Traveler Information Using Available Tools and Resources

2009 National Rural ITS Conference
Human Services Transportation Workshop
Bibiana McHugh, IT Manager of GIS and Location-Based Services
Success Requires:

SYSTEMS INTEGRATION/ARCHITECTURE

STANDARDS

COLLABORATION
When transit information is needed determines how and what is needed.

- PRE-TRIP
- ON-STREET
- IN-TRANSIT
PRE-TRIP

Need

Trip Planning Information

On-Line Tools

Trip Planners
System Maps
Alerts
Podcasts
PRE-TRIP

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Trip Planner

From: Address, intersection, landmark, Stop ID

To: Address, intersection, landmark, Stop ID

Depart after or Arrive by
5:07 p.m.
Mar 5

Plan trip
Plan a trip using public transportation

Use Google Maps to

- Get step-by-step transit directions
  - in your web browser
  - on your mobile phone
- Find transit stops in your area
- View station information and schedules

Join the transit partner program

Get transit directions

Start address

Destination address

Leave 3/2/09 2:23pm

Get directions

See what cities are covered

Recent highlights: New York Montreal Houston, TX Moscow

Terms of Use
Google Maps with transit directions

Google Maps for mobile makes it easy to get public transit directions while you're out and about in more than 50 cities worldwide. Quickly access information for subway, bus, and train routes.

Download Google Maps to your BlackBerry, S60 (Nokia), Windows Mobile, or Java-enabled phone to give it a try. Watch the demo video below to see how to plan a transit trip using Google Maps on a phone.

Get Google Maps for your phone

Enter your phone number and we'll send you a link

(e.g. 123-456-7890)

Send link to my phone

or visit m.google.com/maps from your phone

This service is free from Google; carrier charges may apply.
Welcome to the official forum for discussing upcoming changes to the Google Transit Feed Specification. Please be sure to read the welcome message!

**Discussions** 5 of 411 messages  view all »

- exact_times_in_frequencies.txt
  By Tom Brown - Feb 26 - 1 author - 0 replies
- spec_update_for_February_26_2009_(no_functional_changes)
  By Joe Hughes - Feb 26 - 1 author - 0 replies
- trip_type_addition_to_trips.txt
  By Frank - Feb 21 - 3 authors - 3 replies
- [gtfs-changes] stop_timezone_proposal_(was_Re: Using Multiple Time Zones)
  By Jehiah Czebotar - Feb 17 - 4 authors - 6 replies
- Suggestion: more explicit direction_id
  By Tom Hixson - Jan 27 - 11 authors - 16 replies

**Pages** All 5 pages  view all »

- Open Proposals
  Last updated by Joe Hughes - Oct 10 2007 - 1 author - 1 page long
- Spec Changes Summary
  Last updated by Colin Bick - Jul 11 2008 - 1 author - 4 pages long
- Completed Proposals
  Last updated by Joe Hughes - Feb 29 2008 - 1 author - 1 page long
- stop_features_txt_proposal
  Last updated by Mike Gilligan - Mar 25 2008 - 1 author - 1 page long

GTFS Change Forum
Established for proposing, discussing, testing, adopting, and recording changes to the spec.
Wide Adoption of GTFS
TriMet ATIS Trip Planner
transit only with limited walking options
Five Points A-Train
Biking and Walking Options
Task 1. **Project Management Plan**
   Project Initiation Workshop
   July 15-17, 2009

   **Deliverables:** Detailed Scope of Work, Project Plan and Schedule

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Task 2. **Develop and implement the open source MMTPS**
   Deliverables: Working on-line prototype for Portland Metro area.

   **Jan 2011**

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Task 3. **Evaluation Study**
   Focus on open source aspect of the project, and the accuracy and usability of the planned trips using the prototype.

   **Deliverables:** Summary reports of Program Development Checks, Results of Data Efficacy Test.

   **May 2011**

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Task 4. **Develop Final Report**
   Deliverables: Final report on development and test, including next steps.

   **June 2011**

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Open Source Multi-Modal Trip Planner
Kick-off workshop, July 15-17, 2009

(complete notes still being compiled)

- Presentations -- see "attachments" section at the bottom of this page
- Group exercise: Problems with current trip planners
- Group exercise: Brainstorming and prioritization session
- Technical and architectural notes from developer workshop session

Links to sites/tools mentioned

- http://goroo.com - Goroo, Chicago RTA's mmtp
- http://onebusaway.org - One Bus Away
- http://bycycle.org - byCycle trip planner
- http://transitandtrails.org
- http://tripplanner.kingcounty.gov - King City's trip planner
- http://new.atlitransit.com - Five Points-powered Atlanta trip planner
- http://www.urbansim.org - Simulation model for integrated planning and analysis of urban development
- http://groups.google.com/group/transit-developers - Transit developers google group
- http://ridethecity.com - Ride the City: Bike routing app in NYC

Attachments

- DART Overview.pdf (52.9 KB) - added by nicholasb 3 weeks ago.
- Five Points (presentation).pdf (1.8 MB) - added by nicholasb 3 weeks ago.
- Graphserver (presentation).pdf (0.7 MB) - added by nicholasb 3 weeks ago.
- King County Metro ATIS Review (presentation).pdf (178.1 KB) - added by nicholasb 3 weeks ago.
- Mathew Coogan (presentation).pdf (3.7 MB) - added by nicholasb 3 weeks ago.
- NPNH TIS - Project Overview (presentation).pdf (235.8 KB) - added by nicholasb 3 weeks ago.
- NYSDOT TranStar by Telvent (presentation).pdf (0.6 MB) - added by nicholasb 3 weeks ago.
- OneBusaway Overview (presentation).pdf (1.0 MB) - added by nicholasb 3 weeks ago.
- OS MMTPS Workshop - Project Overview (presentation).pdf (2.5 MB) - added by nicholasb 3 weeks ago.
- RTD Trip Planning Overview (presentation).pdf (68.7 KB) - added by nicholasb 3 weeks ago.
- TriMet ATIS Administrative Features.pdf (48.8 KB) - added by nicholasb 3 weeks ago.
- UTA Technology Review (presentation).pdf (403.3 KB) - added by nicholasb 3 weeks ago.
- UTA Trip Planning Discussion.pdf (64.6 KB) - added by nicholasb 3 weeks ago.
Open Source Oregon Brokerage Software System (OBSS) supports eligibility, scheduling, communication and billing.
PRE-TRIP

Need

Trip Planning Information

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OpenGIS® Standards and Specifications

OpenGIS® Standards and Specifications are technical documents that detail interfaces or encodings. Software developers use these documents to build support for the interfaces or encodings into their products and services. These specifications are the main “products” of the Open Geospatial Consortium and have been developed by the membership to address specific interoperability challenges. Ideally, when specifications are implemented by two different software engineers working independently, the resulting components plug and play, that is they work together without further debugging.

The documents are available at no cost to everyone.

OpenGIS® Standards

Implementation Standards are different from the Abstract Specification. They are written for a more technical audience and detail the interface structure between software components. An interface specification is considered to be at the implementation level of detail if, when implemented by two different software engineers in ignorance of each other, the resulting components plug and play with each other at that interface.

Any Schemas (xsd, xsf, etc) that support an approved Implementation Standard can be found in the official OGC Schema Repository.

Abstract Specification

The OGC Technical Committee (TC) has developed an architecture in support of its vision of geospatial technology and data interoperability called the OpenGIS Abstract Specification. The Abstract specification provides the conceptual foundation for most OGC specification development activities. Open interfaces and protocols are built and referenced against the Abstract Specification, thus enabling interoperability between different brands and different kinds of spatial processing systems. The Abstract Specification provides a reference model for the development of OpenGIS Implementation Specifications.

OpenGIS® Reference Model (ORM)

The OpenGIS® Reference Model (ORM) provides a framework for the ongoing work of the OGC. ORM provides a foundation for many OGC Specification documents. The OGC BMB consists of the approved OpenGIS® Specifications, which are official positions of the OGC membership and quite often are provided as support documents.

Best Practices Documents

Documents containing discussion of best practices related to the use and/or implementation of the abstract or implementation positions of the OGC and thus represent an endorsement of the content of the paper.

Discussion Papers

Documents that present technology issues being considered in the Working Groups of the OGC. They provide a forum for the information industry on a specific topic. Discussion papers are not intended to be taken by the Open Geospatial Consortium nor of the OGC Technical Committee. Schemas for some of these documents are also available.

White Papers

Documents describing official positions of the Open Geospatial Consortium, Inc.

Change Requests

Change Requests are submitted by anyone for any existing or proposed OpenGIS® Specifications.
Start at MARRIOTT HOTEL - DOWNTOWN

Trip Details
Valid: m:58 PM on 2/27/09
Transit time: 8.8 minutes
Waiting time: 10.0 minutes
Total walk: 0.17 miles
Fares: This trip is within Fareless Square, so no fare is required.

Walk north to SW Jefferson & 1st
Step ID 12789
About 2.0 minutes - 0.2 miles

Bus 96 To Portland
4:33 PM Depart SW Jefferson & 1st
Step ID 12789
6.8 minutes
4:34 PM Arrive SW Jefferson & 10th
Step ID 3049

Alert for route 96: Due to construction, the stop on SW Columbia at 1st Ave (Step ID 12789) is closed. Board temporary stop on Columbia between 9th & 10th or on Harbor Blvd at Montgomery (Step ID 11002).

Walk north west to Art Museum
Step ID 6493
About 1.0 minutes - 0.02 miles

Streetcar Portland Streetcar to NW 23rd Ave
4:44 PM Depart Art Museum
Step ID 6493
6.8 minutes
4:51 PM Arrive NW 10th & Couch
Step ID 10270

Walk south to POWELL'S BOOKS - CITY OF BOOKS
About 1.0 minutes - 0.05 miles

End at POWELL'S BOOKS - CITY OF BOOKS

System Map Integration with Trip Planner
Links to outside sources of information
PRE-TRIP

Need

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Podcasts
What is RSS?
RSS is a convenient way to collect and organize the news and information you want in one place. It stands for "Really Simple Syndication." Many organizations and individuals publish RSS news feeds about their company, products, services or interests.

How to use TriMet’s RSS feeds
You can use a web browser, a news reader application or a web-based news reader to view RSS feeds. Copy the feed’s address and paste it into your news reader. When we publish new content to trimet.org, the headlines of the news feeds you have added will automatically appear in your news reader.
PRE-TRIP

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Podcasts

TriMet TV
A video podcast for riders
TriMet TV is a video podcast featuring news about TriMet services and transit construction projects.

Subscribe to TriMet TV now
- Get new TriMet TV episodes by email
- RSS TriMet TV Podcast (RSS)
  http://trimet.org/rss/trimettv.rss
- iTunes TriMet TV Podcast (iTunes)

Watch or download TriMet TV episodes
Traveler Information via Podcasts

Episode 6 · Nov. 19, 2007
MAX to PDX: Take the Train to the Plane
Flying out of PDX? TriMet's MAX Red Line is a convenient and inexpensive way to get to and from Portland International Airport.

Episode 9 · Dec. 20, 2007
Tips for a Smooth and Easy Ride
Commuting on TriMet? Here are four quick tips that will help make it a smooth and easy ride.

Episode 4 · Oct
Get Real-Time
Did you know! Regular bus service is available on a daily basis. Climbing at

Episode 8 · Dec. 4, 2007
Winter Weather Riding Tips
When the weather turns bad, TriMet. If you plan to take the ice storm, here's what you need to know.

Episode 7 · Nov. 26, 2007
Take a Ride on Line 20-
TriMet's Line 20-Burnside/Steel neighborhood from Beaverton to\n
Episode 24 · Dec. 17, 2008
How to Load Your Bike on the Bus
Thinking about bringing your bike on the bus? It's easy!

Episode 23 · Nov. 21, 2008
Riding the Bus After Dark?
If you are traveling alone between 8 p.m. and 5 a.m., you can ask your bus operator to stop anywhere along the route—not just at designated stops.
ON-STREET

Need

Arrival Information

On-Street Tools

Phones

Digital Displays

Mobile Apps
ON-STREET

Need

Arrival Information

Tools

Phones

Digital Displays

Mobile Apps

TRIOMET

Traveler Information
Transit Tracker (next arrival times) via phone

Stop ID numbers for 238-RIDE /
Transit Tracker™ info

TransitTracker by Phone
Monthly Usage

1.4 Million Calls
12-08

40,000 Calls
09-04

TRIMET
ON-STREET

Need

Arrival Information

Tools

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Digital Displays

Mobile Apps

TRIOMET

Traveler Information
ON-STREET

Need

Arrival Information

Tools

Phones

Digital Displays

Mobile Apps
Real-Time Vehicle Locations

Requires Query to RDBDS Tables

Maintained by Distributed Systems:
- HR System
- Scheduling
- GIS
- Operations
- AVL
- Dispatch

Vehicle Status
- On Schedule
- Out Of Revenue
- Early
- Late
- Off Route
- Silent Alarm

Vehicle Filters
- Route
  - Any Route
  - MAX Blue Line
  - MAX Red Line
  - MAX Yellow Line
- Vehicle Number
  - X or 5, 9, 7, etc.
- Block
  - X or 5, 9, 7, etc.
- Badge
  - X or 5, 9, 7, etc.
- Status
  - Any Status
    - On Schedule
    - Out of Revenue
    - Early
- Assigned Garage
  - Any Garage
    - CENTER
    - ELMO
    - MERLO

Preferences
- Match all filters or any filter. Limit to 100 results (0 for no limit).
- Active update?
- Pan map on update?

Show Vehicles

Vehicle Information

<table>
<thead>
<tr>
<th>Report Date</th>
<th>Report Time</th>
<th>Route No.</th>
<th>Route</th>
<th>Direction</th>
<th>Block</th>
<th>Vehicle No.</th>
<th>Badge</th>
<th>Status</th>
<th>Garage</th>
<th>Speed</th>
<th>In/Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-03-03</td>
<td>07:55:09</td>
<td>100</td>
<td>MAX Blue Line</td>
<td>MAX to Hillsboro</td>
<td>9123</td>
<td>N/A</td>
<td>Early</td>
<td>ELMO</td>
<td>0</td>
<td>0</td>
<td>Inbound</td>
</tr>
<tr>
<td>2009-03-03</td>
<td>12:34:50</td>
<td>12</td>
<td>12-Barber Blvd</td>
<td>To Sherwood</td>
<td>1208</td>
<td>02152</td>
<td>2941</td>
<td>On Schedule</td>
<td>CENTER</td>
<td>0</td>
<td>Outbound</td>
</tr>
</tbody>
</table>
Maintain & manage a central “core” set of data as a foundation for all application initiatives versus Application Centric Approach
ON-STREET

Need

Arrival Information

Tools

Phones

Digital Displays

Mobile Apps
TriMet Developer Resources

TriMet has made resources available to software developers, to promote the use of transit and information related to transit.

At this time these resources include a schedule published in the Google Transit Feed Specification (GTFS) format as well as web services from TriMet's TransitTracker and trip planner systems.

As more resources are made available they will be announced here.

A number of tools developed using TriMet's developer resources are listed here.

Getting started:

We have built a brief list of definitions to transit terms. We've also published our GTFS data.

To start using our GTFS data you can read about it here.

To start using our Web Services feed you must first register here.

The Web Services currently available are documented here.

The TimeTable Publisher project is hosted as a google code project.
Developer Resources

Google Transit Feed Specification Data

Google's transit feed specification is well documented by Google's page on the subject.

Schedule data in GTFS format is available for download at http://developer.trimet.org/schedule/. You will find directories numbered according to the date the schedule takes effect:

<4 digit year><2 digit month><2 digit day>

TriMet schedules start on Sunday at 12:00 a.m. and generally are valid until the following Sunday at 12:00 a.m. Schedules are not always published each week, so a published schedule may remain valid for more than one week. Schedules usually are published no later than 6:00 p.m. on Saturday.
Web Services API

All web services TriMet has made available use the Representational State Transfer (REST) RPC-style calls over HTTP GET requests with parameters URL encoded into the request.

Each web service begins with a base URL followed by parameters and arguments. Parameters and arguments can be separated by a forward slash ("/"). Parameters can also be passed using the HTTP GET parameter style; following the base URL with a "?", argument names followed by an equals "=" followed by the argument value and the next parameters separated by a &.

The final parameter will always be "appID" and should be a valid registered AppID. AppIDs registration can be done here.

For example called the arrivals service with a base url of "http://developer.trimet.org/ws/V1/arrivals" would be called:

Using slashes:
"http://developer.trimet.org/ws/V1/arrivals/locIDs/6849,6850/appID=0000000000000000000000000000000000"

Using HTTP GET parameters:
"http://developer.trimet.org/ws/V1/arrivals?locIDs=6849,6850&appID=0000000000000000000000000000000000"

<table>
<thead>
<tr>
<th>Arrivals:</th>
<th>Reports next arrivals at a stop identified by location ID.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detours:</td>
<td>Retrieves a list of detours currently in effect by route.</td>
</tr>
<tr>
<td>RouteConfig:</td>
<td>Retrieves a list of routes being reported by TransitTracker from the active schedule, optionally a list of directions for those routes and stops in each of those directions.</td>
</tr>
<tr>
<td>Trip Planner:</td>
<td>Plan trips between two locations programmatically.</td>
</tr>
</tbody>
</table>
TriMet App Center
Transit tools for the web and mobile devices

Since TriMet made its schedule and arrival data available to the public several years ago, independent programmers have created a number of useful transit tools for riders.

Below are some of the free and commercial applications that are available from third-party developers using TriMet’s open data.

**Arrival**
anythinghonest.com/arrival
Provides arrival information.
For iPhone

**Dadnab™**
dadnab.com
Provides public transit directions (trip planning) via text messaging.
For phones with text messaging

**Google Earth™**
earth.google.com
TriMet stops and stations are included in the “Transportation” layer under “Points of Interest.”
For PC, iPhone, iPad Touch

**iTransitBuddy**
transitbuddy.com
Provides schedule information.
For iPhone, iPod Touch

**MyTriMet**
mytrimet.com
Provides arrival information.
For mobile web browsers

**PDX Bus**
pdxbus.folksportals.org
Searches for nearest stops, provides arrival information and displays a map.
For iPhone, iPod Touch

**PDXT.org**
pdxt.org
Provides arrival information.
For phones with text messaging

**POI Factory**
tnyurl.com/mefm5s
Provides points of interest (POI) files of TriMet stops.
For GPS Wayfinding Devices

**Portland Transit**
pdx.transitapp.com
Searches for nearest stops, provides arrival information.
For iPhone, iPod Touch

**Google Maps™**
maps.google.com
Provides public transit directions (trip planning) and information.
For web browsers and various mobile devices

**iBus**
tnyurl.com/ki3aw8
Searches for nearest stops, provides arrival information and displays a map.
For iPhone, iPod Touch

**iNap**
moco.me/inap.php
Alerts you when nearing a destination.
For iPhone

**Portland Transit**
tnyurl.com/kanoag
Searches for nearest stops, provides arrival information, displays a map and plans trips.
For iPhone

**Public Routes™**
tnyurl.com/m4ivd3
Provides public transit directions and information.
For web browsers

**Public Transportation Stop and Service Finder**
tnyurl.com/mmbm27
Displays all stops and routes within a geographic location.
For web browsers

trimet.org/apps
SMS Service

www.trimet.org/apps/sms
Provides arrival information.
For phones with text messaging

Trainlogic.net

www.trainlogic.net
Displays schedule information for trains.
For SIRME/BlackBerry

Transicast

www.transicast.com
Searches for nearest stops, provides arrival information, and shows vehicle locations on a map.
For Android

TransitQ

transitq.com
Provides schedule information.
For Palm OS

TriMet Android App

tinyurl.com/fm644mr
Provides arrival information.
For Android

TriMet Arrival Times

tinyurl.com/dx2569
Provides arrival information.
For Google Gadgets

Transit Board

tinyurl.com/dg8p8v
Displays arrival information intended for use on full-size computer screens or kiosk displays.
For web browsers

Transit Maps

transitmaps.org
Displays public transit routes.
For web browsers

Transit Surfer

tinyurl.com/fw579g
Provides arrival information.
For mobile phone web browsers

TriMet Arrival Times

tinyurl.com/2q6l67n
Provides arrival information.
For Google Gadgets

TriMet Tracker

www.trimetcityhome.net
Provides arrival information.
For mobile phone web browsers

Transit Time Map

tinyurl.com/jy4kk2
Displays how far you can travel on public transit from a given location in a certain amount of time.

Transit Trips

transittrips.com
Saves and prints trip using Google Maps.
For web browsers

Transity

tinyurl.com/fm2dpg5
Provides schedule information.
For mobile phone web browsers

Note: These aren’t “official” TriMet products, so we don’t endorse, warrant or support any of the applications listed here. We tested them initially to make sure they work, but use them at your own risk. TriMet, in its sole discretion, may remove/add application listings without notice.
External Use of TransitTracker APIs
External Use of GTFS and TransitTracker APIs

Author: Zhenwang Yao

This is an application based on Google Transit Feed Specification (GTFS) data. Web service is provided by Trimet.

Great thanks to them!
Customer Information at Airport
Port of Portland’s Use of Data

External Use of TransitTracker APIs
IN-TRANSIT

Need

Stop Location Information

Tools

Announcements

Displays

Traveler Information
IN-TRANSIT

Need

Stop Location Information

Tools

Announcements

iNap
moop.me/inap.php

Alerts you when nearing a destination.

For iPhone
IN-TRANSIT

Need

In-Route Trip Planning

Tools

Dadnab™
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Provides public transit directions (trip planning) via text messaging.
For phones with text messaging

PDX Bus
pdxbus.teleportaloo.org
Searches for nearest stops, provides arrival information and displays a map.
For iPhone, iPod Touch

TRIMET
Traveler Information
IN-TRANSIT

Internet Access

Wi-Fi access on WES Commuter Rail
Success Requires:

SYSTEMS INTEGRATION/ARCHITECTURE

STANDARDS

COLLABORATION