



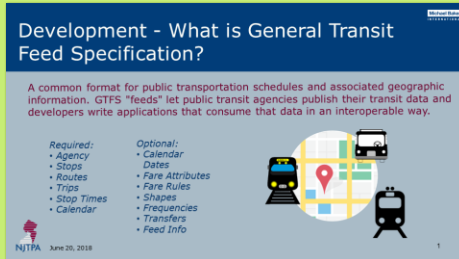
Building a Unit Testing Utility for GTFS-ride

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The Google Transit Feed Specification (GTFS)

- What is it?
 - GTFS is a file specification that allows a transit agency to define its transit system and routes in a way that can be parsed by various computer applications
 - GTFS originated from the Portland area and was the result of a collaboration between TriMet and Google
- How does it work?
 - GTFS defines a transit system using a series of text (.txt) files
 - The specification is highly flexible and allows for multiple transit networks to be defined within a single GTFS feed
- What is it used for?
 - GTFS is used by transit agencies worldwide to provide a universal definition of their transit schedule and routes
 - Google Maps uses GTFS to provide public transit routing options in real time
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- Differences between GTFS and GTFS-ride
 - GTFS-ride adds several files that allow definitions of stop- and route-level ridership data
 - Additions are designed around aggregate ridership data collection to allow for identification of ridership trends within the defined transit system

Project Goal

- Develop a feed generator for GTFS-ride specific feeds that can be used to test the limits of a feed validator or other GTFS-ride utility

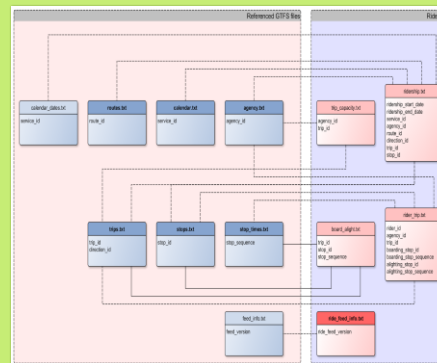


Figure 1: Differences between text files accepted by GTFS and GTFS-ride software

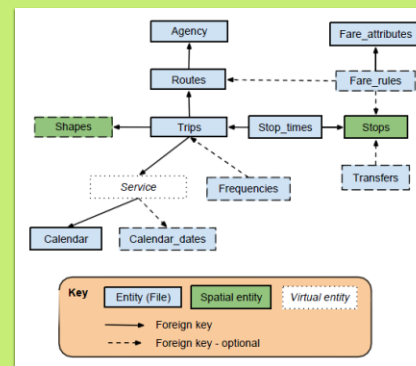


Figure 2: Flow chart describing how the text files in GTFS-ride feeds are related

Process

- Define parameters that GTFS-ride validators check for
- Manually create GTFS-ride data sets that...
 - Push limits of data specification (inaccuracies/invalid values in stop times, trip sequence, trip IDs, boardings, etc.)
 - Check for logical errors (stops on a non-existent route, boardings at a nonexistent stop, etc)
- Create automatic feed generator utility in python
 - Generate valid feeds given parameters and specifications of GTFS-ride
 - Generate invalid feeds given a valid feed to test boundaries of other GTFS-ride utilities to be made in the future

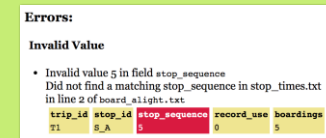


Figure 3: Example output from an invalid feed generated to test the limits of the feed validator



Figure 4: Example text files from an invalid feed generated to test the limits of the feed validator

Resources

- <https://i95coalition.org/wp-content/uploads/2018/06/I-95CC-GTFS-Task3-Webinar-image-1.png>
- <https://www.gtfs-ride.org/>
- <https://github.com/ODOT-PTS/transitfeed-ride/>
- <https://github.com/ODOT-PTS/GTFS-ride/>