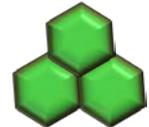# Applications and Impacts Breakout Group III: Mobility

Steve Mortensen
Federal Transit Administration

Bob Rupert
Federal Highway Administration
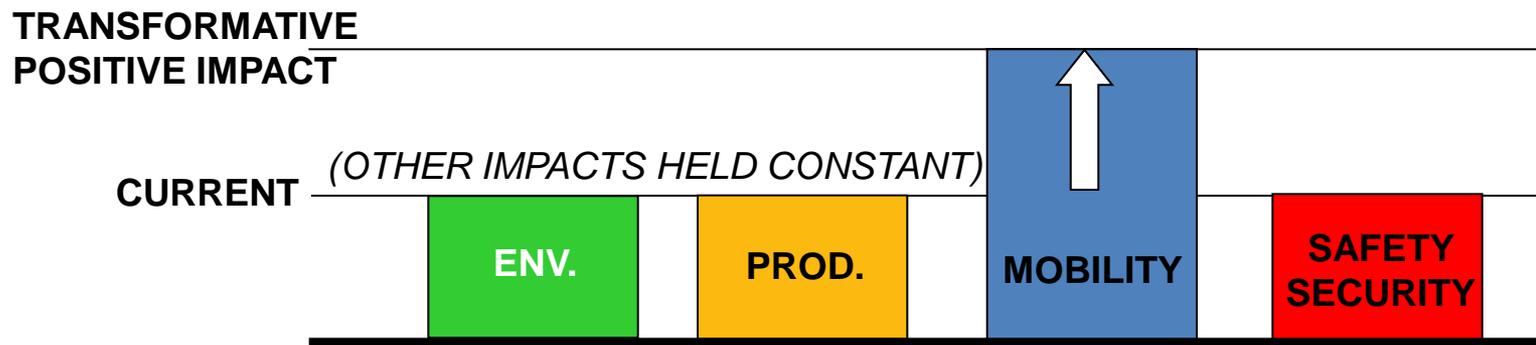Office of Operations

Karl Wunderlich
Noblis

Mobility and Environment Workshop – December 1, 2010

Transformative Mobility Impacts

- One breakout group will identify promising applications to achieve goals related to enhancing individual mobility

- For the purposes of this breakout, transformative mobility impacts have occurred when the transportation system has:

  - *a transformative ability for travelers of all types to access the largest possible set of destinations reliably and predictably through the transportation system* without increased environmental impact or safety risk

TRANSFORMATIVE POSITIVE IMPACT

(OTHER IMPACTS HELD CONSTANT)

CURRENT

| ENV. | PROD. | MOBILITY | SAFETY SECURITY |

Today's Exercise (Part 1) Measuring Impact

- Feedback materials
  - Application scorecard
  - 3 poker chips (for voting)
- Facilitators preview overall exercise
- Facilitators lead group discussion on measuring transformative impact
  - Three example measures given
  - Participants may suggest others
  - Simple hand-count voting to determine up to three to be further explored
- Flip-chart exercise (group discussion)
  - Measure definition and current baseline (if known)
  - What change represents transformative impact?

Today's Exercise (Part 2) High Impact Apps

- As we did yesterday, consider up to 10 applications in each impact area
  - One slide per concept, brief clarifying discussion
  - Record High-Medium-Low rating on your scorecard for each of the measures
- 3-2-1 Poker chip voting for the applications most likely to have transformative impact (per your measures)
- Facilitated discussion about the application with the highest vote total
  - Identify key data, communications and research needs for this application
  - How close to transformative will this application get us?
- Repeat facilitated discussion for second highest ranked application (time permitting)
- Reconvene to consider results within each breakout
  - Discuss the implications of your group process
  - Identify a presenter from your group for the breakout report at 11 AM

Exercise Ground Rules

- For today's exercise, these items can't be changed
  - Breakout group impact area definitions
  - No adding new application concepts
- Data environment assumptions from yesterday can be relaxed, however
  - Assumptions about what data is available can be tailored in this exercise

- Policy-related issues are <u>NOT in play for discussion</u>
  - Intellectual Property, Privacy, Access/Security, Meta-data, Quality, Aggregation, Standards, Financial/Business Models….
  - If these topics come up, we will park the discussion until this afternoon, when we have special session to deal with these in turn

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Impact Measure Definition Activity

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- **Aggregate travel time reliability**
- **Average accessibility**
- **Total person-hours of delay**

FACILITATORS: PLEASE RECORD ON FLIP CHARTS
USE SIMPLE HAND-COUNT VOTES WHEN NEEDED

- **Are these the right measures?**
- **Can we better refine them?**
- **How many measures are needed (up to 3)?**
- **For each selected measure:**
  - **Record definition**
  - **Establish current baseline (if known)**
  - **Set transformative target**

Application Scorecard Activity

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- **Next, we're going to go through application concepts that address the mobility impact area**

- **We will present each concept on a single slide**
  - You can ask clarifying questions, or offer suggestions about how data might be leveraged
  - But the concept itself cannot be altered, modified or enhanced in discussion

- **Record an notes/comments on each application with an assessment on your scorecard for each criteria (High-Medium-Low)**
  - Let's fill in our selected measures now on your scorecard

- **Consider how you will vote for the applications with the most potential to achieve our transformative targets**
  - What applications have the most potential to help us reach our transformative target by 2025?

IntelliDrive

- **Multi-modal Real-Time Traveler Information**

- **Problem Addressed:**
  – Improve precision and accuracy traveler information with respect to travel times, cost, or availability on alternate routes or modes

- **Description**
  – Considers real-time and historical travel conditions for the traveler's trip (pre-specified origin, destination, and time of departure)
  – Suggests potential routes and modes (e.g., HOV, transit, tolled lanes) with travel times, travel time reliability, and costs for each alternative
  – Predicts travel times based on existing and expected traffic patterns, weather conditions, incident locations, and work zone locations and timings

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- **IntelliDrive-Driven Integrated Corridor Management**

- **Problem Addressed:**
  - Incompatible operational and data collection procedures limit coordination among freeway, signal system, and transit system operators in a corridor

- **Description**
  - Aggregate, consolidate and exchange data on alternate routes and modes to provide true corridor-wide traveler information services
  - Enable traffic management and transit agencies to coordinate their existing systems to improve corridor performance
  - Support integrated and coordinated response during major incidents and emergencies within corridor boundaries

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- **Curbside Parking Availability System**

- **Problem Addressed:**
  - Inform drivers about the availability of curbside parking, reducing congestion, emissions, and driver frustration

- **Description**
  - Monitor curbside parking availability either by using fixed sensors installed in parking meters or the road surface, or by a network of connected vehicles
  - Parking data relayed to a central manager for processing and broadcast
  - Inform travelers in real time the availability of parking spaces, the rate, type, and hours via the internet as well as mobile and in-vehicle devices

- **Dynamic Ridesharing**

- **Problem Addressed:**
  - Logistical constraints of traditional carpooling (e.g., long-term commitments, fixed schedules, and communication difficulties) prevent ridesharing from realizing its full potential

- **Description**
  - Leverage in-vehicle and hand-held devices to allow ride-matching
  - Integrate carpooling functions into vehicle computer and displays, use voice activated ridesharing technology to reduce distraction effects
  - Vehicle-data integration utilized by HOV/HOT enforcement agencies to verify vehicle occupancy

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- **Dynamic Routing of Vehicles**

- **Problem Addressed:**
  - Improve awareness of the best route to destinations, reducing delays. For emergency responders, delays translate into loss of lives.

- **Description**
  - Provide in-vehicle route guidance to road users, including private vehicle drivers, freight shippers, and emergency responders
  - Specifically address the integration of IntelliDrive data and in-vehicle navigation systems
  - Route guidance based on current and predicted conditions

- **General Road User Traffic Signal Priority**

- **Problem Addressed:**

  – Give priority to general road users at urban intersections for a fee, resulting in reduced delays and increased travel time reliability

- **Description**

  – Subscribers can receive signal priority (like transit signal priority)

  – Application will facilitate vehicle progression along the facility

  – Service subscriptions would be based on specific routes/corridors and/or times of day

  – Generate revenue on traditionally non-revenue generating roadways

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- **Transit Signal Priority**

- **Problem Addressed:**
  - Due to a limited ability to make accurate predictions, traditional methods have resulted in poorly performing TSP schemes

- **Description**
  - Enable earlier detection of buses, and more accurate and continuous monitoring of the bus as it traverses the corridor
  - Establish low latency and ongoing communications with Priority Request Servers (PRS) at individual, or multiple, intersections
  - Consider new inputs (e.g. passenger loads) and criteria (e.g. type of service, peak direction, etc.) for generating priority requests

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- **Multi-modal Integrated Payment System**

- **Problem Addressed:**
  - Unfamiliarity with fare payment methods and inconvenience are factors that deter some travelers from using transit more often

- **Description**
  - Utilize standards for an open architecture electronic payment system
  - Establish a transportation payment environment that reduces delays at toll plazas and parking payment kiosks, and reduces dwell times at bus stops
  - Promote ease of transfers across modes and increase customer convenience
  - Mine trip chaining patterns to improve service planning and operations
  - Support implementation of congestion-based transit fare pricing

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- **Connection Protection**

- **Problem Addressed:**
  - Missed mode transfers can result in cascading impacts and a substantial increase in travel time, limiting transit attractiveness within a corridor

- **Description**
  - Systematically calculate the probability of successful intermodal connections
  - Travelers can initiate requests for connection protection during the trip
  - A centralized system manages these multiple requests and current system status to maximize reliable transit trip making within the corridor
  - Communicate connection protection and schedule changes to travelers

- **Real-Time Route Specific Weather Information for Motorized and Non-Motorized Modes**

- **Problem Addressed:**
  - improve mobility and safety of users of motorized and non-motorized modes of transportation (e.g., automobiles, transit, freight, bicyclists, and pedestrians) by providing real-time, highly localized weather information

- **Description**
  - Fuse weather-related probe data generated by probe vehicles with weather data from traditional weather information sources
  - Develop highly localized weather and pavement conditions for specific roadways, pathways, and bikeways

Voting

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Breakout Exercise (Part 2) Voting

- Now that we've worked through all the applications, vote for the three most promising applications

  - BLUE = 3 points (top priority)

  - RED = 2 points (second-highest priority)

  - WHITE = 1 point (third-highest priority)

  - Deposit your chips in the voting bins identified for each application (also turn in your scorecards)

- We'll take a quick break (5 minutes) to tabulate the results

- One Bin, One Participant, One Chip rule

  - Do NOT dump all of your chips in a single bin

  - We want your individual priority of the top THREE applications

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Quick Break

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Exercise Results

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Exercise Complete