



UNITED STATES
DEPARTMENT OF TRANSPORTATION

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



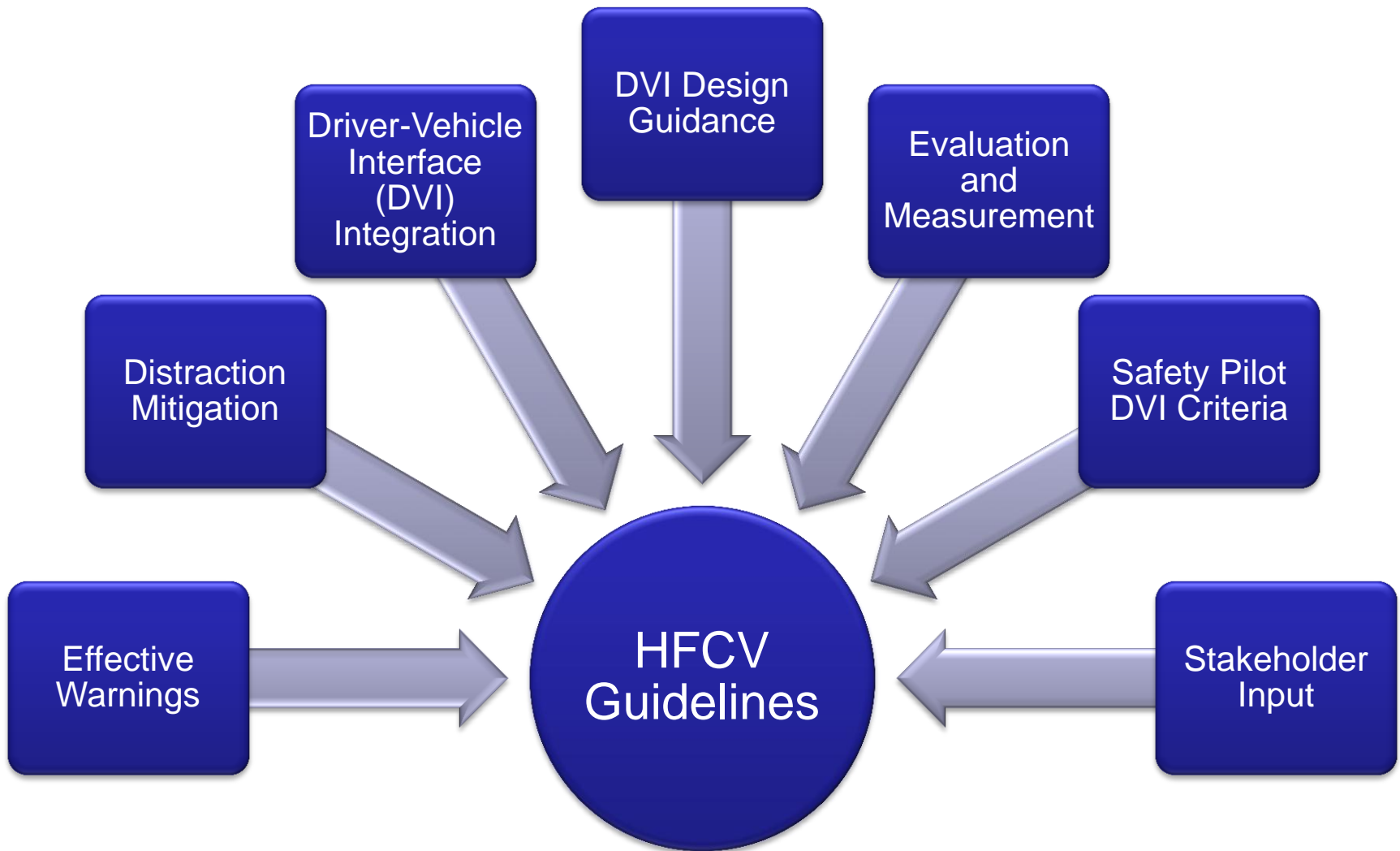
■ Multiple Applications:

- 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



Additional HFCV Activities

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

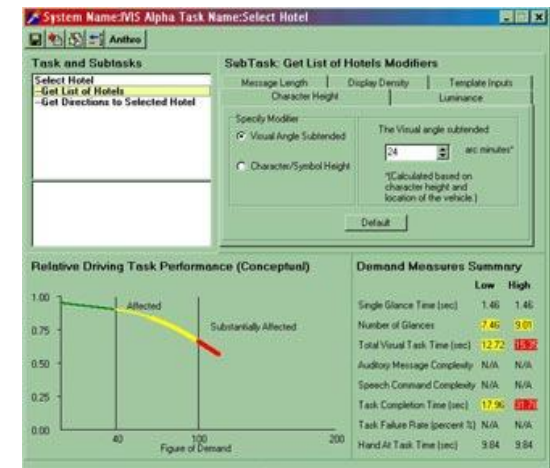


Predictive DVI Evaluation Tool

- 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



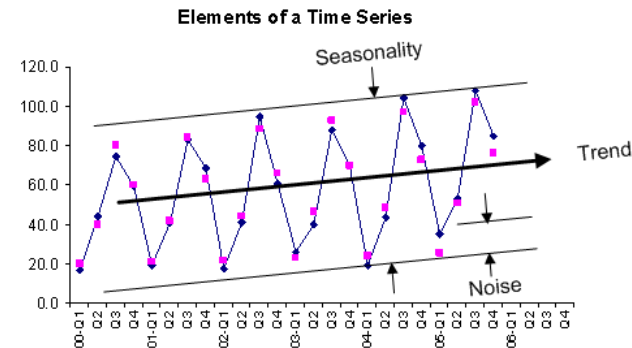
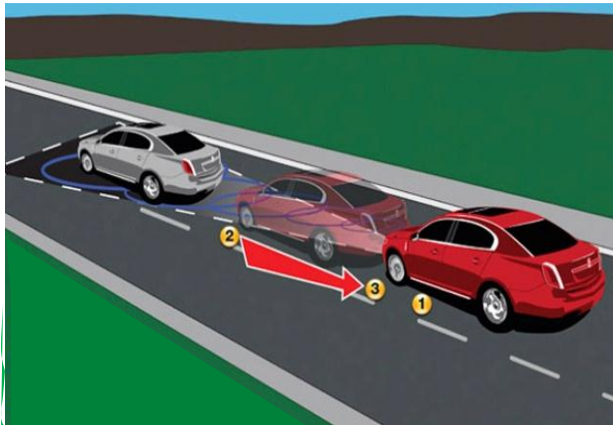
Distract-R



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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