FTA RESEARCH
FEDERAL TRANSIT ADMINISTRATION

Mobility Marketplace Connecting Trips for All

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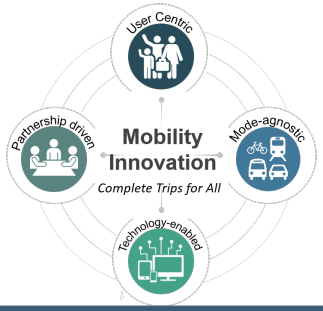
U.S. Department of Transportation
Federal Transit Administration

Outline

- Vision for Mobility Innovation
- Shift in Mobility Management Paradigm
- Supply and Demand
- Marketplace



Mobility Innovation Principles

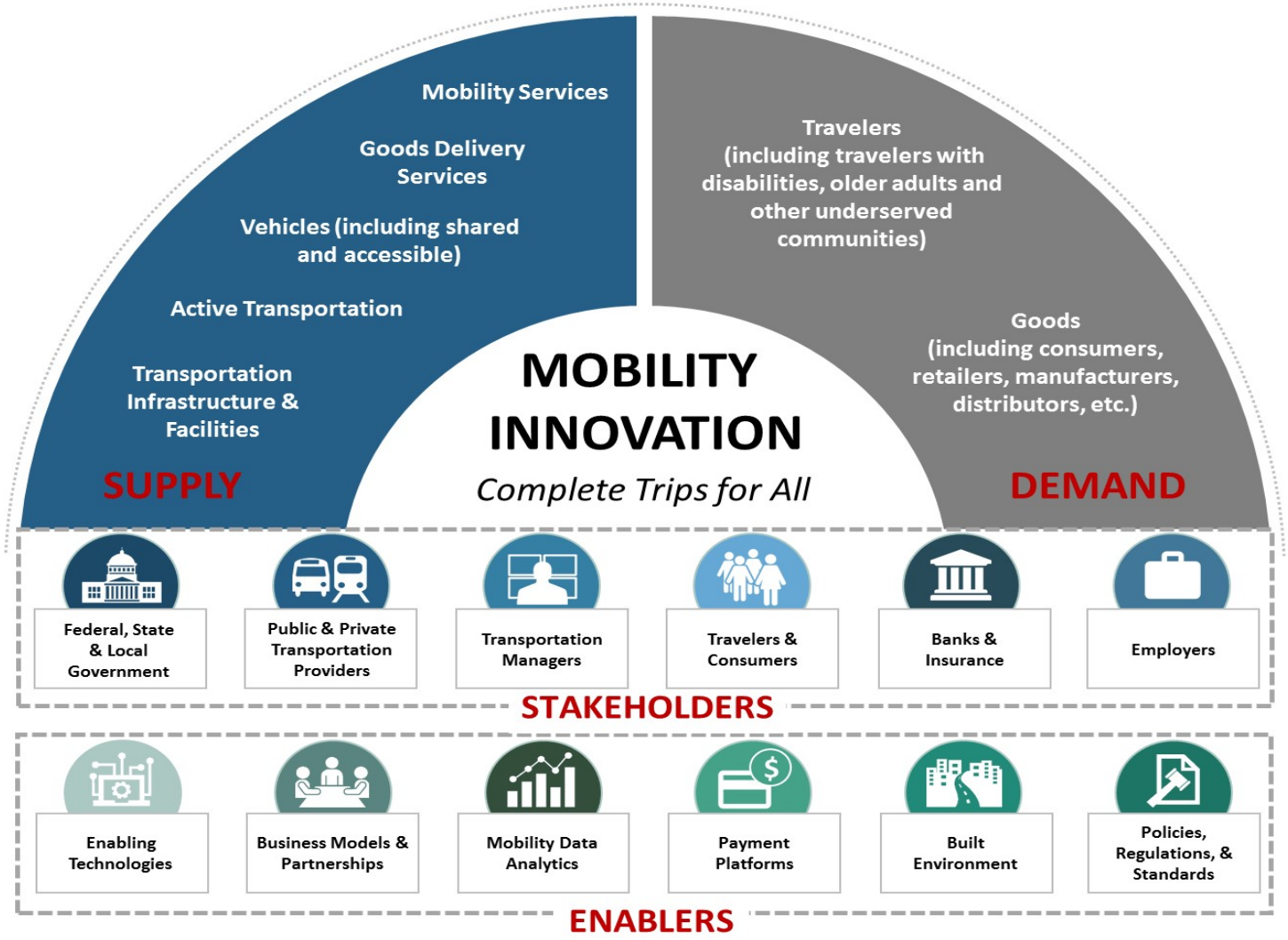
Traveler-centric – promotes choice in personal mobility driven by the specific needs of the traveler and utilizes universal design principles to capture the needs of all travelers.

Mode-agnostic – encourages multimodal connectivity and system interoperability where all modes of travel are considered and integrated seamlessly to achieve the complete trip vision.

Technology-enabled – leverages emerging and existing technologies, data connectivity, and standardization to support personal mobility choices.

Partnership driven – develop and leverage unique partnerships, both public and private, to accelerate deployment of emerging mobility options.

Bringing it All Together



Our population is Growing

In 30 years it is expected to grow by about [redacted]

Millennials – Shaped by Technology

There are ☐ million Millennials aged 18-34

The transportation sector is the [ ] source of greenhouse gases (GHGs)

Older Americans are Redefining Longevity

By 2045, the number of Americans over age 65 will increase by ☐%

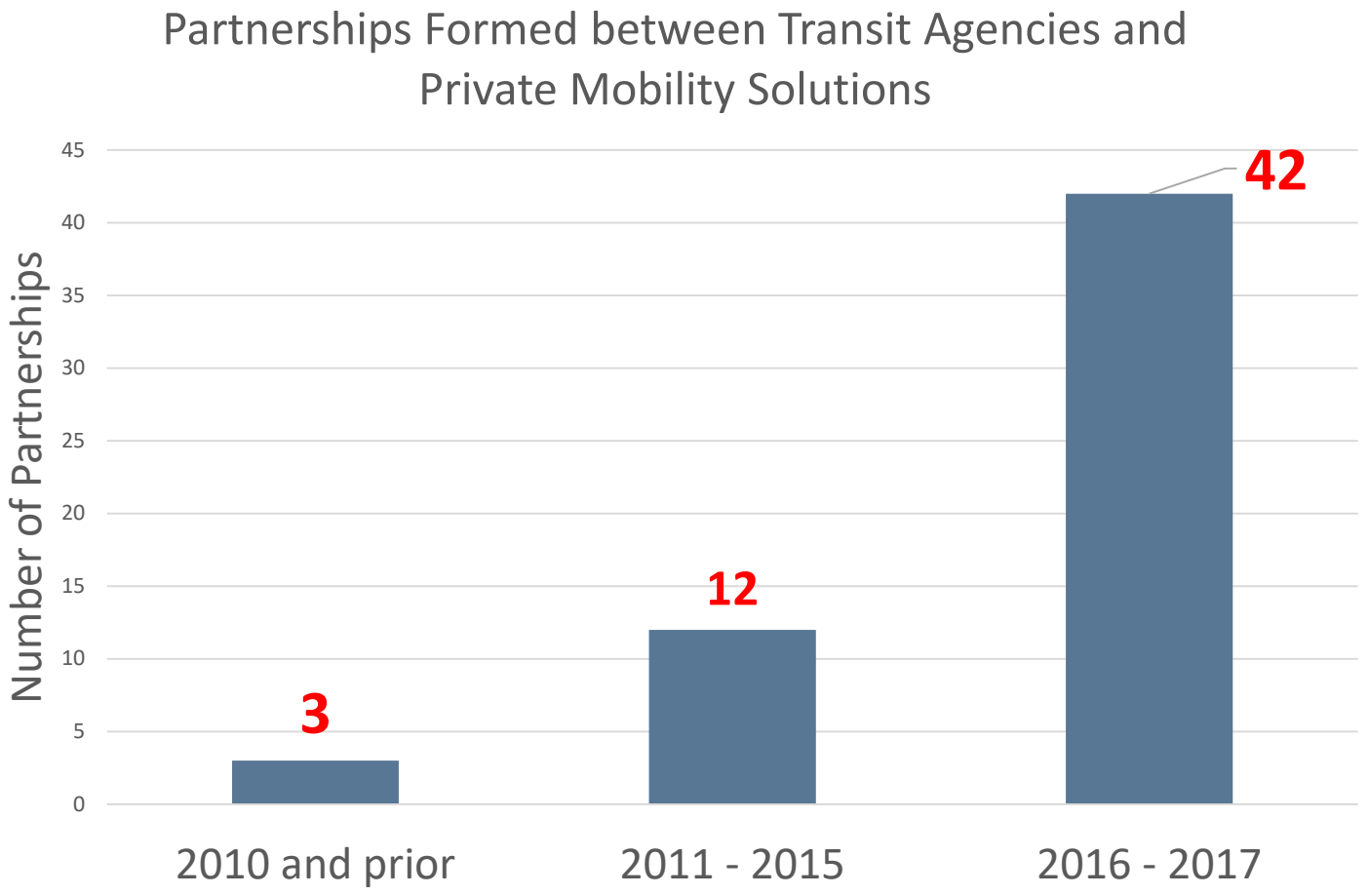
All Travelers Need Mobility Choice

Persons with disabilities comprise nearly ☐% of the U.S. population

Public or Private?

Public or Private?

Transit Agency and Private Mobility Partnerships



Complete Trip

8. Completing travel to destination

1. Trip planning

7. Transferring between vehicles

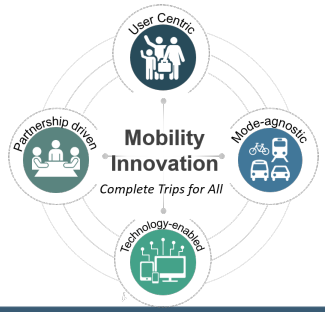
2. Traveling to station/ crossing intersections

6. Leaving vehicles

3. Using station/ stop

5. Using vehicles

4. Boarding/riding vehicles



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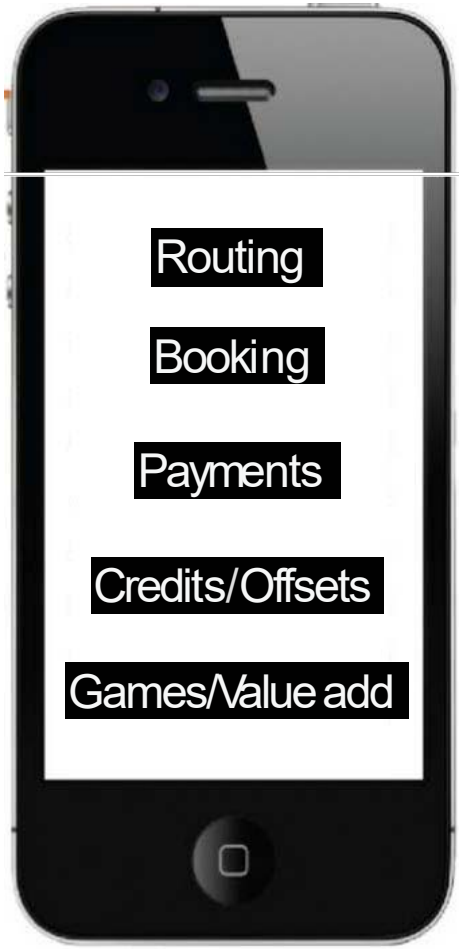
Customer Experience



Source: Timothy Papandreou, former Director, Office of Innovation at San Francisco Municipal Transportation Agency (SFMTA), @tpap_

Multiple modes, little or no integration; multiple payments, multiple bookings, etc

Privately-Owned Vehicles

Public Transit, Rail, Bus, Ferry

Regional & Intercity Services: Rail, High-Speed Rail, Air

Shared Fleet Vehicles

Employer Shuttles, Jitneys
Commercial Deliveries

Taxi, Limousine & Transportation Network Companies

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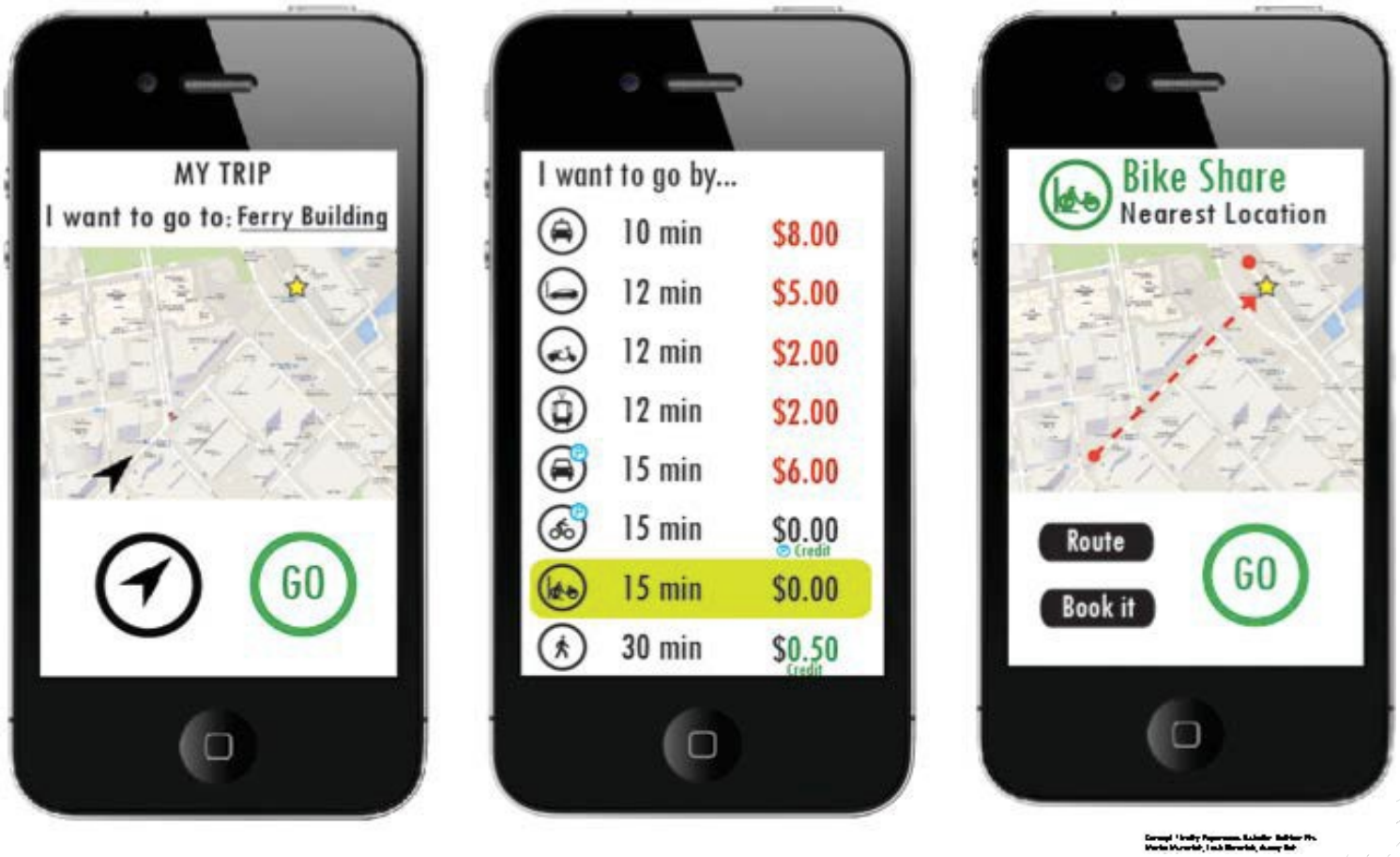
Mobility options - customized



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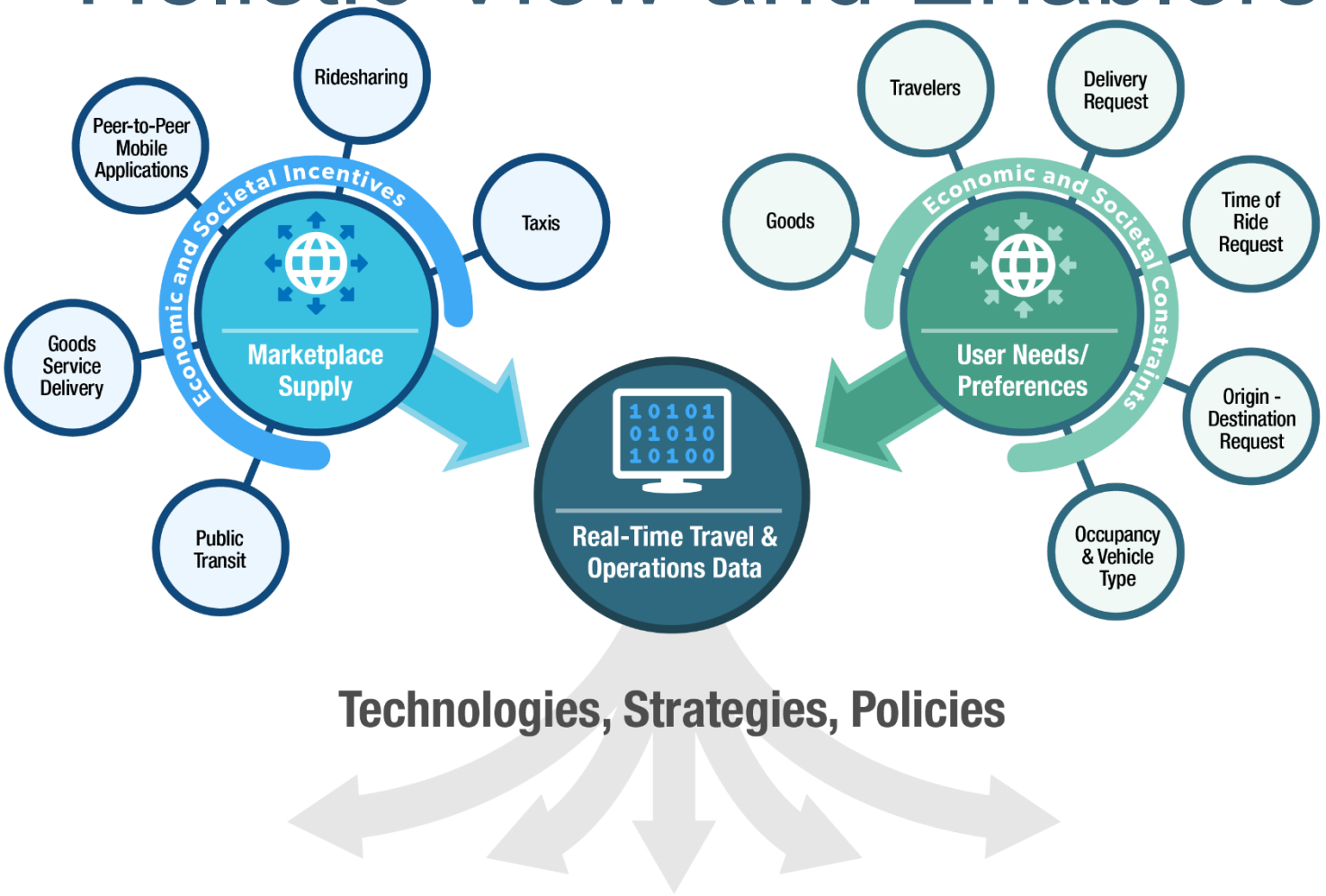
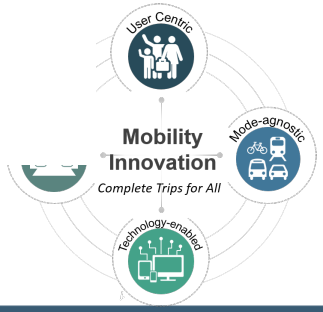
Holistic View and Enablers

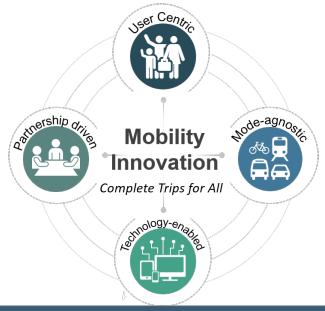




What's Role of Public Transportation?

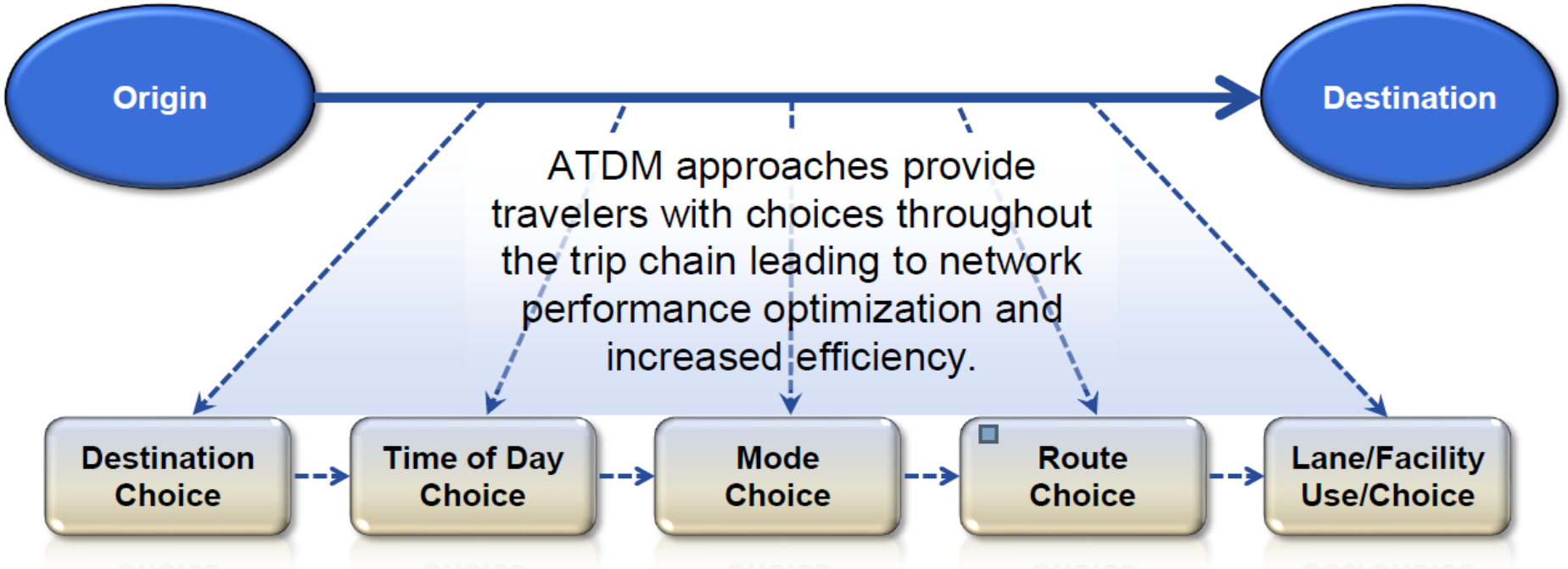
- Provide backbone for a multimodal integrated transport system
- Provide perfect environment to demonstrate & pilot new technologies and operations
- Redefine public transportation
- Redefine traffic management

Transit operations in a future environment



Role of Traffic Management

Active Transportation and Demand Management

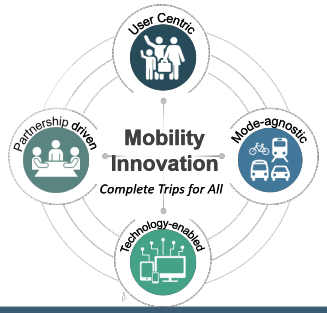


Key Takeaway: Active management occurs before, during, and at the end of the trip chain

Travel Management Coordination

Figure 1-1
U.S. DOT MSAA Integrated Vision

Photo Credit: Pressfoto - Freepik.com



Not just city center

CITY CENTER

High-density downtown/CBD employment centers and surrounding neighborhoods

SUBURBAN

Predominantly lower-density residential users with some segregated mixed uses

EDGE CITY

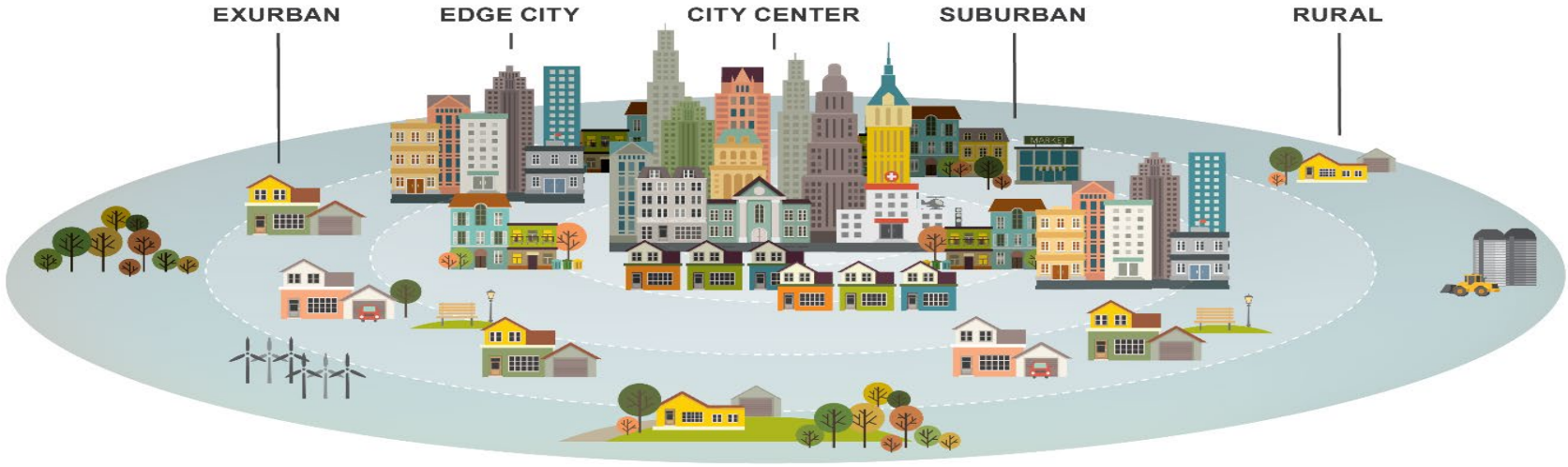
Medium-density employment centers outside of the urban core

EXURBAN

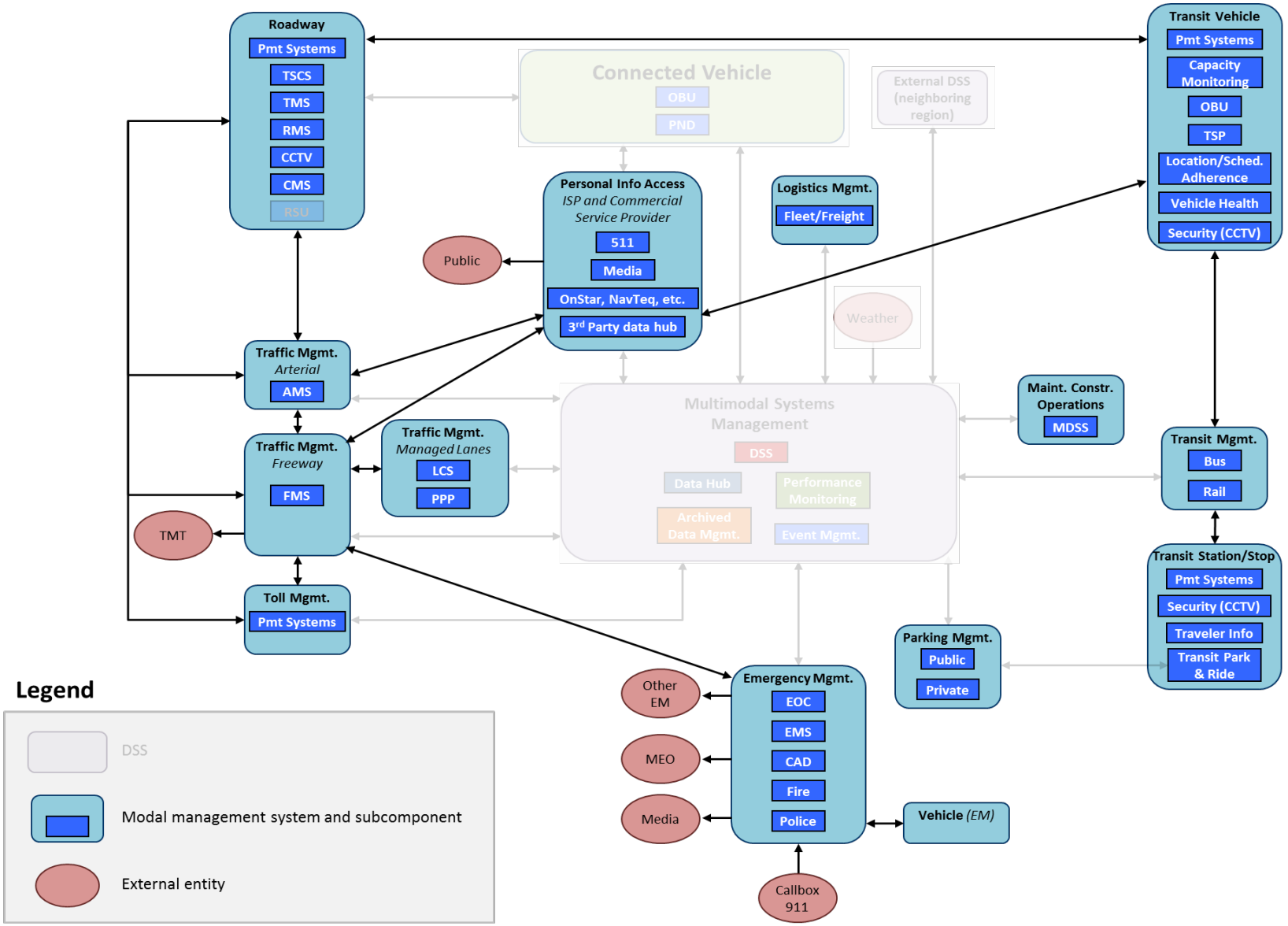
Very low-density residential uses on the urban fringe

RURAL

Typically unincorporated



Real-time Multimodal Management



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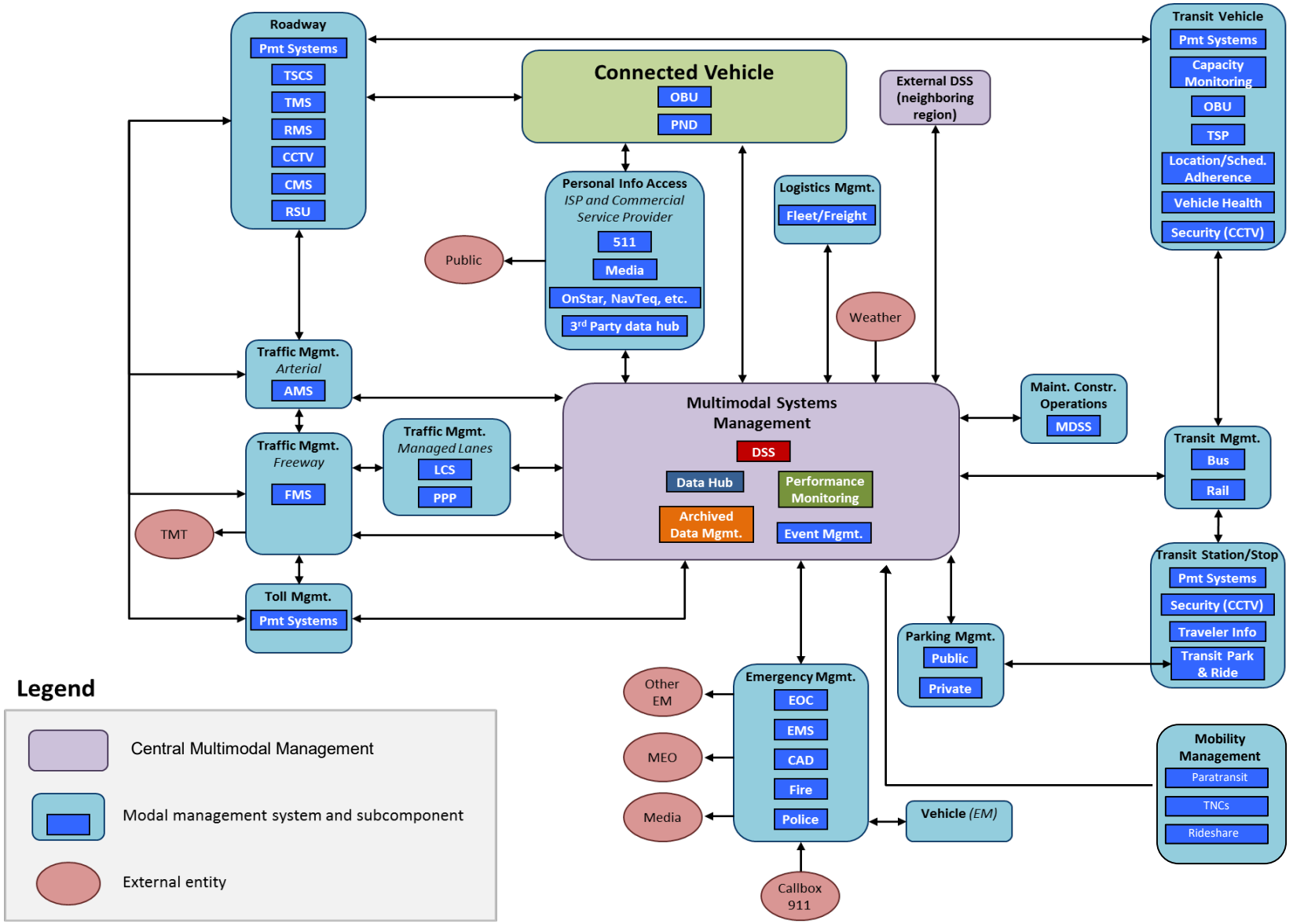
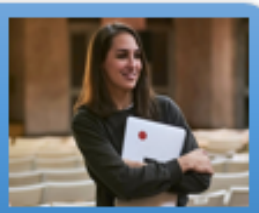


Complete Trip → User Journey

Marry is a recent college graduate who lives in a close-in suburb and works in the downtown of a major metropolitan area. She currently does not own a car and relies on her phone to plan her commute to work everyday. On a rainy day, she uses the MOD app to plan the best way to get to the office before 9 am.



Plan a Trip

- Mary will open the MOD App to check her commute this morning
- The app will identify her trip based on her profile.
- Since it is raining, she decided not to walk to the subway station but will take a TNC.
- Mary has to be at a meeting starting at 9 am and selected the fastest option on the trip planner.
- The geocoder will translate the OD into lat/long.
- The MMTE algorithm will run to generate the shortest and quickest path based on Mary's selections.
- Three trip options are made available.
- Mary picks one and starts her trip.

Start Trip

- Lyft pickup on time
- Driving to the subway station
- The app notifies Mary of a delay for the first leg of the trip due to an accident.
- The trip itinerary is updated based on the delayed arrival time to the subway stop.
- Marry decides to get off early and start walking to catch the next train.

Accident Delays approaching the subway station

Mode Shift

- Walking to the subway station
- Marry tries to catch the subway arriving in 10 mins
- She increases walking speed.

Mode Shift

- Marry takes the subway on time
- Train near full as per the APC on the MOD App.
- In transit – on track for arrival to get to bikesharing station while bikes are available (bikesharing service)

Mode Shift

- Bikeshare availability on the MOD App shows the number of available bikes.
- Marry picks a bike
- In transit – on track for arrival at work before 9 am.)
- Audio alert: section of the bike path is closed.

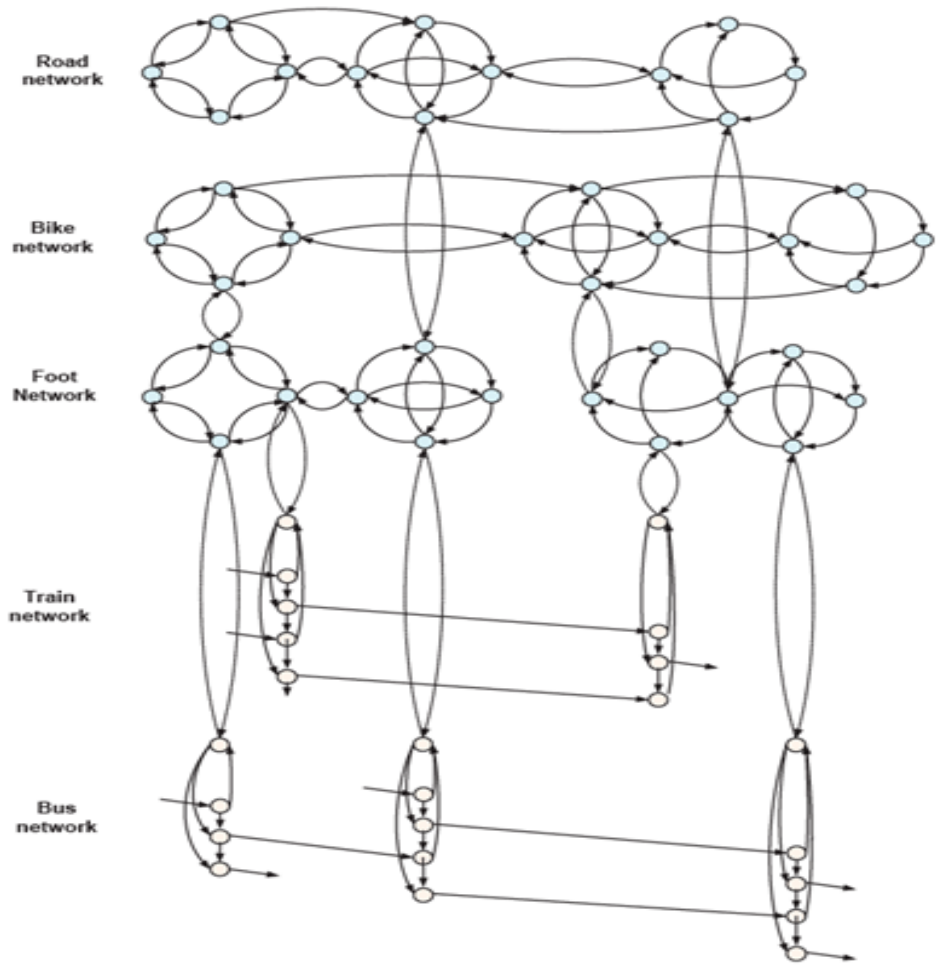
Detour Bike Path

- Marry takes an alternate route
- Train near full as per the APC on the MOD App.
- In transit – Planning to arrive at 9h10 am to the office

Arrive at Destination

- Marry arrives at work
- Her MOD apps indicates that her trip cost was $9.20. She burned 80 calories and her carbon foot print was 4.33 kg CO2e*.
- Profile update: The mobile app requests this trip pattern be saved in her profile.

Multimodal Trip Engine



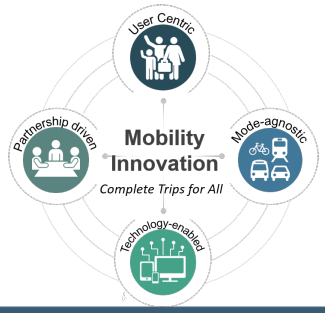
Carsharing
Courier Network Services
Microtransit
Pedicabs
Personal Vehicle Sharing
Ridesharing
Ridesourcing
Scooter Sharing
Shuttles / Taxis

Bikesharing
Personal bike

Walking

Train

Bus

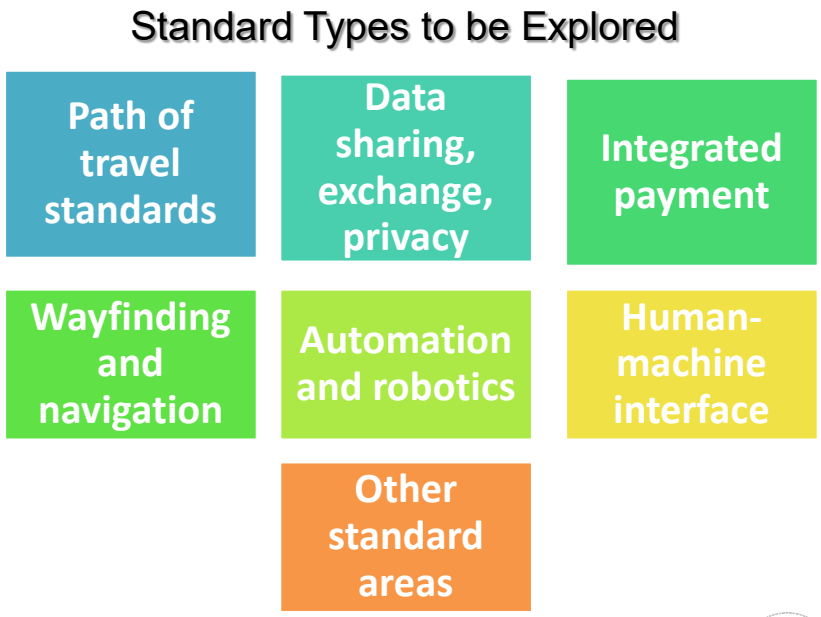


Multimodal and Accessible Standards Assessment

- DRAFT Forward Looking Assessment White Paper

  Over 100 pieces of literature reviewed

  - Dimensions and characteristics of Multimodal and Accessible Travel (MAT)
  - Standard types to be explored
  - Impacts on Standard Development
    - 5-10 year timeframe
    - Policies, regulations, governance, advancing technology, demographics
  - Gap Analysis
  - Next Steps



- Next Steps:
  - Assessment of existing and proposed research;
  - Roadmap

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Take-ways From Current Project

- Increasing number of open source, non-proprietary and non-restrictive options for geocoding,
- Need for a seamless multimodal advanced traveler information system.
- The use of standards is crucial for furthering the work for multimodal trip planning to normalize the data definition
- The mobile application, API and web widget subsystems do not represent a technical barrier
- Continuous advancement of the multimodal routing engine, foresee the concept of transfer between scheduled and on-demand services to be further developed,
- Further development of personalized trip results by using an optimization engine