



MOBILITY DATA – STANDARDS AND SPECIFICATIONS FOR INTEROPERABILITY

Background

FTA established the Standards Development Program (SDP) to focus on transit standards related to mobility, infrastructure, and safety. The program conducts research and analysis to determine the necessity of new standards or where existing standards are lacking. The program also seeks to identify existing standards that are not adequate or specific to transit that may be modified or enhanced for public transportation. Additionally, the program works with standards development organizations (SDOs) to create guidance documents, standards, or recommended practices for voluntary adoption in the industry.

This research project was developed as part of FTA's Standards Development Program encapsulating the vision of USDOT for accessible, equitable, seamless, and complete trips for all travelers. As the transit industry is evolving rapidly to seek interoperability across public transportation systems and services and integrate alternative forms of mobility and technology advancements, the research aims to build upon ongoing USDOT efforts focusing on data exchange and interoperability between modes, platform vendors, and operators as part of the MOD ecosystem.

Objective

The primary goal of this research was to identify any gaps in specifications or standards and focus areas for which FTA will publish a report or issue voluntary guidance. This study identified industry considerations and recommended potential focus areas in the MOD ecosystem—Trip Discovery, Payment, and Operations—including support for interoperability and development of open-source standards.

The research comprised the following activities:

- Comprehensive literature search, including taxonomies, global mobility services, key research outcomes, case studies, standards, open-source specifications, and technological advances in the interoperability of mobility services.
- Survey of transit stakeholders and industry experts to identify relevant demonstrations, data sharing protocols, lessons learned, and workable solutions to encountered problems in the realm of mobility interoperability.
- Classification of the identified gaps into the three components (i.e., trip discovery, payment, and operations) of the MOD ecosystem.
- Development of the Mobility Standards and Guidelines Resource (MSGRR) online tool to interactively inform stakeholders on the available mode-specific standards, open-source specifications, and case studies associated with the integration of mobility services.
- Establish a set of considerations for FTA to promote interoperable, open, and user-centric MOD systems in the United States.

Findings and Conclusions

The accessibility and sharing of standardized mobility data in the United States is currently limited, leading to inconsistent data structures and a lack of interoperability. This may be due to the absence of policy guidelines and the high cost and time-intensive stakeholder consensus approach associated with traditional standards development processes.

Further, there is an apparent need to differentiate between interoperability through deep links and deep integration in the mobility sector. With deep links, a centralized end-user booking application can display various mobility services and operators available for a journey. However, users still need to pay for each vehicle or service separately and are redirected to each operator's application to complete the booking. In contrast, deep integration allows users to book and pay for their entire journey on the mobility application without needing to use individual operator applications. Currently, the mobility industry in the United States is at the first level of integration, which is information integration, as opposed to a multimodal one-stop-shop ideal for users.

Nonetheless, current industry-driven efforts supported by stakeholder input and oversight from governing bodies appear to be well directed to fostering the development of standards and specifications. Several of these industry-driven efforts are worldwide open-source initiatives dedicated toward promoting interoperability within mobility and providing a structured framework to achieve it. These include the General Transit Feed Specification (GTFS) (including extensions such as real-time, pathway, fare, flexibility, and operational data standard), the General Bikeshare Feed Specification (GBFS), the Mobility Data Specification (MDS), Transport Operator to Mobility as a Service Provider (TOMP), General On-demand Feed Specification (GOFS), Transactional Data Specification (TDS), and City Data Standard for Mobility (CDS-M).

Benefits

In addition to the development of the interactive MSGR tool for stakeholders, this research has identified the following set of considerations for FTA to advance interoperable, open, and user-centric MOD systems:

- Encourage open-source data sharing by establishing policies and requirements for the use of federal funding.
- Support industry-driven open-source mobility data standardization efforts.
- Fund demonstrations and evaluation of mobility data integration efforts.
- Promote industry awareness, knowledge, and readiness.

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