

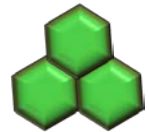


Applications and Data Environments Breakout Group III: Corridor Data Environment



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Today's Exercise (Part 1) Scorecards

- Feedback materials provided in the breakout rooms
 - Application scorecards
 - 3 poker chips (for voting)
- Facilitators will brief assumptions about the data environment that applications can draw upon
- Facilitators will clarify application evaluation criteria
- Consider a set of (up to 12) IntelliDrive application concepts
 - Facilitators provide one slide that describes the application
 - Field questions and clarifying discussion
 - Individually, you rate the application (HIGH, MEDIUM, LOW) against the criteria on your scorecard



Today's Exercise (Part 2) Voting

- Once you have scored each application, each participant votes for the three most promising applications
 - “**Most promising**”: strong potential for transformative impact, low deployment risk, and clear alignment with IntelliDrive program goals
 - 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)
- Quick break (5 minutes) to tabulate the results
- 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 3 PM

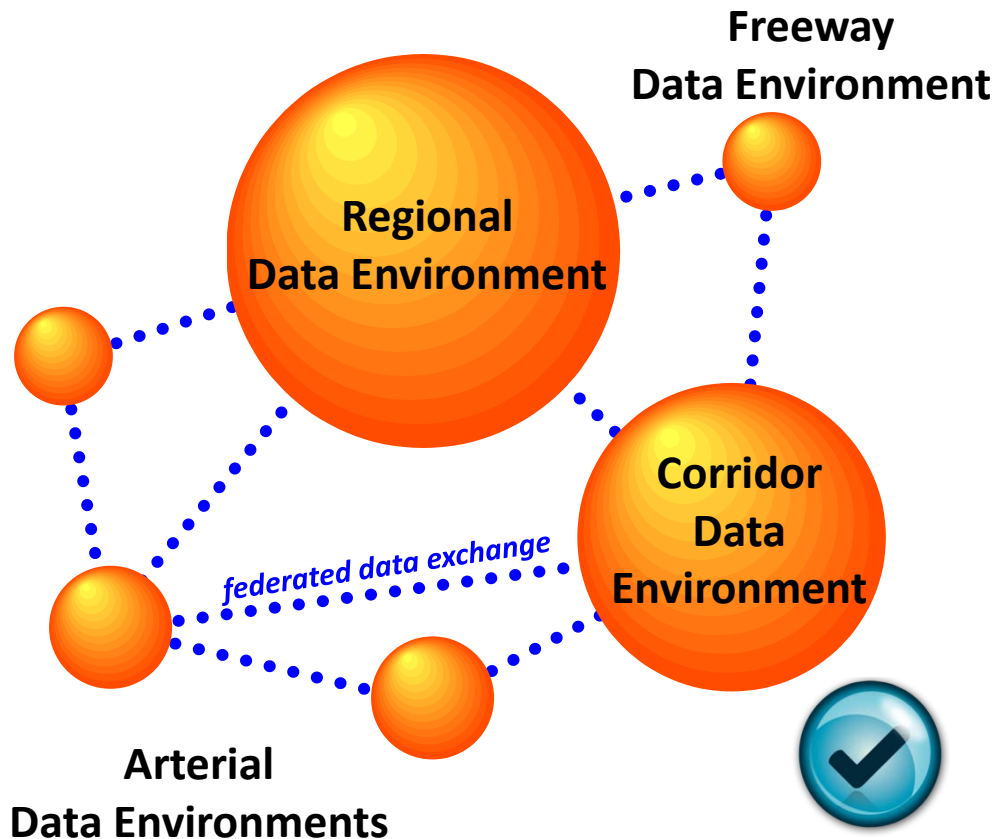


- For today's exercise, these items can't be changed
 - Evaluation criteria
 - Data Environment assumptions
 - Application concepts (no altering or adding new ones)
- Policy-related issues are NOT in play for discussion
 - Intellectual Property, Privacy, Access/Security, Meta-data, Quality, Aggregation, Standards, Financial/Business Models....
 - If these topics come up, we will park the discussion until tomorrow, when we have special session to deal with these in turn

Data Environment Assessment Scorecard Activity



Corridor Data Environment Description

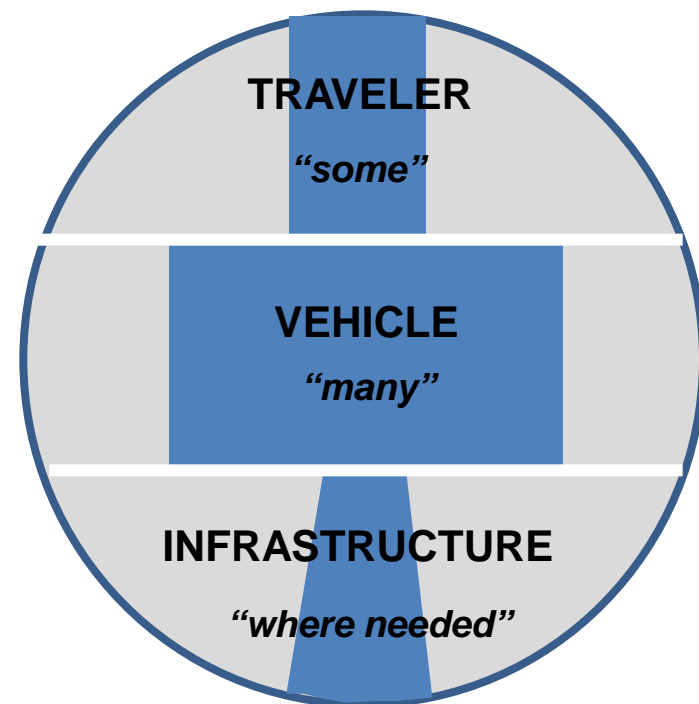


- Organizes multi-source data in a multi-modal sub-regional corridor up to 30 miles in length
 - Vehicles (light, transit, freight, non-motorized, public safety)
 - Mobile devices
 - Roadside/wayside infrastructure
- Federated with related data environments
 - Can pull in federated data to assist in corridor control decisions

- Carries primarily directional travel demand (inbound or outbound) depending on time of day and day of week
- Contains a collection of parallel arterial and freeway facilities, as well as a dedicated transit (BRT or light rail) facility
- Stations along this transit facility have bus feeder networks and some stations provide parking facilities
- Data drawn from all facilities within the corridor boundaries, including crossing arterial, freeway and transit facilities
- Particular facilities within the corridor may have access restrictions (e.g., HOV or Truck Only)
- Tolls may be collected on some or all lanes of roadway facilities
- Incident response vehicles are available for dispatch within the corridor

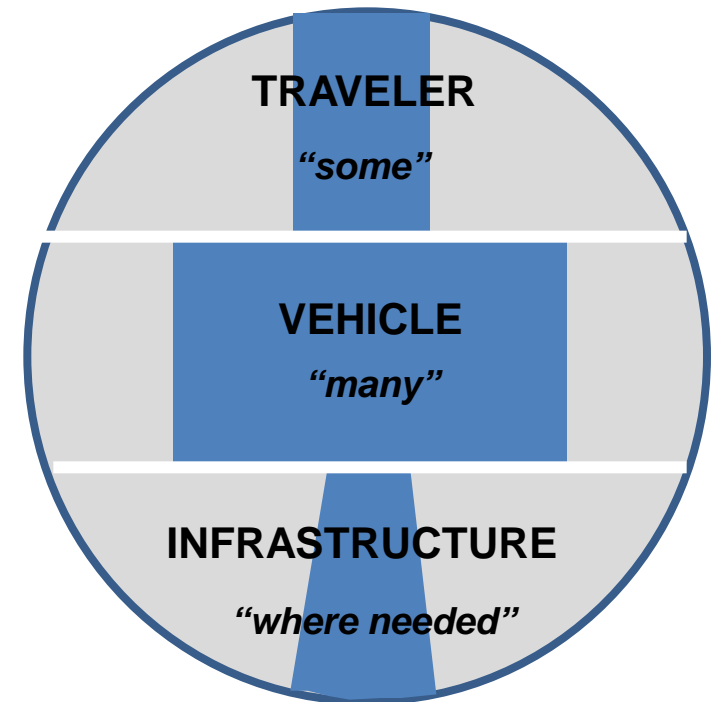
Vehicle and Traveler Data Source Assumptions

- Nearly all travelers carry GPS-enabled mobile devices
- Some travelers opt-in to configure their mobile devices to contribute data regarding position, time and trip characteristics
- Many light vehicles opt-in to contribute data, some broadcast HIA messages
- Many transit vehicles contribute position, passenger count, and other data, some broadcast HIA
- Many freight vehicles provide data on position, credentials and other data, some broadcast HIA
- Most emergency vehicles broadcast HIA and vehicle type data



Infrastructure Data Source Assumptions

- Road Weather sensors, loop detectors, other roadside sensors as currently deployed (2010 baseline)
- Many signalized intersections act as advanced intersections
 - DSRC-capable roadside equipment for 2-way communication with enabled devices and vehicles
 - Broadcast Signal Phase and Timing (SPaT) data via DSRC
- Some transit and curbside parking facilities provide utilization data (spaces used/remaining), every minute



Application Assessment Scorecard Activity



Application Evaluation Criteria

- Next, we're going to go through application concepts that utilize data from the corridor data environment
- 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
 - Please record notes or comments on each concept on your scorecard
- You rate each application on three criteria (**High, Medium, Low**)
 - **Potential Impact:** will this application have transformative impact?
 - **Deployment Readiness:** if we assume the data is available, can this application be developed, tested and widely deployed by 2025?
 - **Program Alignment:** does the application align with program objectives and is there a clear federal role in its development and deployment?

- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

- **Electronic Toll Collection System**
- **Problem Addressed:**
 - Increase interoperability among ETC devices for vehicle-to-roadside communication using 5.9 GHz bandwidth
- **Description**
 - Current 915 MHz ETC systems rely on proprietary vehicle-to-roadside communications, limiting interoperability
 - Enable toll authority to accept electronic payments from vehicles equipped with electronic-payment services (EPS), regardless of EPS account ownership
 - Presents payment instructions to the driver, receives driver input, send payment authorization and display toll payment status to the driver
 - Could be implemented in conjunction with managed or HOT lane concepts

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

Application #3: F-DRG

- **Freight Dynamic Route Guidance**
- **Problem Addressed:**
 - Lack of awareness of the best routes along congested corridors result in increased delays and costs to freight traffic
- **Description**
 - Address negative economic impact on the region by stifling the expansion and entry of logistics operations and logistics-dependent firms
 - Build on the C-TIP Real Time Traffic Monitoring (RTTM) and Dynamic Route Guidance (DRG) applications for best route between freight facilities
 - Routes calculated on current and predicted conditions

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**



Application #4: F-ATIS

- **Freight Real-Time Traveler Information with Performance Monitoring**
- **Problem Addressed:**
 - Uncertainties in traffic congestion and weather conditions pose a productivity and safety risks to freight traffic, result in negative environmental impacts
- **Description**
 - Enhance traveler information systems to address specific freight needs
 - Provide route guidance to freight facilities, incident alerts, road closures, work zones, routing restrictions (hazmat, oversize/overweight)
 - Tailored weather information, regulatory and enforcement information (speed limit reductions), “concierge” services and maintenance locations
 - Intermodal connection information, container disposition and schedule
 - Performance monitoring

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

- **Incident Scene Pre-Arrival Staging Guidance for Emergency Responders**
- **Problem Addressed:**
 - *Ad hoc* staging/positioning of the first public safety vehicles arriving at an incident can result in potentially unsafe or unnecessarily congested conditions
- **Description**
 - Pre-arrival situational awareness is critical to public safety responder vehicle routing, staging and secondary dispatch decision-making
 - Still or video images of an incident scene, surrounding terrain, and traffic conditions provided to moving vehicles and dispatchers
 - Improve staging decisions based on available data, transmit staging plan (possibly graphic/map based) transmitted to emergency vehicles en route

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

Application #7: RAMP

- **IntelliDrive-Driven Ramp Metering System**
- **Problem Addressed:**
 - Improve current ramp metering systems capability to respond to changing traffic conditions in real time
- **Description**
 - Leverage new mobile source data to calculate optimal ramp metering rates resulting in improved throughput and reduced emissions
 - Broadcast timing information (analogous to SPaT data) allowing vehicles to decelerate or accelerate
 - Integrate with HOV bypass, arterial signal coordination and dynamic speed harmonization applications deployed in same interchange

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**



Application #8: D-RIDE

- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**



- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

Application #10: S-PARK

- **Smart Park and Ride System**
- **Problem Addressed:**
 - Uncertainty about parking availability at transit stations limits the attractiveness of using transit for suburban commuters
- **Description**
 - Capture information on park and ride lot availability, and communicate that to potential travelers at key decision points
 - Utilize hands-free voice recognition within the automobile
 - Identify alternative parking location when lots are full, provide updated train/BRT schedule information, support parking reservation concept

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

Application #11: T-CONNECT

- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**

Application #12: WX-INFO

- **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

**PARTICIPANTS: ON YOUR SCORECARDS, PLEASE
RECORD NOTES/COMMENTS – CRITERIA RATING**



Voting



Breakout Exercise (Part 2) Voting

- Now that we've worked through all the applications, vote for the three most promising applications
 - **"Most promising"**: strong potential for transformative impact, low deployment risk, and clear alignment with IntelliDrive program goals
 - 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



Quick Break



Exercise Results



- Were similar or dissimilar applications selected during voting?
- Did the highest ranking applications align in the same quadrants of the impact/deployment readiness chart?
- Regarding the top 6 applications:
 - Are they highly overlapping? Or independent?
 - Do they require coordinated research?
 - Will they require coordinated deployment?
- Who would like to volunteer to report out the breakout group findings?

Exercise Complete

