

I-81 Coalition

The Smart Freight Route

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Phase 1



 **VirginiaTech.**
Transportation Institute

**CDM
Smith.**

CDM Smith Experience – Smart Freight Technology

CDM Smith staff has been Developing Concepts and Prototypes to Improve Freight Efficiency and Safety for trucking operations for more than 20 years.

- Kansas City Cross Town Improvement Project
- Memphis – Drayage Optimization
- Freight Advanced Traveler Information (FRATIS) Ports
- FRATIS Prototype – Dallas/Fort Worth
- FRATIS Prototype – Miami
- I - 81 Corridor Freight Information System ConOps
- Port of Los Angeles Eco-Drive, GEOSTAMP, FRATIS extension
- Columbus Smart Cities Truck Platooning

***(FRATIS-P)
Freight Advanced
Traveler
Information
System + Truck
Parking***



Opportunity for Improvement



Question asked by a Truck Driver...

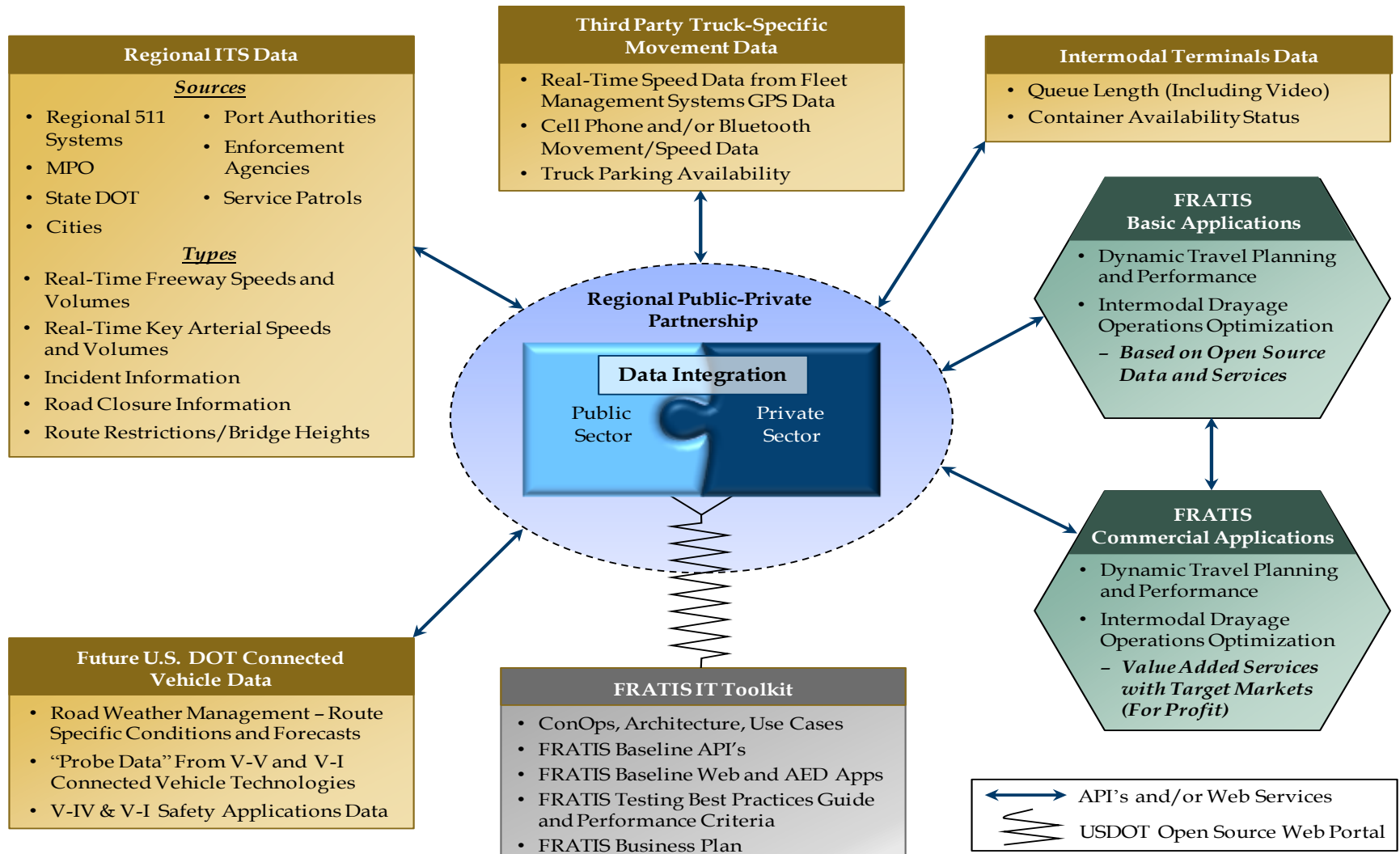


Methodology to answer the question

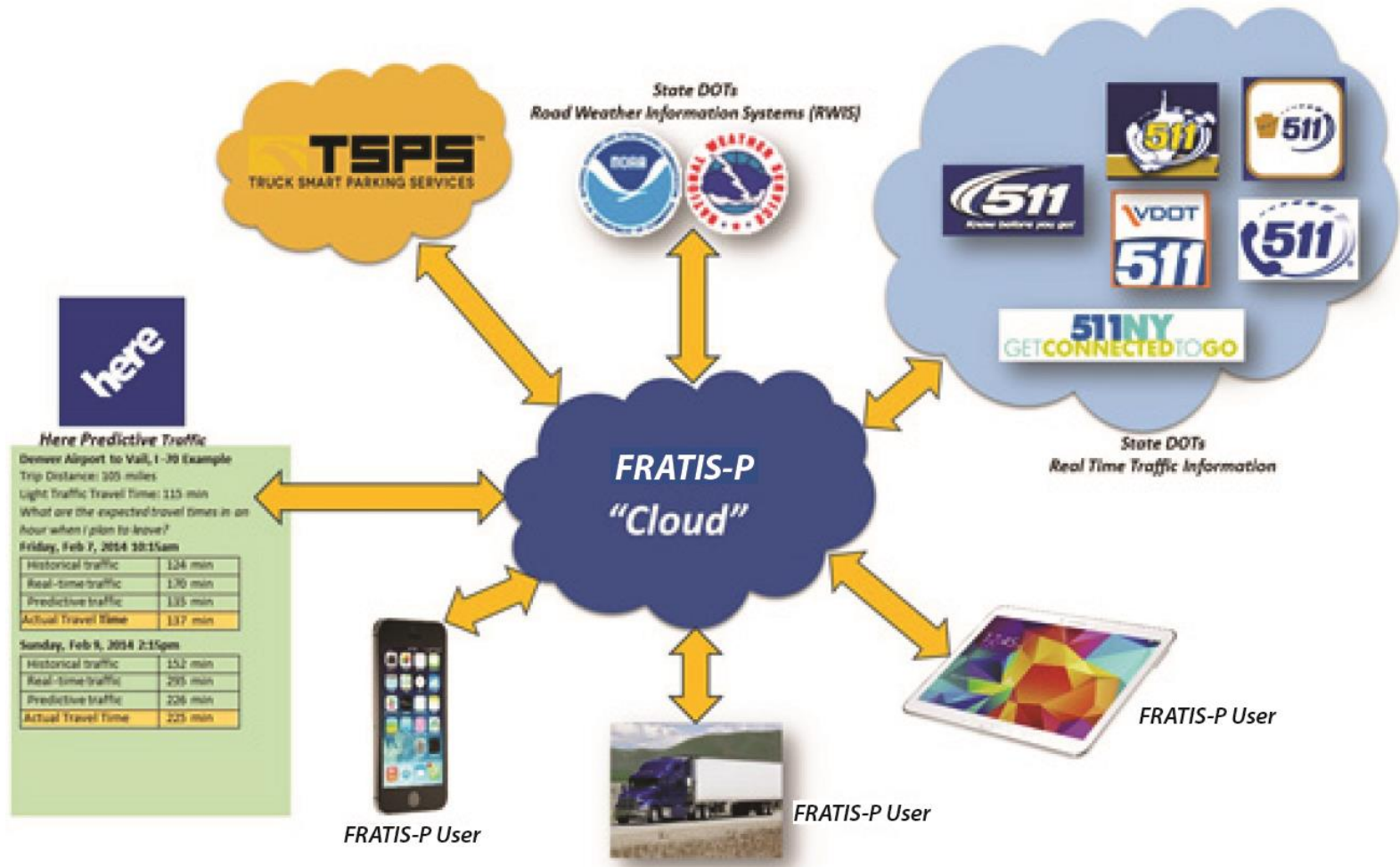
- **Leverage existing data streams between existing public and private sector systems**
 - Create a collaborative systems environment
 - Minimize the need to build a system from the ground up
 - Keeps costs low and provide for a higher rate of return on the investment
- **Deliver FRATIS-P on multiple types of devices**
 - Cell Phone, Tablets, Telematic Devices
 - Incentivize the adoption and use of the system
- **Integrate the planned technologies with public sector ITS and sensor information systems**
 - Available in current highway system
 - Lower costs and increase ROI on investment



Integration of ITS Data

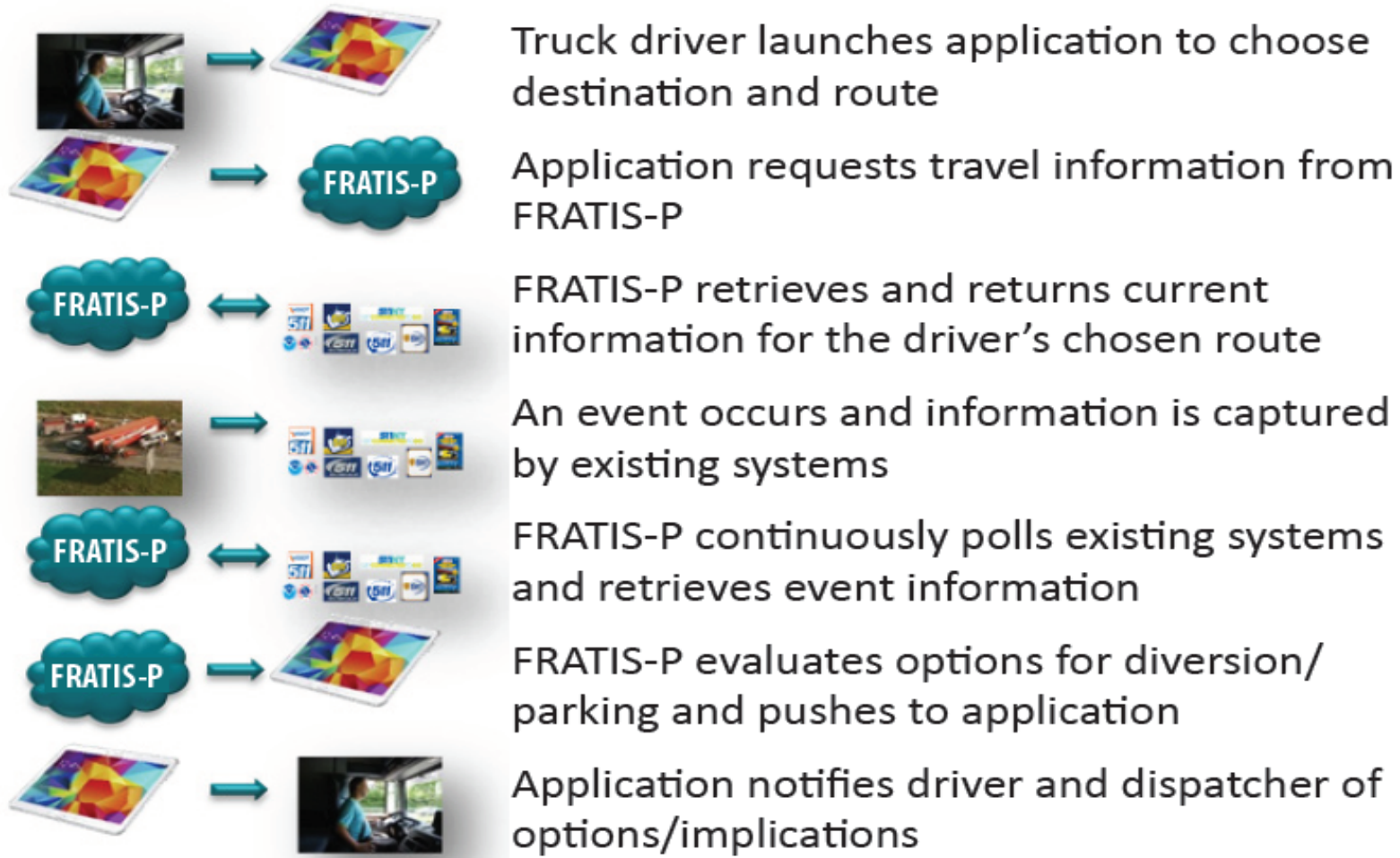


I-81 FRATIS-P "Cloud"



FRATIS Deployment with FMCSA

“One Button” Rule



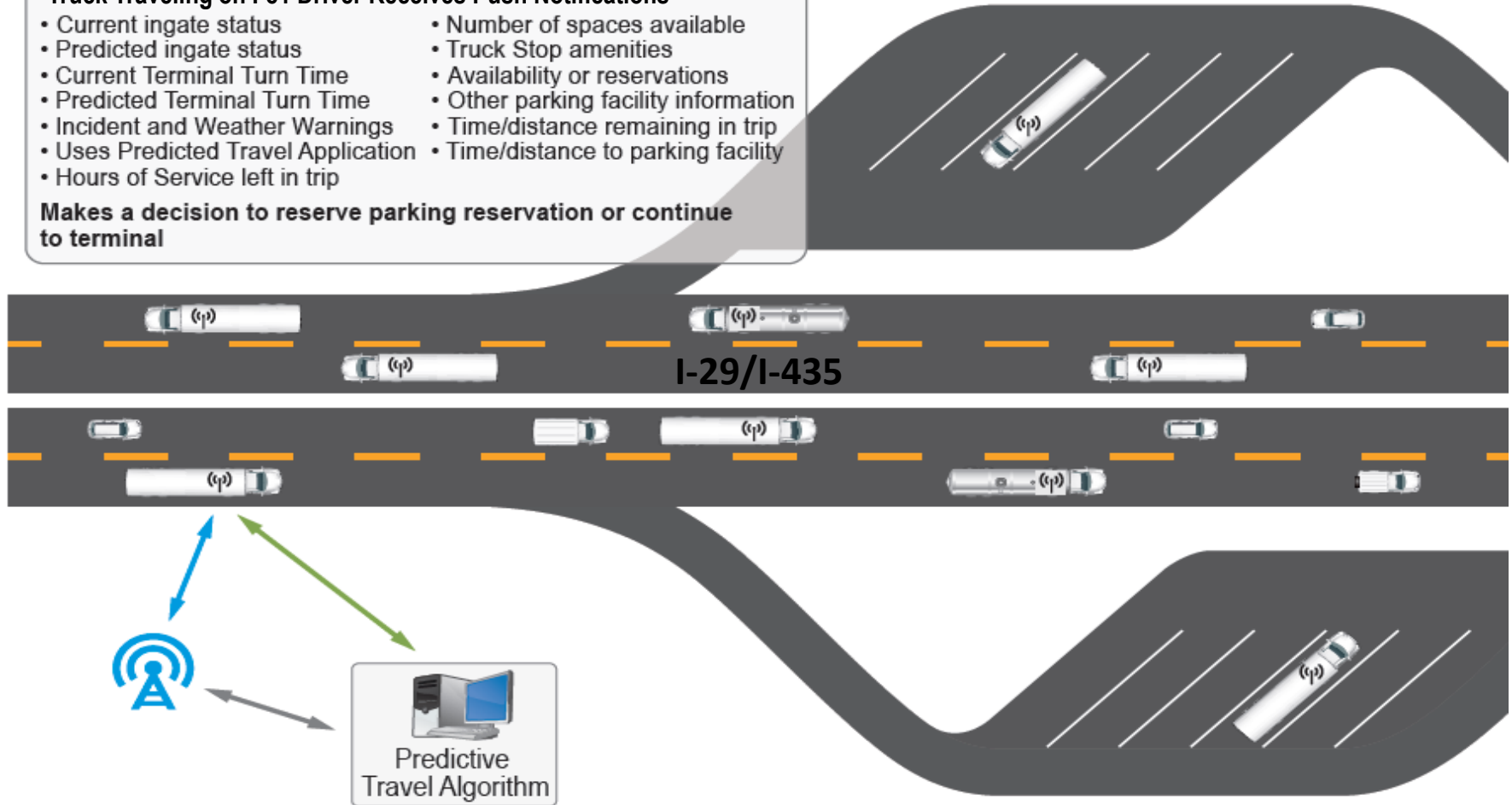
Example Truck Parking Reservations.....

Predictive Algorithms Provide Best Solution

Truck Traveling on I-81 Driver Receives Push Notifications

- Current ingate status
- Predicted ingate status
- Current Terminal Turn Time
- Predicted Terminal Turn Time
- Incident and Weather Warnings
- Uses Predicted Travel Application
- Hours of Service left in trip
- Number of spaces available
- Truck Stop amenities
- Availability or reservations
- Other parking facility information
- Time/distance remaining in trip
- Time/distance to parking facility

Makes a decision to reserve parking reservation or continue to terminal



FRATIS Available Services

- Truck Parking information Services (TPIS)
- Truck Alternate Routing Services (TARS)
- Truck Travel Predictive Services (TTPS)
- Truck Road Weather Travel Services (TRWTS)

(FRATIS-P)
*Freight Advanced
Traveler
Information
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FRATIS Available Services

- **Truck Parking information Services (TPIS)**
 - Network of commercial and public facilities
 - Real-Time Information on availability
 - Truck Parking Reservations
 - Information on availability pushed to driver
- **Truck Alternate Routing Services (TARS)**
 - Truck-specific GPS navigation solution that accounts for truck-restricted and prohibited roads
 - Provide safe and reliable navigation around congestion and accidents



FRATIS Available Services

- **Truck Travel Predictive Services (TTPS)**
 - Predicts travel distance and arrival time and distance based on:
 - Driver's current location
 - Current traffic conditions
 - Historical traffic patterns
 - Estimated hours of service remaining
 - Considers persistent trends (seasons, holidays, and months)
 - Temporal trends (construction)
 - Dynamic trends (weather)
- **Truck Road Weather Travel Services (TRWTS)**
 - Pushes road weather link-specific information to drivers
 - Provides road weather alerts and warnings within a short time horizon of adverse conditions



Benefits to Trucking Companies and Drivers

- Improve **productivity and efficiency** of the fleet
- Empower drivers with real-time information for **faster and better decisions**
- Generate near optimal truck **planned work itinerary** taking into consideration travel times with traffic, waiting times at the terminal, weather conditions, etc...
- Drivers will be able to **navigate to their destinations** and be rerouted in case of heavy traffic, incidents and congestion in their current route

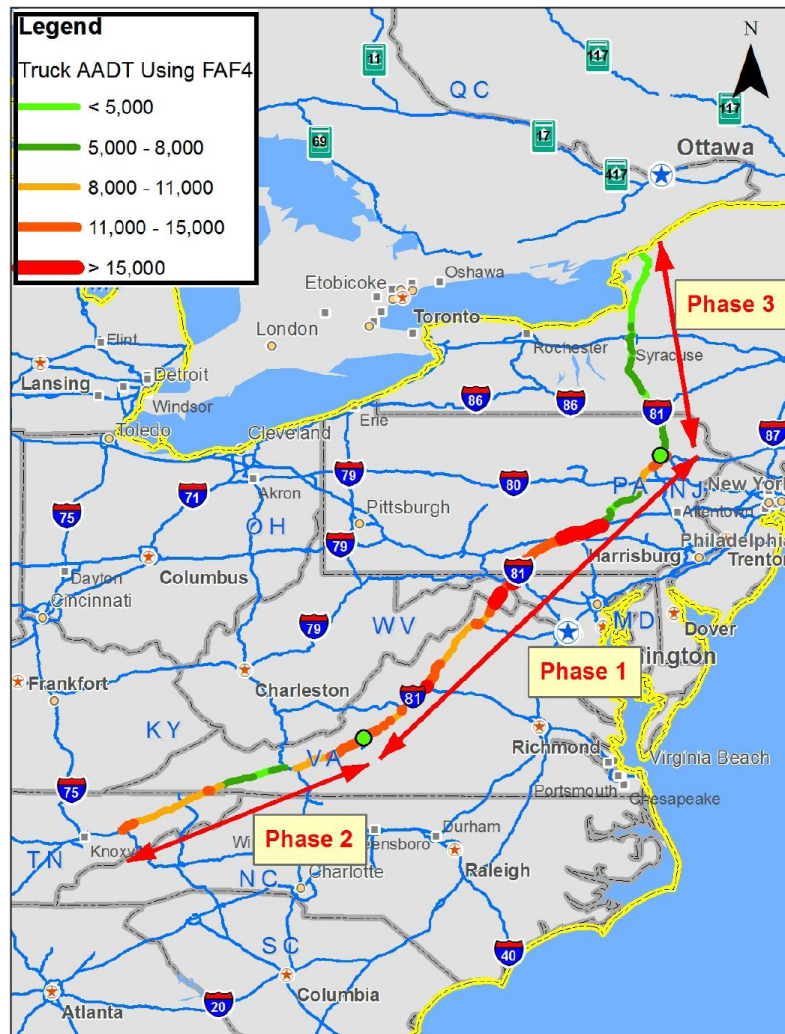


Public Benefits

- **Improve air quality and traffic operations**
- Provides a platform to **support economic development** in the region
- Improve **quality of life** of the region
- **Better utilization** of existing infrastructure and capacity
- Provides capabilities for **safer routes** for trucking operations



I-81 FRATIS-P System Implementation Phases



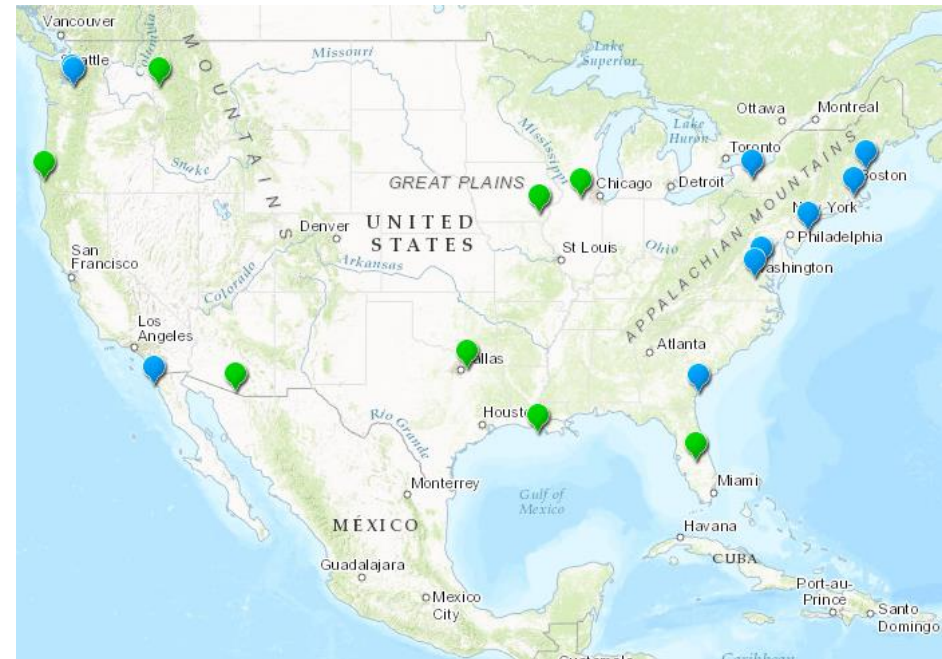
Three Phases:

- Phase 1: Roanoke, VA to Scranton, PA
– 411 miles
- Phase 2: Roanoke, VA to Junction I-40 and I-81
– 225 miles
- Phase 3: Scranton, PA to Thousand Islands Bridge
– 231 miles



Funding Options

- National Highway Freight Program (\$14.8M/yr.)
- FASTLANE Grants
- TIGER Grants
- CMAQ
- Technology and Innovation Deployment Program
- Accelerated Innovation Deployment Demonstration (AID)
- Advanced Transportation and Congestion Management Technologies Deployment



Fastlane Grants

Source:

Transportation.gov



Questions

Questions?

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Scenario Planning Tool for Transportation Technology

- Provides the criteria and process to develop a business case to support the deployment and use of transportation technologies
- The tool will also drive a behavioral change in the decision-making process within the transportation industry's management to adopt and use ITS
- Columbus Smart City

