Human Factors for Connected Vehicles Program

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Human Factors for Connected Vehicles

**Outcome Goal**
- Connected Vehicle technologies and applications will have Driver Vehicle Interfaces (DVI) that effectively communicate safety and various levels of non-safety driving related information while managing workload and minimizing distraction

**Product Goal**
- Human Factors Guidelines to ensure interfaces are effective without increasing distraction or creating high workload
  - Produced in time to inform 2013 Agency Decision
Program Scope

- **Multiple User Groups:**
  - Light vehicles
  - Commercial Vehicles
  - Transit operators
  - Age groups: Older and Younger drivers

- **Multiple Applications:**
  - V2V and V2I
  - Safety, Mobility, Sustainability
    - Special concern about non-safety applications
  - Original equipment, Nomadic (carry-in) devices, software “Apps”

Focus is on “Connected” Applications
Generating the Guidelines

HFCV Guidelines

- Driver-Vehicle Interface (DVI) Integration
- DVI Design Guidance
- Evaluation and Measurement
- Safety Pilot DVI Criteria
- Distraction Mitigation
- Effective Warnings
- Stakeholder Input

U.S. Department of Transportation
Additional HFCV Activities

- Predictive DVI Evaluation Software Tool
- Longer-term Exposure Field Operational Experiment
Predictive DVI Evaluation Tool

- Software tool for designers to be able to estimate distraction potential or workload issues for their DVI and system configurations
  - A new program product that does not feed guidelines directly, but will have future integration
  - Very useful for designers
  - Will likely produce partially validated tool

Distract-R
Longer-term Exposure FOE

- Field Operational Experiment
  - To be awarded this fall
  - Managed by Volpe Center
What role can NDS play in HFCV?

- Address the hard questions not well-suited to simulator or lab experiments:
  - Behavioral Adaptation
  - Willingness to engage
  - **How drivers interact with integrated and portable devices**
    - Assess how drivers interact with HFCV integrated DVIs
Rethinking the Data Needs

- Vehicle kinematics
- Vehicle control measures
- Camera-based direct observation
- GPS, vehicle location, etc.
- Related roadway data
- Cell phone records
- What’s missing?
Driver Interaction Data Source

- Detailed “key stroke” data of driver interactions with DVIs
Contact Information

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