

Flexible

transit

trip planning

Adapting
OpenTripPlanner
to read GTFS-flex



Trillium

CAMBRIDGE
SYSTEMATICS



Terminology, Technology, Tools

Google Maps: **All** of the software and data at maps.google.com

Google Transit: The transit trip planning and other transit-specific software in Google Maps

Software: An application that accepts input (data, parameters) and produces output (our past/current project is essentially “data only”)

Terminology, Technology, Tools

Open Source: software under and open license, meaning that anyone can utilize, change, customize the software “source code” without paying licensing fees

Open Data: data in a format that anyone can use, shared in a way that anyone can access

Terminology, Technology, Tools

GTFS (General Transit Feed Specification): fixed-route timetables in an “open data” specification. *Note: must be shared to be fully open data.*

OTP (OpenTripPlanner): an “open source” software application similar to Google Transit

OSM (OpenStreetMap): an “open data”

Terminology, Technology, Tools

GTFS + OTP + OSM =
a “Google Maps” that you can own, and have
total control over

(Already done for fixed route by TriMet, RTD,
and others)

Trip planners are easy: they revolutionized transit

PLAN YOUR TRIP


Start
Ukiah, CA, United States

End
Navarro River Junction, Mendocino Count

When
Leave at 10/3/20 11:13 A

See itinerary in [Google Maps](#)

[More about transit in Google Maps and on your mobile phone.](#)



← from Ukiah, CA
to Navarro River Junction

2:55 PM - 4:45 PM
(1 h 50 min)

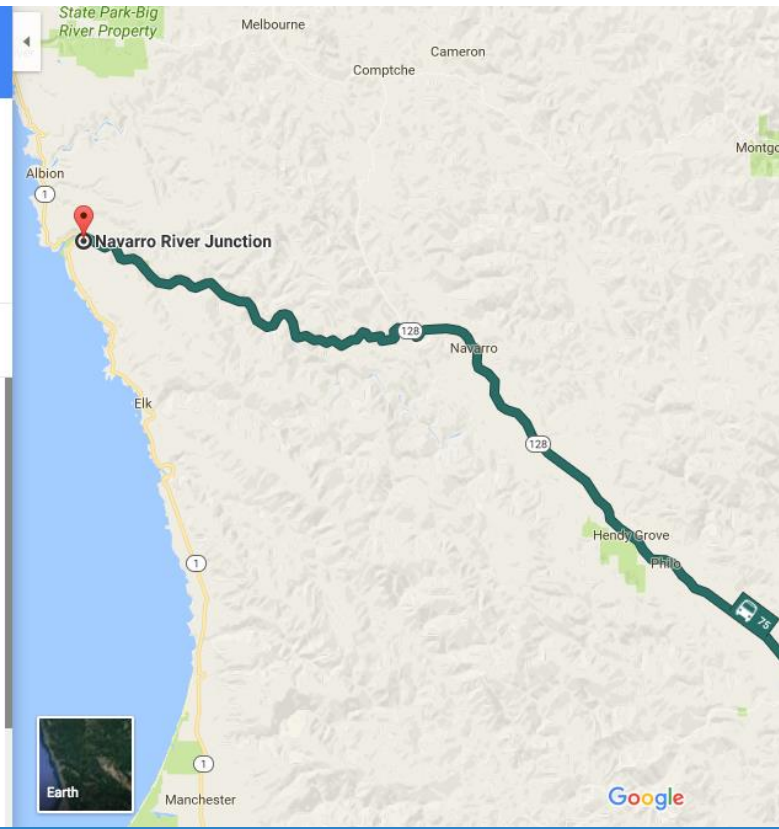
75
2:55 PM from Pear Tree Center
\$3.75

SCHEDULE EXPLORER

- 2:55 PM ○ Ukiah, CA
- 2:55 PM ○ Pear Tree Center
- 4:45 PM ○ Navarro River Junction
- 4:45 PM ● Navarro River Junction

Cost: \$3.75

Tickets and information



State Park-Big River Property

Melbourne

Comptche

Cameron

Albion

Elk

Navarro

Hendy Grove

Manchester

Google

And all you need is GTFS

But trip planners don't work for everyone

GTFS and OTP are exclusively fixed-route focused

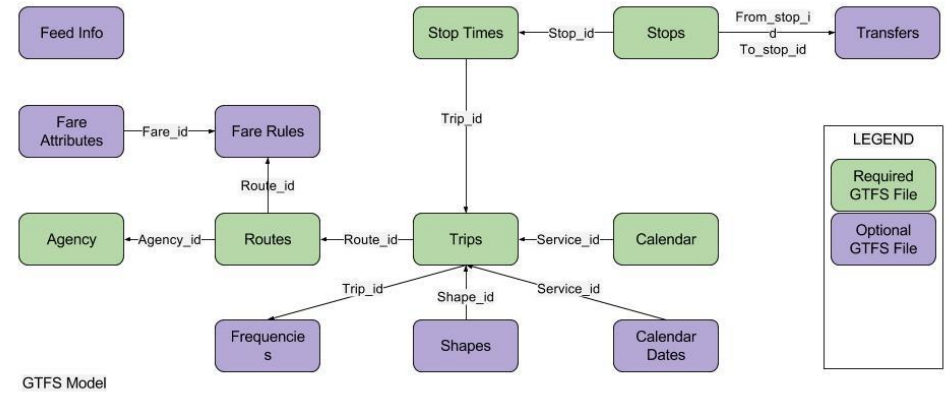
- much or even most public transit is flexible, because fixed routes often aren't practical in rural areas
- ADA complementary paratransit exists everywhere fixed-route transit does

This isn't just small and rural agencies: general public flexible service is getting more attention.

And Vermont agencies know this well

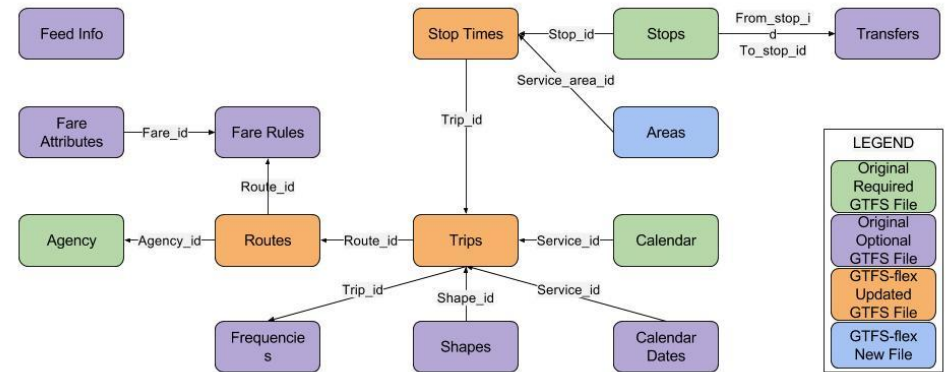
GTFS-flex models flexible transit

- Backwards compatibility with GTFS
- Adds
 - Hail-and-Ride
 - Deviated-fixed
 - Dial-a-Ride
- Flex-to-fixed **connections**
- Eligibility currently ignored



GTFS Model

GTFS-flex Model



More info at gtfsflex.com

How do customers see it?

GTFS flex is only data, we need software to use it

- Why doesn't Google Maps do this already?
 - \$\$\$
- How do we fund something expensive, with no clear likelihood of private profitability?
 - Thanks, FTA

“OTP-flex” is the project deliverable

VTrans and Trillium submitted a Mobility On Demand (MOD) grant application

- Adapt OTP to read GTFS-flex
- Host and deploy a state-wide trip planner integrating all transit modes
- Cambridge Systematics, developer of 1-Click, will provide programming talent to adapt OTP
- Coordinate with TriMet, RTD, and other MOD/OTP projects to ensure work is efficient and integrated into master branch

The vision

- FTA MOD Sandbox objectives:
 - System Integration
 - Innovative Business Model
 - Equity of service delivery
 - Partnership Driven

The vision

- An end to information silos
(System Integration, Innovative Business Model)
- Better public knowledge of flexible services
(Equity of service delivery)
- More accurate trip planning for semi-flexible services
(Equity of service delivery)
- Open-data and open-source replicability
(Partnership Driven, Innovative Business Model, Systems Integration)

The vision

A publicly-owned “travelocity”, basically

The end product

- We'll create and collect GTFS-flex data describing **all** available transportation services in Vermont
- We'll create an online trip planner using "OTP-flex", that allows riders to plan trips on all these services
- The goal is trip **discovery**, not trip "transactions"
- Riders will be able to see a menu of all their options, and when applicable, get the information they need to contact you and set up the ride.

The process

- Initial design concepts vetted not only with VTrans and the agencies, but also developer community
 - TransportationCamp
 - TriMet meeting
 - CalACT
 - CTAA!
- Extensive user (agency, rider, social service agent) testing on site this fall

Upcoming Process and Timeline

May through August:

- Create GTFS-flex data
 - Hold individual conversations with all agencies
 - Confirm precise terms of service for flexible transportation options
- Finalize, organize, and draft official design specifications documentation
- Begin OTP software “backend” adjustments

July to September:

- Develop new OTP user interface

Project Process and Timeline

September-October:

- Launch early beta of full flexible trip planner
- “Road show” in Vermont, reviewing results with agencies on site and local riders
- Collect feedback and requests for adaptation

October and November:

- Revise beta trip planner based on feedback

December:

- Launch the new GoVermont! trip planner

OpenTripPlanner & GTFS-flex

Establishing new ground to build upon

- GTFS is currently a de-facto data standard for fixed-route
- GTFS-flex would enable benefits of standardization & interoperability for demand-responsive transportation
- OpenTripPlanner will become a “reference implementation” to establish GTFS-flex so it can be adopted in other applications
- Other systems and APIs can be integrated to provide real-time, booking, capacity management, and more



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