



BRIEFING PAPER ON RESOURCES RELATED TO TRANSIT AND MULTIMODAL DATA AND/OR STANDARDS

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There have been numerous recent developments and new resources related to Transit and Multimodal Data and Data Standards. This briefing paper provides an inventory of related resources that I thought would be of interest to members of the Advanced Public Transit Systems (APTS) Technical Committee of ITS Canada.

The inventory covers resources on the following topics:

- GTFS, Demand-Responsive Transit, and Transit ITS Standards
- References Concerning Transit ITS Data
- Data-Sharing with Shared-Use Mode Partners
- Multimodal Data Standards (with the Prime Focus on Micromobility)

1. GTFS, DEMAND-RESPONSIVE TRANSIT (DRT), AND TRANSIT ITS STANDARDS

GTFS / MobilityData

Organization aimed at accelerating the development and adoption of General Transit Feed Specification (GTFS), including encouraging best practices, and developing new extensions.

<https://gtfs.org/gtfs-background>

GTFS Best Practices:

Summarizes valuable advice on making GTFS more effective. Recommended practices are organized into three primary sections:

- Dataset Publishing & General Practices
- Practice Recommendations Organized by File (to facilitate mapping practices back to the original GTFS reference)
- Practice Recommendations Organized by Case (e.g., routes with loops, etc.)

<https://gtfs.org/best-practices/>

Changing GTFS: Proposed changes

The following page provides links for all the proposed changes to GTFS:

<https://gtfs.org/changes/>

- **GTFS-Fares:** expands the existing fares functionality to support many of the potential variations in fares (by mode, time of day, transfers, fare product, etc.).
- **GTFS-demand responsive transit:** provides for route deviation services and demand responsive transit
- **GTFS-ServiceChanges:** to represent service changes planned between one and seven days in advance.
- **GTFS-pathways:** allows transit applications to dynamically route riders, and in particular riders in wheelchairs, through stations.
- **GTFS-vehicles:** enables specifying features of specific vehicles such as amenities, bike capacity, boarding restrictions and accessibility.

GTFS-ride

GTFS-ride is an open, fixed-route transit ridership data standard developed through a partnership between the Oregon Department of Transportation and Oregon State University. GTFS-ride allows for improved ridership data collection, storing, sharing, reporting, and analysis.

<https://www.gtfs-ride.org/>

Development of Transactional Data Specification for Demand-Responsive Transportation, TCRP Report 210

Important recent TRB/CTRP report which developed transactional data specifications for demand responsive transit. A primary purpose of a transactional data specification is to enable DRT services in the U.S. to more fully and easily participate in an era of “New Mobility” by facilitating interactions among the software systems that manage them. New mobility refers to technology-enabled urban transportation services that include bike sharing, car sharing, electric scooters, and on-demand transportation services operated by both private-sector and public-sector entities, including Uber and Lyft, as well as public transit agencies.

<http://www.trb.org/Publications/Blurbs/179848.aspx>

ITS Standards Transit Training Modules

https://www.pcb.its.dot.gov/stds_modules_transit.aspx

DOT’s ITS Professional Capacity Building Program (PCB) provides a free 21-module training series on standards used in Transit ITS deployments to the transit community. These modules were developed with partners in the Institute of Transportation Engineers and with support from the American Public Transit Association (APTA). They give transportation professionals the skills to help them effectively utilize transit-applicable ITS standards to procure, install, test, and operate ITS technologies. Some of the modules include:

- Introduction to Transit ITS Standards
- Transit Management Standards
- Traveler Information

- Arterial Management and Transit Signal Priority: Understanding User Needs for Signal Control Priority
- Arterial Management and Transit Signal Priority: Specifying Requirements for Signal Control Priority
- Electronic Fare Payment/Advanced Payment Systems: Open Payments Acceptance
- Emerging Evacuation Standards of Communication/Incident Management
- Introduction to Transit Enterprise Architecture and its Benefits for Transit

Multimodal and Accessible Travel Standards Assessment -Survey of Standards and Emerging Standards White Paper, U.S. Department of Transportation

<https://rosap.ntl.bts.gov/view/dot/43633>

The Standards Planning for Multimodal and Accessible Travel Services task will provide an assessment of standardization needs to support multimodal and accessible travel options. This document provides a survey of existing and emerging standards supporting multimodal and accessible travel. The recent surge of standardization efforts can be largely attributed to the rise of shared mobility and the emergence of new vehicle types, such as micromobility vehicles. Over 50 directly related and 150 related standards were reviewed and cataloged in this survey.

2. REFERENCES CONCERNING TRANSIT ITS DATA

The Use of Transit ITS Data for Planning and Management, and Its Challenges; a Discussion Paper

<http://www4.uwm.edu/cuts/trb/conf/papers/ITS2.pdf>

Discussion paper (30pp) prepared for the US Department of Transportation to:

- Provide a high-level overview of the potential uses of Transit ITS data for planning and management purposes,
- Identify the various challenges in using the data, and
- Recommend research and other initiatives that would enable transit agencies to make more effective use of the data, and position the transit industry for a future of ubiquitous data and data-driven decision-making.

Data Sharing Guidance for Public Transit Agencies – Now and in the Future, TCRP Report 213

Designed to help agencies make decisions about sharing their data, including how to evaluate benefits, costs, and risks.

<http://www.trb.org/Publications/Blurbs/180188.aspx>

Improving Access and Management of Transit ITS Data (TCRP Project G-18)

New TCRP project that is just getting underway:

The objective of this research project is to develop a common, practical approach to storing, accessing, and managing fixed-route transit ITS data. This data management approach will address the following:

- Current data sources, access, quality, and integration challenges;
- Relationship between historical schedule data and ITS data;
- Differing needs of transit agencies and other users of transit ITS data;
- Optimal configuration allowing regular improvement and sharing across the industry;
- Exchange of reports, tools, and analytical techniques based on transit ITS data; and
- Methods and procedures for developing operations management reporting and decision-support systems.

<https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4687>

3. DATA-SHARING WITH SHARED-USE MODE PARTNERS

White Paper: Objective-Driven Data Sharing for Transit Agencies in Mobility Partnerships Shared Use Mobility Center (SUMC)

Details current data-sharing practices, aiming to give transit agencies a guide on establishing partnerships with shared-use mobility providers.

<https://learn.sharedusemobilitycenter.org/overview/white-paper-objective-driven-data-sharing-for-transit-agencies-in-mobility-partnerships/>

Managing Mobility Data, NACTO Policy 2019

This policy resource from the National Association of City Transportation Officials (NACTO) sets out principles and best practices for city agencies and private sector partners to share, protect, and manage data to meet transportation planning and regulatory goals in a secure and appropriate manner.

https://nacto.org/wp-content/uploads/2019/05/NACTO_IMLA_Managing-Mobility-Data.pdf

4. MULTIMODAL DATA STANDARDS (with the Prime Focus on Micromobility)

Mobility Data Standard (MDS) / Open Mobility Foundation (OMF)

<https://www.openmobilityfoundation.org/>

The Open Mobility Foundation (OMF) is a non-profit organization to support the development of open-sourced software that provides scalable mobility solutions for cities, and in particular the Mobility Data Specification (MDS).

The OMF is based on the MDS platform. Over the last two years, cities like Los Angeles, Santa Monica, San Jose, and Austin built MDS to help manage micromobility programs (including dockless e-scooters).

MDS is comprised of a set of Application Programming Interfaces (APIs) that create standard communications between cities and private companies to improve their operations. The APIs allow cities to access data that can inform mobility management and public policy decisions to enhance safety, equity, and quality of life. More than 50 cities across the United States-- and dozens across the globe -- already use MDS to manage micro-mobility services.

Technical information on MDS:

<https://github.com/openmobilityfoundation>

The ITS Canada/ATMS Committee sponsored a 90 minute **Webinar on Open Mobility Foundation and the Mobility Data Specification (MDS)** on February 5, 2020:

<https://www.youtube.com/watch?v=vogeOo5m1fg&feature=youtu.be>

SharedStreets

<https://www.sharedstreets.io/>

SharedStreets is a non-profit organization dedicated to building open source software, digital infrastructure, and governance framework. It was launched jointly by NACTO and the Open Transport Partnership. SharedStreets APIs for micromobility aggregates and anonymizes data to protect citizen privacy.

Please feel free to notify me of any other resources that should be included or of any dead web site links to <brendon.hemily@sympatico.ca>.