Multimodal and Accessible Travel Standards Assessment (MATSA)

U.S. Department of Transportation

With SAE International,
Schweiger Consulting,
and Open Door Organization.

Multimodal and Accessible Travel Standards Assessment (MATSA)

Objectives/Purpose:

- Identify current standards related to multimodal and accessible travel
- Determine gaps where standards should exist, but do not currently
- Identify conflicting standards and duplicative specification efforts
- Develop a framework to inform selection and prioritization of standardization work

Research:

- Literature review of standardization needs
- Assess ITS impact on standards
- Create roadmap for MAT standardization

Source: USDOT

Research Activities

- Forward-Looking Assessment of Multimodal and Accessible Travel
- Survey of Existing Standards and Standards Under Development
- Collect Stakeholder Input and Identify Opportunities to Harmonize (Ongoing)
- Update Survey of Existing Standards and Standards Under Development (Ongoing)
- Develop a Roadmap for Multimodal and Accessible Travel Standardization Work (Estimated completion Fall 2020)

MOD Key Areas for Standards Development

- Path of travel, infrastructure/vehicle
- Wayfinding and navigation
- Automation and robotics
- Human-machine interface
- Other standards areas
- Data sharing, exchange, privacy
- Integrated payment

MAT Dimensions

Spatial
physical location of traveler infrastructure/features/land use

Informational
data/communication/media

Accessibility
traversable by a person with disabilities

Transactional
request/reservation/payment, data exchange/sharing/privacy

Institutional
relationships among transportation/mobility providers

Technological
technology that facilitates MAT

Modal
transportation services that comprise MAT

Temporal
availability of opportunities across the day, week, or other time period

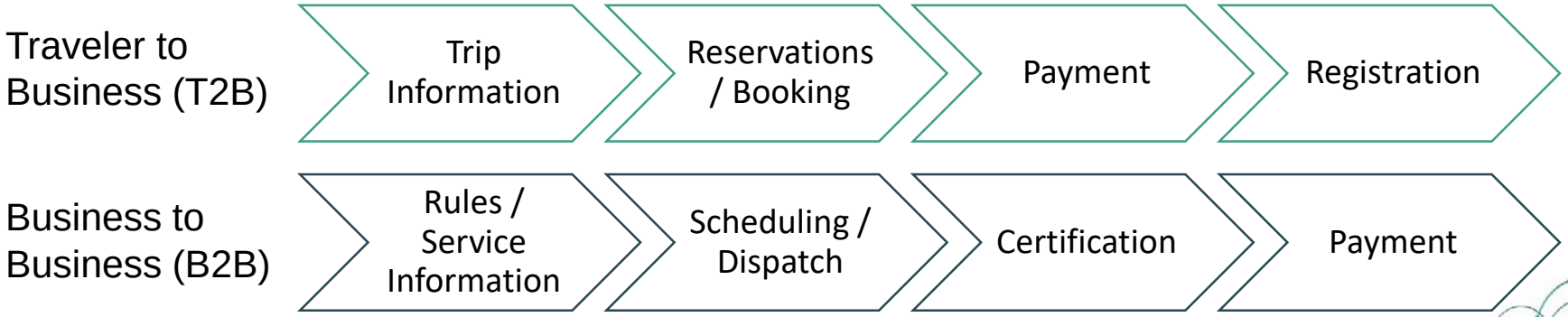
Equity
economic disadvantages, digital poverty, and the urban/rural divide

Complete Trip Focus Areas

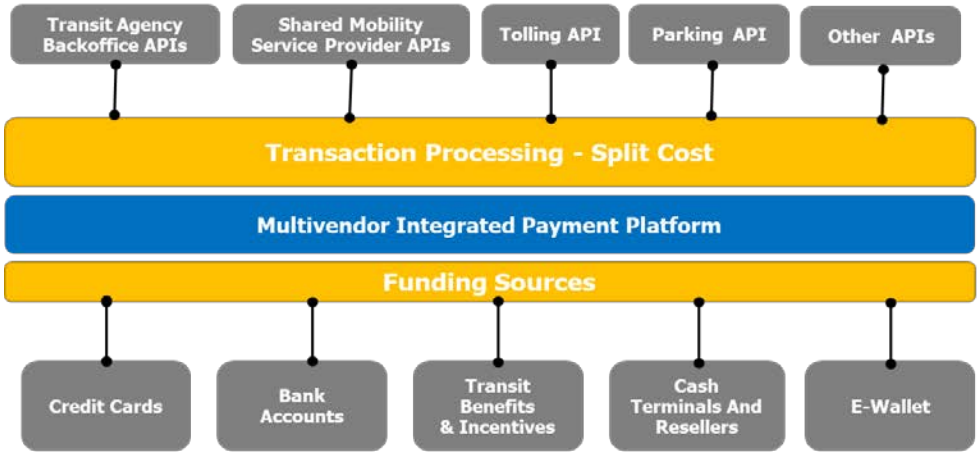
- Identifies each action, transition, leg, and process that encompasses a Complete Trip
- Four groups:
  - Mobility Platform Application Programming Interfaces
  - Wayfinding and Navigation
  - Safety
  - Integrated Payment

Mobility Platform APIs

- Developed framework for duplicative standards and gaps in standards
- Outreach: reviewed emerging/existing standards & specifications
  - ISO – from TC 204 Intelligent Transportation Systems
  - MaaS Alliance
  - Demand Responsive Transportation (SUTI -Scandinavia, TCRP Report 210)
  - Transport Operator to MaaS Providers- APT (TOMP-API)
  - Others (project related -- ATTRI, vendor published and proprietary)



Integrated Payment



Source: USDOT (pre-publication)

Use Cases

- Interchange between operator and financial service account managers (including reconciliation)
- Fee/fare validation by service operator(s)
- Cost estimation for multimodal trip planning
- Point of sale for multimodal journey booking and ticketing

Complete Streets

- Policy and design approach prioritizing safety and mobility for all users
- Two categories:
  - Curb Access and Management (CAM)
  - Public Right of Way/ Data Modeling for Indoor Navigation (PROW)

Illustration of neighborhood street with Complete Streets design elements. Source: NACTO

Curb Access and Management – Current Standards/ Applications Focus

- **Application Uses:**
  - Developing open ecosystems for curb data
  - Curb management
  - Travel assistance
- **Upcoming Standards:**
  - SAE J3194™ - Taxonomy and Classification of Powered Micromobility Vehicles (in development)
  - ISO TC 204 WG 19 is initiating a curb, parking and mobility standards

Image: curbFlow

Curb Access and Management – Research and Gaps

- **Standardized data formats:**
  - Mapping tools
  - Analytic models
  - Digital information exchanges
- **Research & Gaps:**
  - Information exchange standards that help cities and regulators collect mobility service provider data, and monitor/measure regulatory compliance and performance in real-time or near real-time
  - Information exchange standards to support parking-related data sharing
  - Information regarding obstacles that would hinder active mobility along a sidewalk or other right-of-way attached to a curb

Public Right of Way (PROW) and Indoor Navigation Data Models

- Use Cases
  - Navigable, multimodal journey plans for travelers of all modes (for web, kiosk, mobile devices)
  - “Safe” journey plans
    - For people with personal ITS-stations (VRUs that communicate with infrastructure incl. intersections and transportation hubs)
    - Crossing “safe” intersections (curb cuts, sufficient crossing times or awareness of traveler
    - Taking paths with operating elevators
    - Selecting navigable paths that are smooth without barriers / obstacles (based on user profiles)
  - On-demand situational awareness provision re: obstacles in path of personalized travel plans

- Requires models of PROW beyond center-line street models
  - Vertical pathways and entrances (e.g., GTFS-Pathways and extensions)
  - Navigable paths through transportation hubs (e.g., GDF nodes – ISO 19147:2015)
  - Regulations for micromobility vehicles
  - Intersections with C2X capability (for vulnerable road users)