



UNITED STATES
DEPARTMENT OF TRANSPORTATION

Driver Distraction and the U.S. Department of Transportation: A Multimodal Approach

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US Department of Transportation

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Driver Distraction



**Distraction is
a Multi-Modal
Issue!**



NHTSA Distraction Research

- NHTSA Distraction Plan
- Connected Vehicles



NHTSA Distraction Plan

Distraction Plan

Eliminate Crashes Due to Distraction

Initiative 1

Improve the
Understanding
of the Problem



Data Approach

Initiative 2

Reduce
Workload from
Interfaces



Vehicle Approaches

Initiative 3

Keep Drivers
Safe

Initiative 4

Recognize
Risks and
Consequences



Behavioral Approach



NHTSA Distraction Plan

Initiative 1: Improve the Understanding of the Problem

Efforts

- 1 Initiate improved police reporting
- 2 Analyze additional crash data
- 3 Continue observational studies
- 4 Publish observational protocol
- 5 Plan analyses for SHRP 2
- 6 Assess use of new technology
- 7 Assess cell phone interfaces
- 8 Evaluate manual entry tasks

- Improved data quality through standardized reporting
- Improved training
- Improved counter-measure identification
- Continued tracking of use
- Improved protocols and data collection techniques
- Provide guidance to outside entities on data collection methods
- Increased understanding of rate/effect/sources of distracted driving
- Information on driver use patterns to identify (dis)benefits
- New data collection methods
- Estimates of exposure, risk of using each interface type
- Estimates of distraction potential of different tasks

Outcomes



NHTSA Distraction Plan

Initiative 2: Reduce Workload From Interfaces

Efforts

1

Review
current
guidelines

2

Develop
distraction and
usability metrics

3

Integrate
findings of previous
tasks to develop
guidelines

- Assess use of current guidelines
- Identify enhancements

- Develop test procedures to evaluate in-vehicle and nomadic interfaces

- Develop voluntary guidelines

Outcomes



Technology Explosion

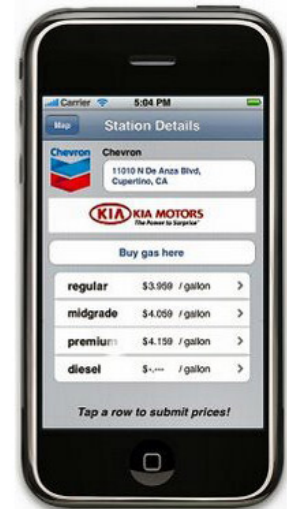
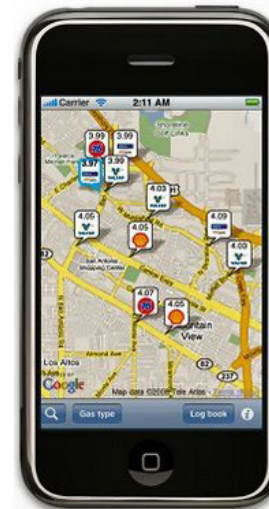
“The car is an expensive phone”



“We’re working hard to make the Audi DT, the ultimate mobile device”



“The company that can accommodate as many different mobile devices as possible, and integrate them in the car -- they're the guys who are going to win long term”



NHTSA Distraction Guidelines

- Distraction Guidelines (voluntary)
 - Phase 1: In-vehicle **visual-manual interfaces**
 - Refines current Industry Guidelines
 - Completion: 2011
 - Phase 2: **Portable devices**
 - New – no current guidelines
 - Completion: 2013
 - Phase 3: **Voice interfaces**
 - New – no current guidelines
 - Completion: 2014



NHTSA Distraction Plan

Initiative 3: Keep Distracted Driver Safe

Efforts

- 1 Improve crash warning interfaces
- 2 Quantify benefits of crash warning systems
- 3 Assess distraction monitoring systems
- 4 Assess effectiveness (technical and behavioral) of cell phone blockers

• Estimate effectiveness and acceptability of different HMIs

• Estimate crash reduction benefits, long term effects of crash warning technologies

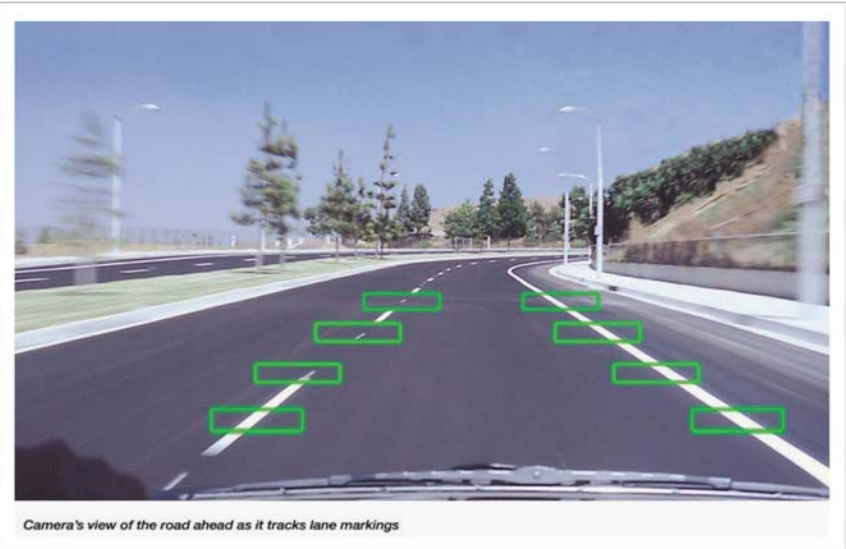
• Develop a set of testing protocols to evaluate/compare systems

• Estimate effectiveness of these systems

Outcomes



Keep Distracted Drivers Safe



NHTSA Distraction Plan

Initiative 4: Recognize Risks and Consequences

Efforts

1

Evaluate laws and high-visibility enforcement

2

Develop targeted media messages

3

Draft and publish model law for use by states

4

Publish guidance for Federal ban

5

Assess potential of education and training programs

6

Develop program resource through World Health Org.

• Determine effectiveness of laws, high-visibility enforcement

• Assess the effectiveness of media campaigns on enforcement

• Provide guidance to States

• Develop employee information program to increase compliance

• Evaluate ways to modify or reduce behaviors

• International leadership and outreach on driver distraction

Outcomes



NHTSA Distraction Plan

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Behavioral Approach

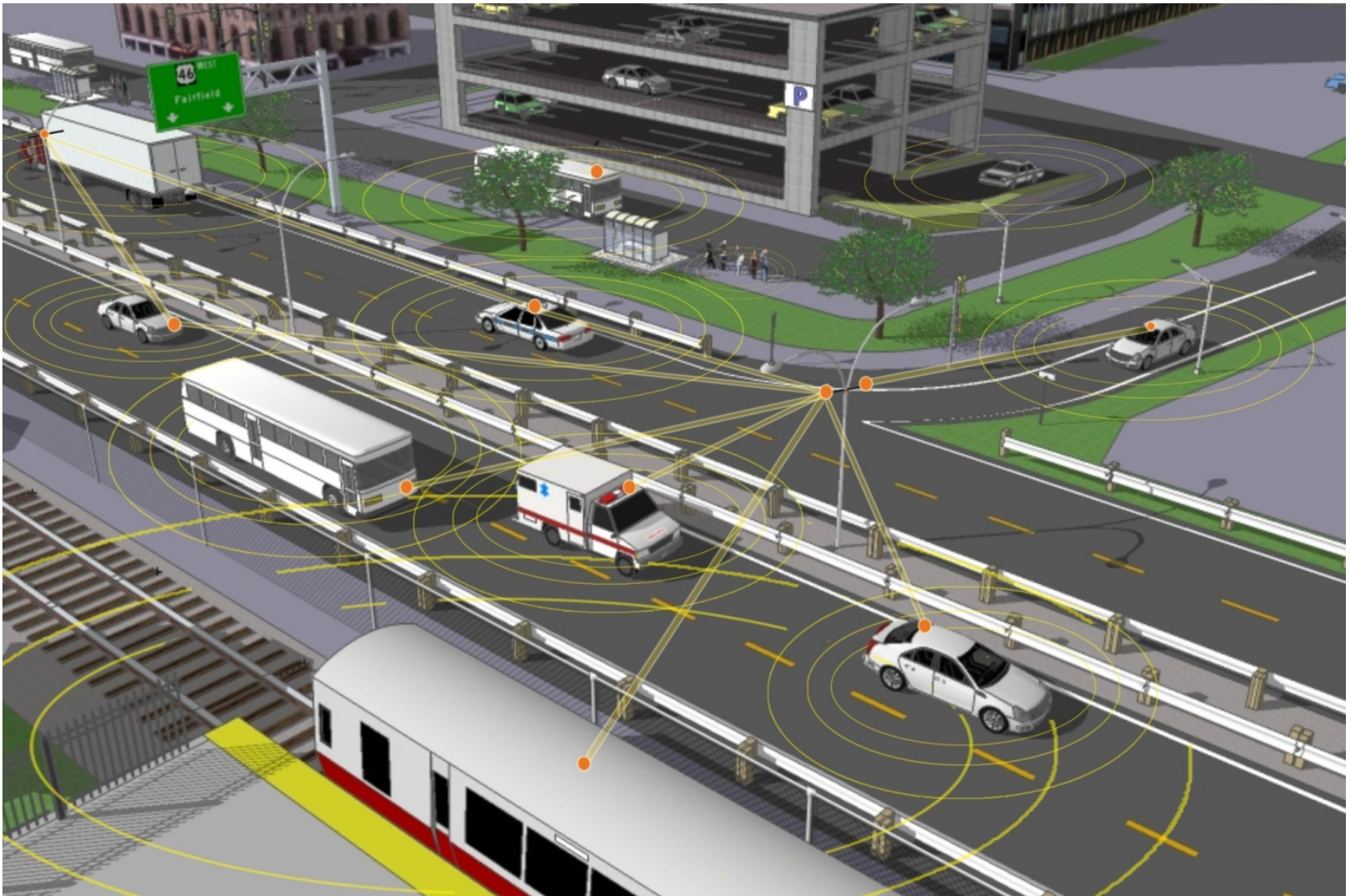


NHTSA Driver Distraction Plan

- For more information:
- [http://www.nhtsa.gov/Research/Human+Fact
ors/Distractiion](http://www.nhtsa.gov/Research/Human+Factors/Distractiion)
 - Report No. DOT-HS-811-299
 - (Several NHTSA driver distraction-related papers as well)
- <http://www.distraction.gov>



The Connected Vehicle

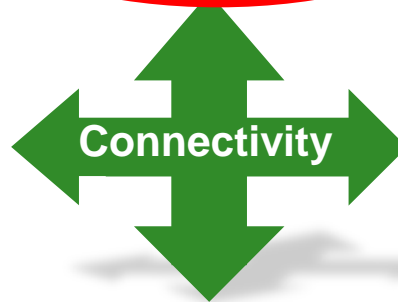


The Connected Vehicle

Vehicles and Fleets



Drivers/Operators



Wireless Devices



Infrastructure



Human Factors for Connected Vehicles

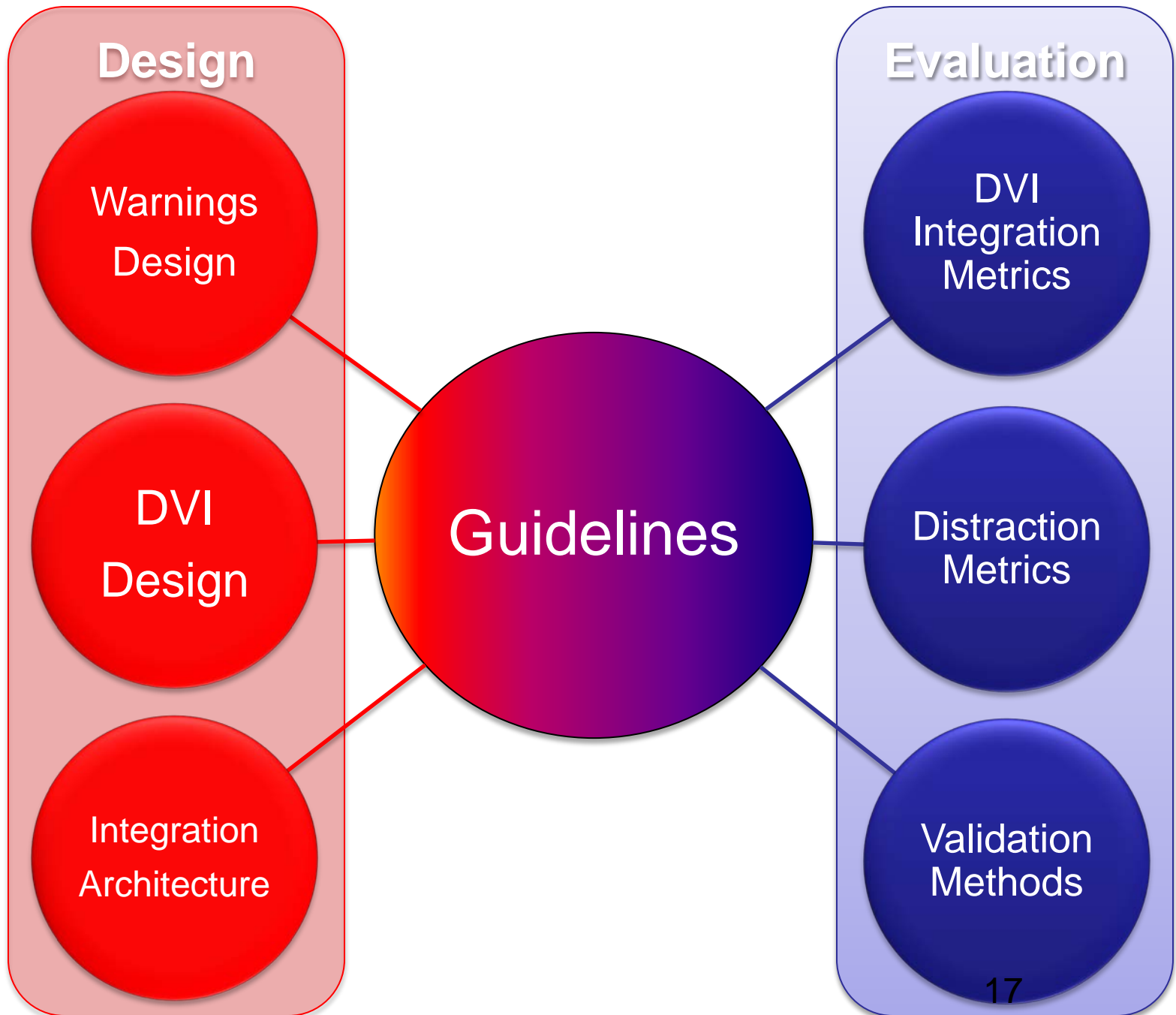
■ Outcome Goal

- Connected Vehicle technologies and applications will have Driver Vehicle Interfaces (DVI) that effectively communicate safety information while managing workload and minimizing distraction

■ Product Goal

- Human Factors Guidelines to ensure interfaces are effective without increasing distraction or creating high workload





Program Scope

■ Multiple User Groups:

- Light vehicles
- Commercial Vehicles
- Transit operators
- Age groups: Older and Younger drivers



■ Multiple Applications:

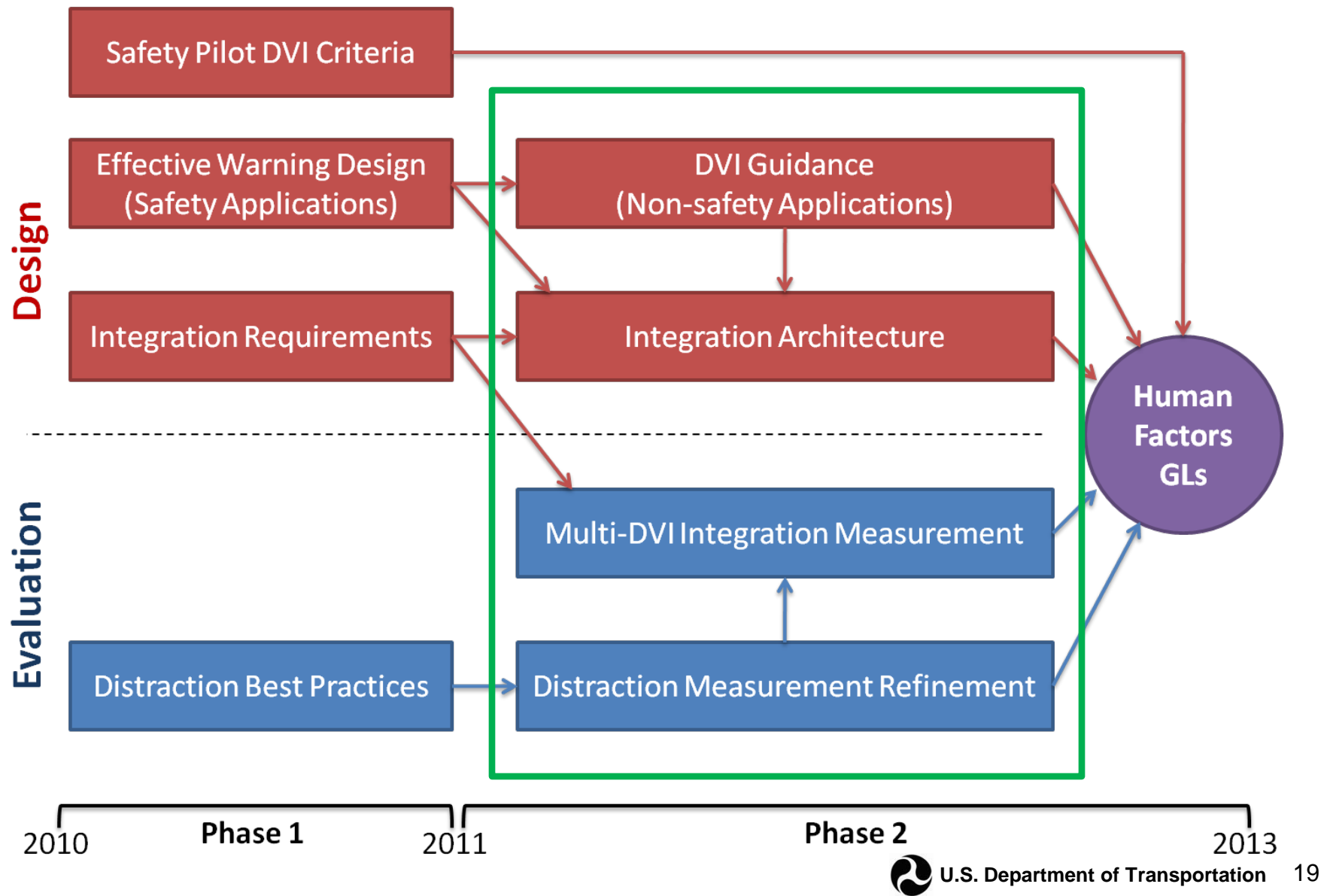
- V2V and V2I
- Safety, Mobility, Sustainability
 - Special concern about **non-safety** applications
- Original equipment, Nomadic (carry-in) devices, software “Apps”



Focus is on “Connected” Applications

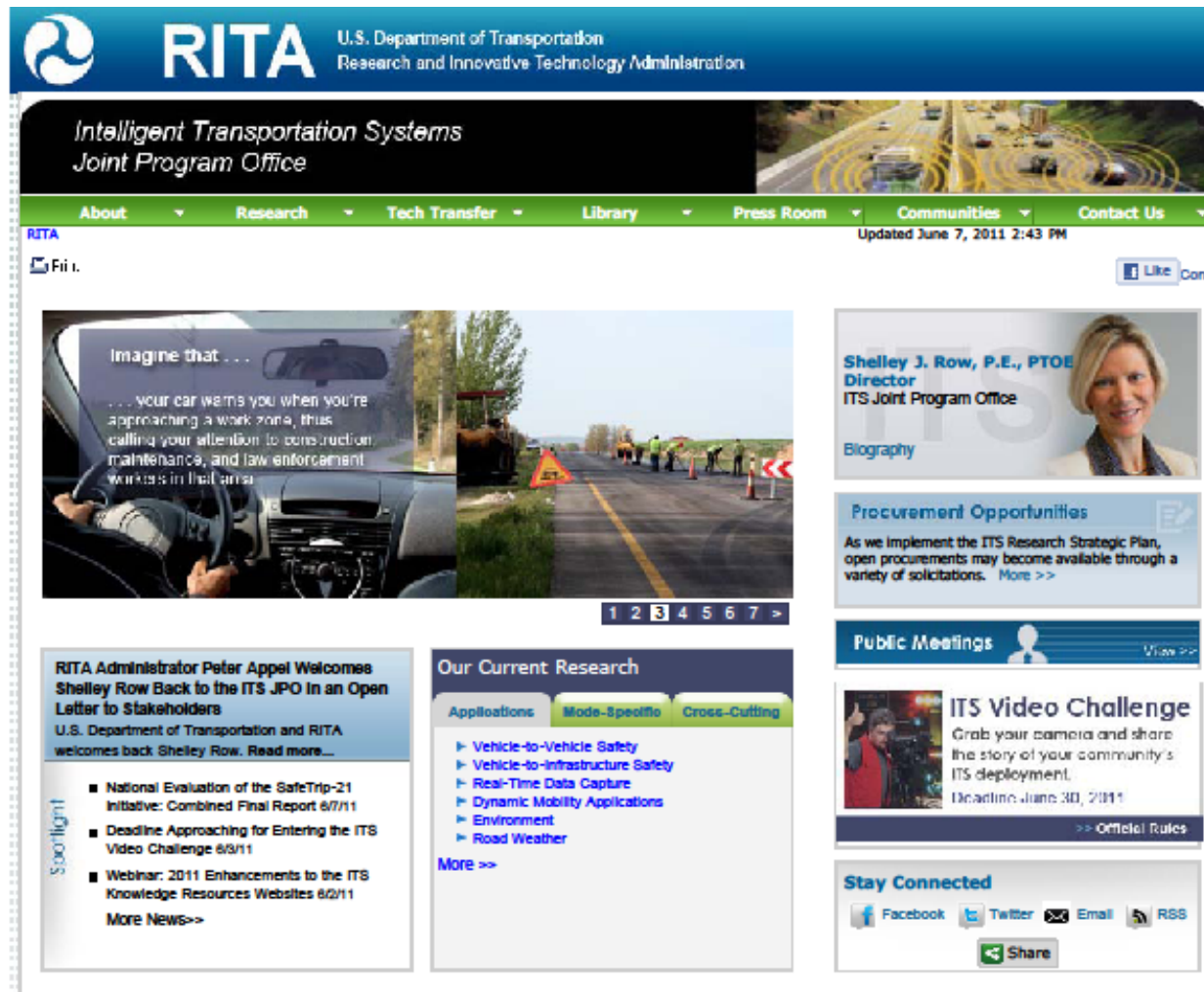


Path to the Guidelines:



For More Information about CV

www.its.dot.gov



The screenshot shows the homepage of the RITA ITS Joint Program Office website. The header features the RITA logo and the text "U.S. Department of Transportation Research and Innovative Technology Administration". Below this is a navigation bar with links: About, Research, Tech Transfer, Library, Press Room, Communities, and Contact Us. The main content area is divided into several sections. On the left, there is a "Spotlight" section titled "RITA Administrator Peter Appel Welcomes Shelley Row Back to the ITS JPO in an Open Letter to Stakeholders". In the center, there is a large image of a car's interior with a text overlay that reads "Imagine that . . . your car warns you when you're approaching a work zone, thus calling your attention to construction, maintenance, and law enforcement works in that area." To the right of this image is a photo of a road construction site. Below the image is a pagination bar with numbers 1 through 7. On the right side of the page, there is a "Public Meetings" section with a "View >>" link. Below that is an "ITS Video Challenge" section with a "View >>" link. At the bottom right, there is a "Stay Connected" section with links to Facebook, Twitter, Email, RSS, and a "Share" button.

RITA U.S. Department of Transportation
Research and Innovative Technology Administration

*Intelligent Transportation Systems
Joint Program Office*

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Updated June 7, 2011 2:43 PM

Imagine that . . .
... your car warns you when you're approaching a work zone, thus calling your attention to construction, maintenance, and law enforcement works in that area.

1 2 3 4 5 6 7 >

RITA Administrator Peter Appel Welcomes Shelley Row Back to the ITS JPO in an Open Letter to Stakeholders
U.S. Department of Transportation and RITA welcomes back Shelley Row. [Read more...](#)

Our Current Research
Applications Mode-Specific Cross-Cutting

- Vehicle-to-Vehicle Safety
- Vehicle-to-Infrastructure Safety
- Real-Time Data Capture
- Dynamic Mobility Applications
- Environment
- Road Weather

[More >>](#)

Shelley J. Row, P.E., PTOE
Director
ITS Joint Program Office

[Biography](#)

Procurement Opportunities
As we implement the ITS Research Strategic Plan, open procurements may become available through a variety of solicitations. [More >>](#)

Public Meetings [View >>](#)

ITS Video Challenge
Grab your camera and share the story of your community's ITS deployment.
Deadline June 30, 2011
[>> Official Rules](#)

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FHWA Distraction Research

- Commercial Electronic Variable Message Sign (CEVMS) Study
- Distractions within the Right of Way



CEVMS Study Objectives

- Do drivers look at Commercial Electronic Variable Message Signs (CEVMS) more than at standard billboards?
- Are there long glances to CEVMS that would be indicative of a decrease in safety?
- Do drivers look at CEVMS and standard billboards at the expense of looking at the road ahead?



Distraction in the Right of Way

- Goal is to develop a scientific basis for decisions about types of information that can be safely displayed within the Right of Way (with a focus on graphically enabled CMSs), without adversely distracting drivers
- Types of information could include road signs, animated road signs, advertisements, etc.



Study Overview

- Expert panel to discuss distraction and information display issues in the Right of Way
- Behavioral Studies:
 - Test in simulated and on-road driving environments



Related Research Activities

- Use of Signage in the Right-of-Way
 - Determine the conspicuity of different messages (warning, regulatory signs, etc.) as a function of type of sign and the environment in which the signs are located.
- Driver Expectations in Complex Interchanges
 - Understanding of driver expectations of complex interchanges and how those expectations can be used to create better signs.



FMCSA Distraction Research

- 2009 Virginia Tech Study
- Recent Crash trends involving trucks and distraction



F M C S A
Federal Motor Carrier Safety Administration

FMCSA Distraction Research

- 2009 Virginia Tech Study
 - Dialing a cell phone increased crash or near-crash risk 5.9 times
 - Use of, or reach for, an electronic device increased crash or near-crash risk 6.7 times
 - Text messaging increased crash or near-crash risk **23 times**





Inattention/Distraction Crash Trends

- New electronic devices (laptops, cell phones, GPS systems) promote truck driver distraction/inattention that was not a problem in the past
- Driver inattention was coded as the fourth highest FARS driver crash factor in 1994-97
- Inattention now coded in FARS 2009 as third highest driver crash factors for large trucks and fourth highest driver factor for passenger vehicles



Summary

- Distraction is a high-priority topic for the US Department of Transportation
 - NHTSA's Distraction plan is comprehensive, and focuses on distractions inside the vehicle
 - FHWA's interest is in preventing external distractions where possible
 - FMCSA's focus is on preventing distraction for truck operators
 - RITA held Distraction Summits in 2009 and 2010



Thank You!

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