressing the effects of agency capital projects, programs, policies and activities on communities of color and low-income populations.

Limited English Proficiency

The U.S. Department of Transportation (DOT) LEP guidance states that Title VI and its implementing regulations require that DOT recipients take reasonable steps to ensure meaningful access to their programs and activities by LEP persons. The Federal Transit Administration published its LEP Guidance in its Circular 4702.1B “Title VI Requirements and Guidelines for Federal Transit Administration Recipients” requiring recipients to develop an LEP implementation plan consistent with the provisions of Section VII of the DOT LEP guidance.

TriMet is committed to full compliance with Title VI and Executive Order 13166 to provide meaningful access to programs, services and benefits for persons with limited English proficiency, or LEP. From the Title VI Circular:

Consistent with Title VI of the Civil Rights Act of 1964, DOT’s implementing regulations, and Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency” (65 FR 50121, Aug. 11, 2000), recipients shall take reasonable steps to ensure meaningful access to benefits, services, information, and other important portions of their programs and activities for individuals who are limited-English proficient (LEP).

In 2010, TriMet completed its LEP Language Assistance Plan and Implementation Schedule after an extensive review of the LEP populations in the TriMet service district and their needs. A special LEP Workgroup recommended a two- tiered approach to meeting the needs of LEP populations: Tier One retains successful programs and activities designed to meet the language needs of LEP populations; Tier Two identifies new areas of focus to further the agency’s goal of providing LEP customers with meaningful access to TriMet programs and services. This plan continues to guide TriMet as to how to best serve LEP populations.

Four Factor Analysis

In 2017, TriMet updated its Four Factor Analysis. As per DOT and FTA guidance, there are four factors for agencies to consider when assessing language needs and determining what steps they should take to ensure access for LEP persons:

- 1) The number or proportion of LEP persons eligible to be served or likely to be encountered by a program, activity or service of the recipient;
- 2) The frequency with which LEP individuals come in contact with the program;

- 3) The nature and importance of the program, activity or service provided by the recipient to people's lives; and
- 4) The resources available to the recipient and costs.

Web Content Accessibility

TriMet works extensively to ensure that its website and web-based applications such as OTP SUM are fully accessible and usable by customers with disabilities. Code for these applications is expected to be accessibility standards-compliant and follow Web Consortium Accessibility Guidelines (WCAG) Level A conformance. WCAG guidelines and success criteria are organized around four principles of accessibility:

- **Perceivable** - Information and user interface components must be presentable in ways that all users can perceive.
- **Operable** - User interface components and navigation must be usable by all users (the interface cannot require interaction that a user cannot perform)
- **Understandable** - Users must be able to understand the information as well as the operation of the user interface (the content or operation cannot be beyond their understanding)
- **Robust** - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies (as technologies and user agents evolve, the content should remain accessible).

(Adapted from Web Content Accessibility Guidelines (WCAG) Overview - <http://www.w3.org/WAI/intro/wcag.php>)

More information on WCAG guidelines can be found at <https://www.w3.org/WAI/intro/wcag>. New designs for TriMet's website and web applications are typically tested with riders who use screen readers. In the past, this has involved the agency working with the Oregon Commission for the Blind, for example, to either observe a customer with a vision impairment using the site, or to recruit users to test it and submit feedback via email. A similar approach will be taken during the testing phase for OTP SUM.

Public Involvement

TriMet has an established comprehensive public involvement process to ensure minority, low-income and LEP populations are engaged through public outreach and involvement activities. TriMet's Public Engagement Framework was originally submitted to the FTA on January 2013 as part of the response to the FTA's Title VI Program Review, and has been updated as part of this submittal. TriMet's Diversity and Transit Equity Department serves as a resource to other TriMet divisions to integrate these populations into TriMet's public involvement activities.

Equity and Accessibility in OTP SUM

The sections that follow describe the intended actions that TriMet and the OTP SUM project team will take to ensure that equity and accessibility are a key consideration throughout the OTP SUM development, implementation, and testing process. With assistance from the Title VI and Equity Program Administrator and the Diversity and Transit Equity department, the OTP SUM team will implement the frameworks and policies described in the section above to evaluate equity considerations for the OTP SUM application.

Title VI

TriMet will adhere to all rules and regulations provided through FTA Circular 4702.1B, as adopted through TriMet's 2016 Title VI Program Update, throughout OTP SUM development, implementation, and testing.

The new OTP front-end application will be a "mobile first" web app, not a native smartphone app. This means that its full functionality will be available to all internet users, regardless of whether they access the tool from an iPhone, Android phone, desktop computer, tablet, or other type of hardware. Thus, it will not exclude low income persons people who may not own a smartphones but who can access the internet in other ways.

For people who lack access to or comfort with the internet, the enhanced trip planning capabilities will still be available via our call center. The existing deployment of OTP (without SUM integration) is already accessible to customers through call-takers in the customer service department, who provide trip planning assistance seven days a week from 7:30am to 5:30pm. The trip planning application that these call takers use will be updated to include new SUM modes, and the staff will be trained on the new functionality.

Environmental Justice

With guidance from the Title VI and Equity Programs Administrator, the project team will apply the TriMet Equity Lens framework described above to both the technical design of the OTP SUM enhancements, as well as the roll-out and testing of the application itself. This project will leverage TriMet's Public Engagement Framework to ensure that Environmental Justice and Title VI communities are represented as part of the test group.

While the scope of this phase of OTP SUM only includes a plan for payment integration, not implementation of integrated payment, TriMet recognizes that some of its customers might not have access to bank accounts or credit card accounts to link to payment for SUM trips. The project team will work with moovel (responsible for conducting the integrated payment plan) to develop strategies for making future integrated payment functionality accessible to people with access to linked bank or credit card accounts.

As part of the implementation and testing phase of the OTP SUM improvements, TriMet will evaluate the availability and use of the OTP SUM application by geographic area as well as monitor the availability of other support available to TriMet customers to ensure equal access to all public transportation services and agency programs provided by TriMet.

Limited English Proficiency

Informed by the agency's Four Factor Analysis, TriMet's website provides basic How to Ride information in eleven languages besides English (Spanish, Vietnamese, Chinese, Russian, Korean, Japanese, Tagalog, Romanian, Somali, Arabic, Cambodian, and Persian). This includes information on fare payment, rules for riding, safety and security, accessibility, and agency contact information including interpretation services. All these pages also have TriMet's Title VI public notice, complaint procedures, and complaint form in the relevant language. As TriMet has prioritized resources on serving the largest group in the LEP

population¹, the Spanish web pages have more extensive content, including a current version of OTP in Spanish. The next generation trip planner will also be available in both English and Spanish, and the project team will conduct a Four-Factor analysis to determine if support for additional languages will be appropriate. TriMet will monitor the use of OTP SUM in order to improve the user experience and meet the needs of LEP populations (as applicable).

Enhancing Accessibility of Recommended Pedestrian Routes

A key component of enhancements to the core OTP routing engine will allow for more detailed pedestrian and wheelchair access routing and directions text to and from transit stops by incorporating updates to the OpenStreetMap (OSM) pedestrian network. The concentrated effort in improving both the accessibility data in the street network and its use in OTP will be a sharp enhancement to equity for persons with disabilities. TriMet is collaborating with the OSM coding community to establish best practices for representing this accessibility information in the base network to serve as a model for communities nationwide. TriMet will build out this accessibility information in the OSM network and provide a model for replicating this work in other regions.

This model will then provide the basis for infusing this information into the OTP core engine so that it can make optimal use for planning pedestrian trips. Further, with this capability included in the OTP core, derivative products such as Transport Analyst will have enhanced capabilities for equity analysis activities. In addition, through other linked applications to this effort (namely, the VTrans project to expand OTP to support demand-responsive transit service), our combined efforts will allow OTP to read the GTFS-flex specification, which will surface itineraries for “flexible” public transit modes like hail-and-ride and deviated-fixed services, furthering improving trip making capabilities for people with disabilities and the aging population who often depend upon these flexible services.

Because the scope of OTP SUM is only to allow passengers to plan trips, with links to SUM providers’ applications (there is no direct provision or subsidy for the SUM segments of trips planned within OTP SUM), equivalent service requirements do not apply for the SUM segments of trips planned within OTP.

¹ Spanish-speaking LEP persons comprise over 4% of the TriMet Service District population, whereas LEP Speakers of the next most common language, Vietnamese, make up less than 1% of the total population. Source: TriMet 2016 Title IV Update, available at <https://trimet.org/about/pdf/2016-title-vi.pdf>

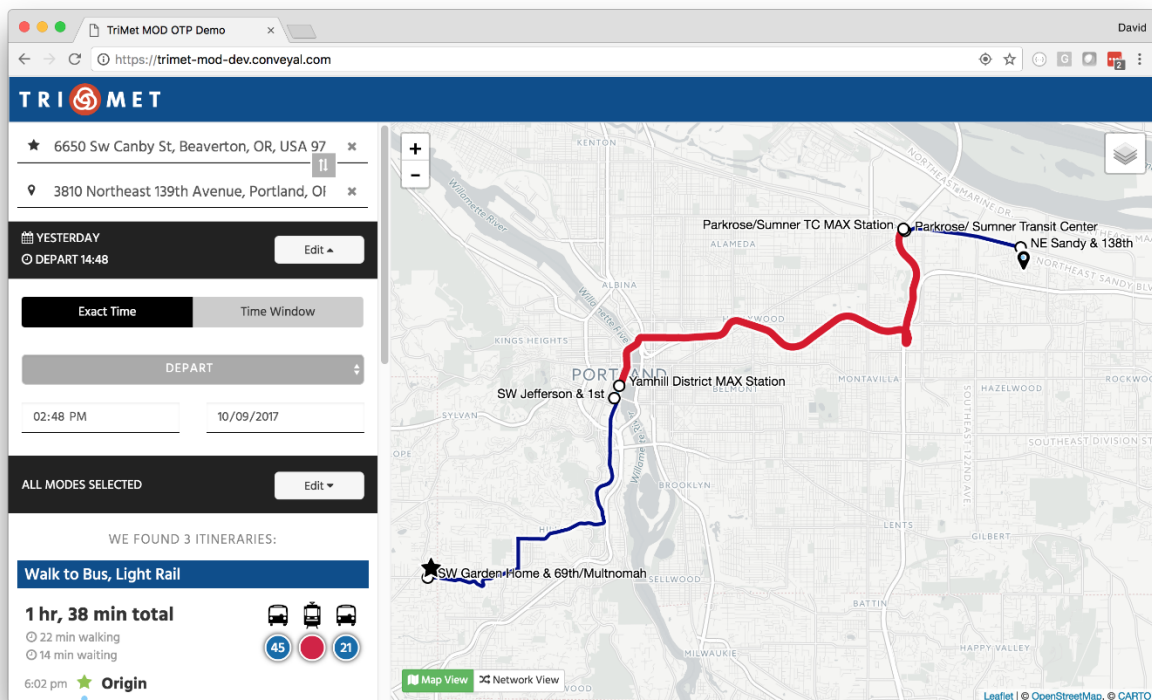
Quarter 3/4 APPENDIX B

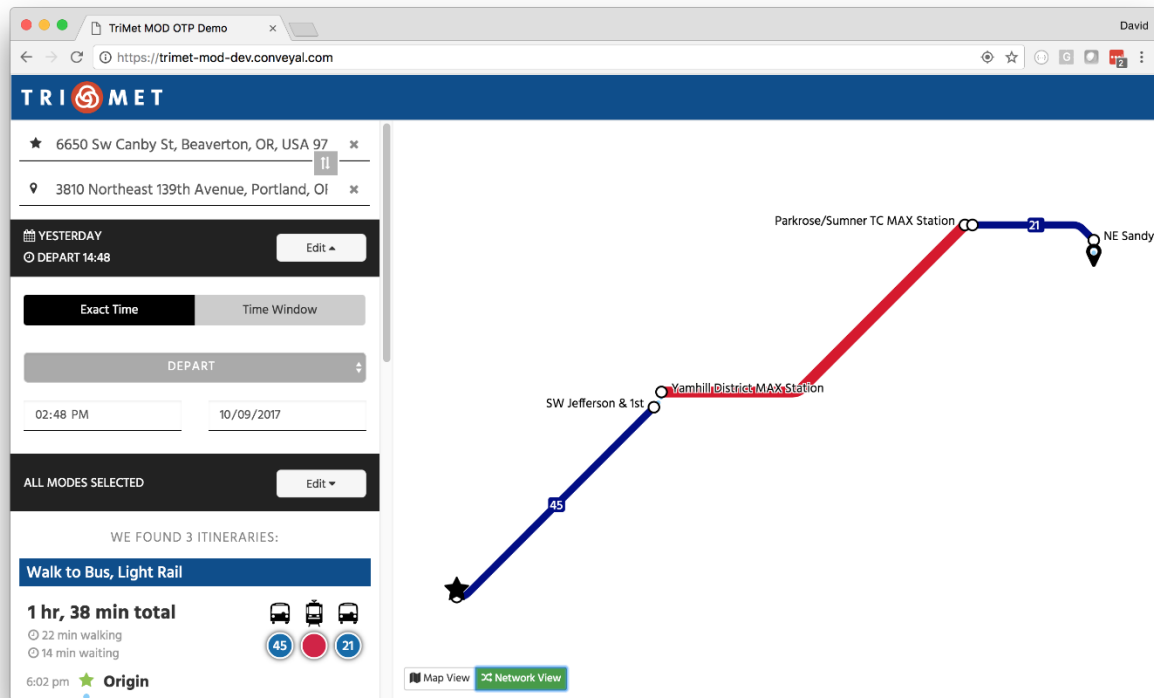
TriMet MOD Grant Task 3 Milestone 3 Documentation Application Development - Conveyal

Signoff given on 9/28/2017 weekly check-in. In italics are the key functional requirements from the milestones document. The latest version of the demo app is online at <https://trimet-mod-dev.conveyal.com/>.

Schematic Transit Mapping: Visualization of trip plan in schematic/diagrammatic format similar to stylized transit maps, and ability to toggle between schematic and geographic views

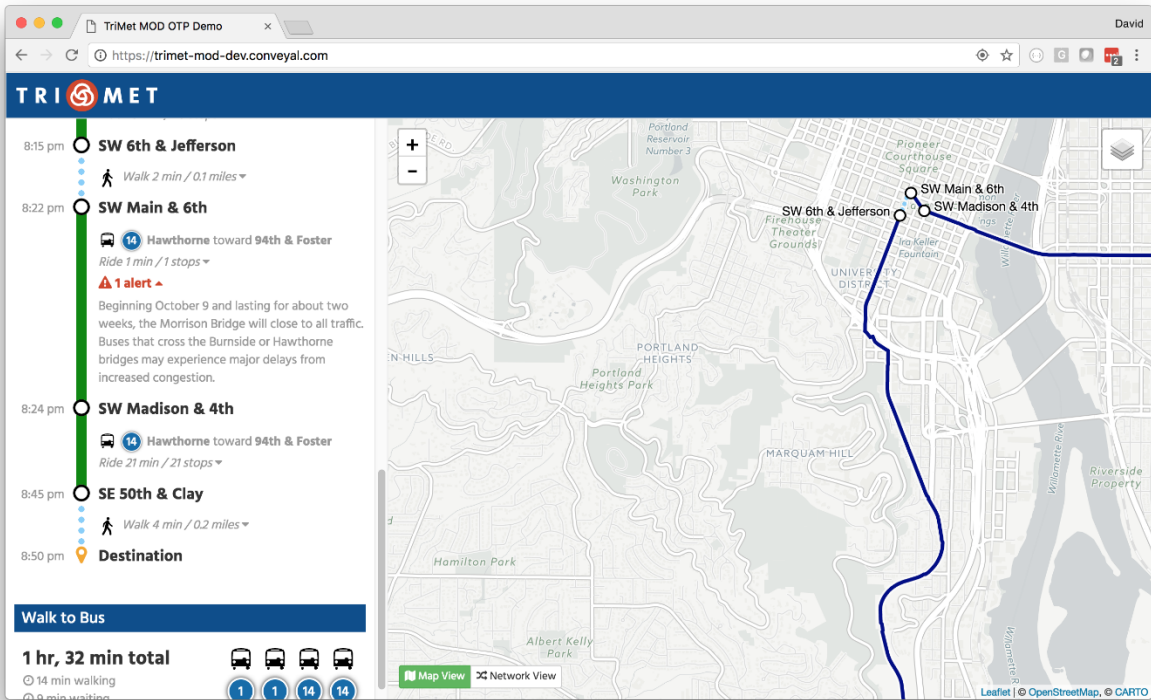
The transitive.js mapping library has been extended to support both schematic and geographic rendering, and is now being used to render all trip plan map overlays. The user can toggle between "Map View" and "Network View" display modes using a new selector in the bottom-left corner of the map pane:



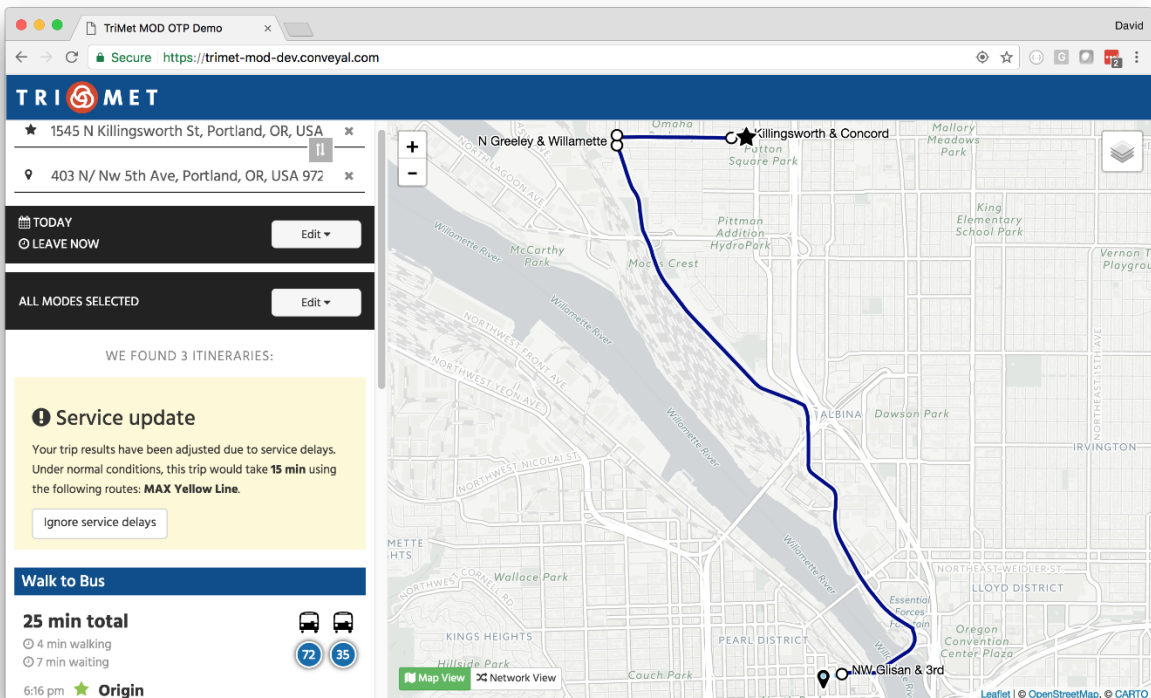


Display of Real-time Results: Display of GTFS-RT alerts for affected service in itinerary results, and explanation of any reroutes / detours based on real-time information

Relevant GTFS-RT service alerts (i.e. informational alerts that do not impact the OTP routing algorithm) are returned and displayed with itineraries: (Note: this feature was implemented earlier in the project but is officially part of this milestone delivery.)

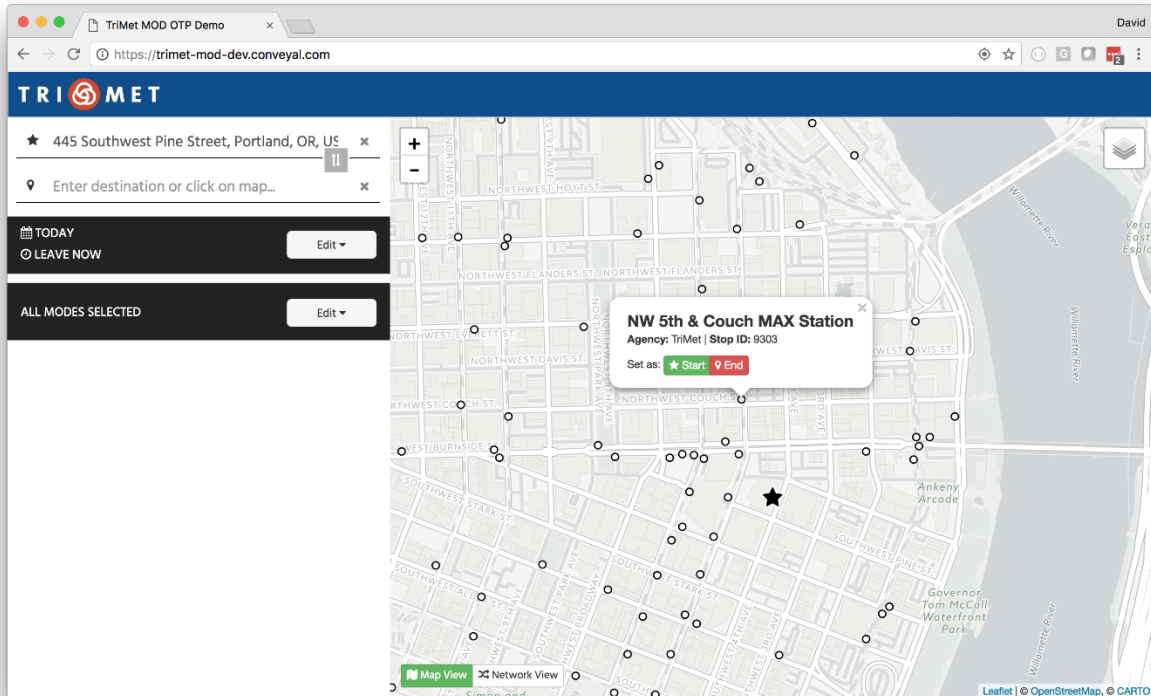


Cases where routing *is* affected by GTFS-RT trip updates are now being detected and the user is alerted, with the option to toggle between the affected (i.e. rerouted) and "normal" itineraries for the search:



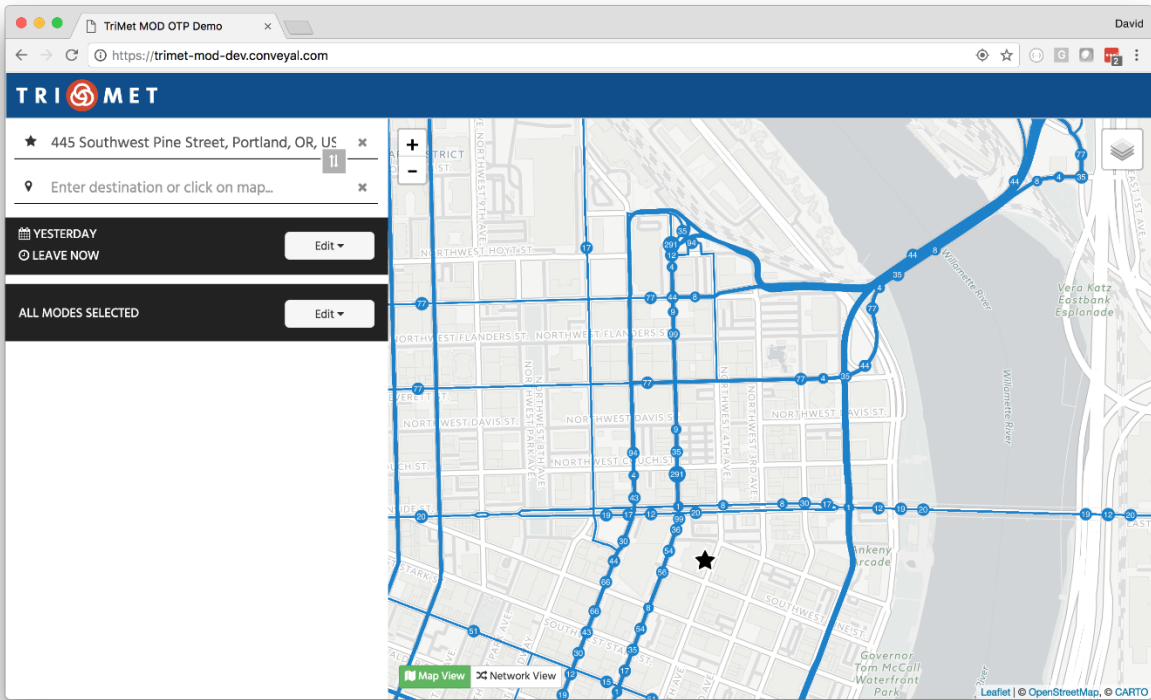
Stops Overlay: Overlay of transit stops on map (derived from GTFS) with ability to select stop as start/end location

The stops overlay is implemented and includes a basic popup with buttons to set the stop as the start or end of the search (implementation of the full Stop Viewer is part of M5):

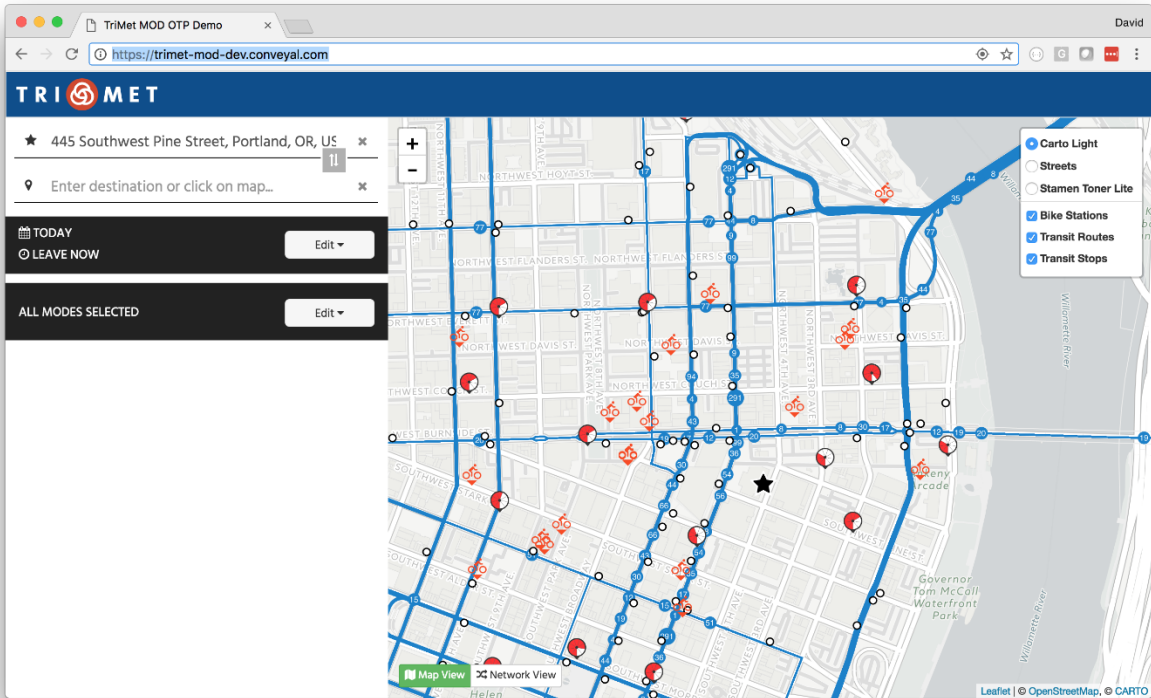


Routes Overlay: Overlay of labeled transit routes (autogenerated from GTFS)

The route overlay is being generated automatically from GTFS and is being rendered as both standard and high-resolution tilesets for zoom levels 1 through 18:



We also implemented a map layer selector for toggling between base layers and enabling/disabling the three overlays (bike share, routes, and stops):



Containerized Local Installation Package for the Pelias geocoder <http://pelias.io>

82 commits

14 branches

0 releases

6 contributors

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

Commit	Message	Time
dianashk Merge pull request #26 from pelias/move_dockerfiles_to_repos ...		Latest commit 6a96744 12 days ago
baseimage	Install NPM3 in baseimage	a month ago
elasticsearch	move all the dockerfiles back to a flat structure	3 months ago
libpostal_baseimage	add libpostal baseimage and fix interpolation script	3 months ago
valhalla	remove CMD from non-long-running containers	3 months ago
.env	env: set default env vars for safety	6 months ago
build.sh	remove no-cache switch	3 months ago
docker-compose.yml	Remove all Dockerfiles	a month ago
example.sh	add valhalla	6 months ago
pelias.json	update pip-service url in config	12 days ago
prep_data.sh	change sh to bash for all data_prep scripts	a month ago
readme.md	readme: add commands for saving images to tar files	2 months ago
run_services.sh	move all the dockerfiles back to a flat structure	3 months ago

[readme.md](#)

Dockerfiles for [Pelias](#) services

Prerequisites

1. Docker version 1.10.1 or later.
2. A directory for storing downloaded datasets. Set `DATA_DIR` to the folder's path in `.env` file.
3. OSX Only
 - i. In Docker > Preferences > Advanced, set the CPU to 4 and memory to 12 GB. This ensures that Docker has enough memory to run the imports and API.

Create a Directory for Your Data

Each of the containers will be able to access this directory internally as `/data`, source data downloaded by the containers will be stored here.

note: the data can be fairly large, make sure you have at minimum ~15GB free space available on this volume

```
mkdir -p /tmp/data
```

If you wish to change the location of your data directory you can simply change the `DATA_DIR` environment variable.

Each importer and service has a range of different options, detailed installation and configuration instructions can be found here: <https://github.com/pelias/pelias/blob/master/INSTALL.md> For an up-to-date references of supported options you can also view the README files contained in each repository on Github.

Getting Up and Running

First you'll need to create (or edit) the provided `pelias.json` file at the root of the repository. This is where you will specify all the details of your desired Pelias instance, such as area of coverage and data sources. You can reference the individual data sections below for more details on configuration.

Once that's ready, the following command will build all the images and containers required:

NOTE: this command can take several hours depending on your network, hardware, and the size of the region of coverage selected in `pelias.json`.

```
./build.sh
```

once the process is complete you can list the running services:

```
$ docker-compose ps
      Name                    Command             State      Ports
-----
pelias_api                    npm start           Up         0.0.0.0:4000->4000/tcp
pelias_baseimage              /bin/bash           Exit 0
pelias_elasticsearch          /bin/bash bin/es-docker Up         0.0.0.0:9200->9200/tcp, 9300/tcp
pelias_geonames                /bin/bash           Exit 0
pelias_interpolation          npm start           Up         0.0.0.0:4300->4300/tcp
pelias_openaddresses          /bin/bash           Exit 0
pelias_openstreetmap          /bin/bash           Exit 0
pelias_pip                     npm start           Up         0.0.0.0:4200->4200/tcp
pelias_placeholder            npm start           Up         0.0.0.0:4100->4100/tcp
pelias_polylines              /bin/bash           Exit 0
pelias_schema                 /bin/bash           Exit 0
pelias_whosonfirst           /bin/bash           Exit 0
```

Checking that Services are Running

All the services should be up and running after the build script completes. The ports on which the services run should match the configuration in `docker-compose.yml`. You can confirm this worked correctly by visiting each one at the corresponding URLs.

API

<http://localhost:4000/v1/search?text=portland> [http://localhost:4000/v1/search?text=1901 Main St](http://localhost:4000/v1/search?text=1901%20Main%20St)
<http://localhost:4000/v1/reverse?point.lon=-122.650095&point.lat=45.533467>

Placeholder

<http://localhost:4100/demo/#eng>

PIP (point in polygon)

<http://localhost:4200/-122.650095/45.533467>

Interpolation

<http://localhost:4300/demo/#13/45.5465/-122.6351>

Data Download and Import

There is a script that is actually used in the `build.sh` script but can also be executed independently to update the data and rebuild the ES index and other databases.

Note: if you are going to run it independently, it's important to make sure the docker containers have already been built. This script will also shut down any running services to avoid conflicts during imports.

It is **VERY VERY** strongly recommended that you use the `pelias.json` config file to limit the data downloads to a region no larger than a region (state in US). There is too much data in larger regions for a single machine to handle. Also keep in mind that the amount of time a download and import will take is directly correlated with the size of the area of coverage.

For TIGER data, use `imports.interpolation.download.tiger[]` (see [interpolation repo doc](#))

```
mkdir -p /tmp/data
export DATA_DIR=/tmp/data
sh ./prep_data.sh
```

Individual Data Sources

Who's on First

note: this guide only covers importing the admin areas (like cities, countries etc.)

configuration

For WOF data, use `imports.whosonfirst.importPlace` (see [whosonfirst repo doc](#))

```
"imports": {
  "whosonfirst": {
    "datapath": "/data/whosonfirst",
    "importVenues": false,
    "importPostalcodes": true,
    "importPlace": "101715829",
    "api_key": "your-mapzen-api-key"
  }
}
```

download

```
docker-compose run --rm whosonfirst npm run download
```

import

```
docker-compose run --rm whosonfirst bash -c 'npm start'
```

OpenAddresses

configuration

For OA data, use `imports.openaddresses.files` (see [openaddresses repo doc](#))

```
"imports": {
  "openaddresses": {
    "datapath": "/data/openaddresses",
    "files": [ "us/or/portland_metro.csv" ]
  }
}
```

download

```
docker-compose run --rm openaddresses npm run download
```

import

```
docker-compose run --rm openaddresses npm start
```

OpenStreetMap

Any `osm.pbf` file will work. A good source is [Metro Extracts](#), which has major cities and custom areas. Download and place the file in the data directory above.

configuration

Once you find a URL from which you can consistently download the data, specify it in the configuration file and the download script will pull it down for you.

For OSM data, use `imports.openstreetmap.download[]` (see [openstreetmap repo doc](#))

```
"imports": {
  "openstreetmap": {
    "download": [
      {
        "sourceURL": "https://s3.amazonaws.com/metro-extracts.mapzen.com/portland_oregon.osm.pbf"
      }
    ],
    ...
  }
}
```

download

Using the download script in the container:

```
docker-compose run --rm openstreetmap npm run download
```

Or, download the data by other means such as `wget` (example for Singapore):

```
wget -qO- https://s3.amazonaws.com/metro-extracts.mapzen.com/singapore.osm.pbf > /tmp/data/openstreetmap/extract.osm.
```

**import**

```
docker-compose run --rm openstreetmap npm start
```

Geonames**configuration**

You can restrict the downloader to a single country by adding a `countryCode` property in your `pelias.json`:

```
"imports": {
  "geonames": {
    ...
    "countryCode": "SG"
  }
}
```

download

```
docker-compose run --rm geonames npm run download
```

import

```
docker-compose run --rm geonames npm start
```

Polylines

configuration

```
"imports": {
  "polyline": {
    "datapath": "/data/polylines",
    "files": ["pbf_extract.polyline"]
  }
}
```

download

The extract of the polylines is done using the OSM pbf file so that must be downloaded first. See OpenStreetMap section for details on that. Once the pbf extract is in place, run the following command.

```
docker-compose run --rm polylines sh ./docker_extract.sh
```

import

```
docker-compose run --rm polylines npm run start
```

Setting Up Elasticsearch

This will take place as part of the build script, but in the case you'd like to manually manipulate the schema, the following command will install the pelias schema in elasticsearch:

```
docker-compose run --rm schema bash -c 'node scripts/create_index.js'
```

You can confirm this worked correctly by visiting http://localhost:9200/pelias/_mapping

Shutting Down and Restarting

To stop all the containers, `docker-compose down`.

Restart all the containers with `docker-compose up` OR `sh ./run_services.sh`.

Saving docker images as tar files

Docker images can be saved for offline use with the following command:

```
docker images --filter 'reference=pelias/*:latest' --format '{{.Repository}}' | parallel --no-notice docker save -o '
```


Quarter 3/4 APPENDIX D

TriMet MOD Grant Task 4 Milestone 1 Documentation User Research Survey - Mapzen

The Addresses Data Contribution Survey was released at
<https://www.surveymonkey.com/r/open-data-contributions>.



Welcome to the OpenAddresses Data Contribution Survey

Thank you for taking the time to participate in this survey! We really appreciate your feedback.

We are working on a web application that will allow data owners to contribute their address data into an open-data aggregate system called OpenAddresses. We are hoping our work will make contributing to open-data rewarding, accessible, and intuitive, but we need your help to make sure what we are building meets your needs.

Please answer the following questions to the best of your knowledge and if something is unclear leave us a comment and we will be sure to follow-up with you individually.

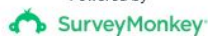
If you have additional information you'd like us to be aware of, please contact us at hello@mapzen.com and mention 'OpenAddresses Data Contribution application' in the subject line.

Again, thank you for your time and we look forward to your feedback!

Cheers,
Mapzen Team

Next

Powered by



See how easy it is to [create a survey](#).

Data Contents

1. What type of address data do you or your agency maintain?

- Rooftop
- Parcel
- Door
- Driveway
- Other (please specify)

2. How was/is the data collected?

3. What format is the data stored in?

- ArcGIS server
- CSV files
- Shapefiles
- Other (please specify)

4. Which of these would most accurately describe the area used to delineate the coverage area?

- County
- City
- State
- Country
- Other (please specify)

Data License

5. Is there an explicit license that covers this data?

- Yes
- No
- I don't know

Data Maintenance

6. How frequently is this data updated?

- Daily
- Weekly
- Monthly
- Not on a schedule
- I don't know
- Other (please specify)

7. What is the process for reporting/correcting an inaccuracy in the data?

8. How many individuals/maintainers are responsible for the availability and accuracy of this data?

- 1
- 2-5
- More than 5
- Other (please specify)

9. What's the best way to communicate with the maintainers?

- Group email address or alias
- Individual email addresses
- Other (please specify)

10. Is this data currently publicly available?

- Yes
- No
- I don't know

Data Distribution

11. How can someone acquire this data?

- Download from a URL
- Request via DVD or flash drive
- Custom FTP posting
- Other (please specify)

12. Is there a fee to acquire the data?

- Yes
- No
- I don't know

Working Environment

13. Which operating system do you use? (Please specify the version of your operating system below)

- Windows
- MacOS
- Linux
- Other

Version number

14. Which browser do you use?

- Internet Explorer
- Chrome
- FireFox
- Safari
- Other (please specify)

15. Are you able to upgrade your browser if needed?

- Yes
- No
- I don't know

Agency/Organization information

16. What would be required to get permission to publish this data in an external and open database such as OpenAddresses? Is there an approximate timeline for this process?

17. Would it be helpful to have supporting materials to present to your team?

- Yes
- No
- I'm not sure, maybe

18. If supporting materials would be helpful, check any that you feel would be appropriate or relevant to your organization.

- Overview of the importance and impact of open data
- Overview of OpenAddresses with information about existing data
- Listing of all the available open-source tools that currently use/support the open-data that can be leveraged by your organization
- Maps showing open-data coverage across your region
- Maps showing open-data coverage across the US
- Maps showing open-data coverage across the entire world
- Overview of typical open-data licenses
- Consultation with a lawyer
- Visit or call from maintainers of an open-data aggregate database, such as OpenAddresses
- Public recognition and credit for the data contribution

Other (please specify)

Participant Contact Information

19. Name

20. Organization

21. Email

22. Would you be interested in testing a rough prototype in the next few weeks? *(Note: There will be **NO** obligation to contribute your data during the testing or in the future.)*

- Yes, I'd love to!
- No, thanks, but good luck!

Prev

Finish & Submit