



# IntelliDrive<sup>SM</sup>

## Vehicle to Infrastructure Connectivity for Safety Applications

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# Safer Driving in the V2I Environment

- Greater situational awareness
  - Your vehicle can “see” nearby vehicles and knows roadway conditions you can’t see
- Reduce or even eliminate crashes thru:
  - Driver Advisories
  - Driver Warnings
- Focus is DSRC 5.9 GHz and crash prevention
- Communication can be *to or from* vehicle, infrastructure, and/or nomadic/aftermarket devices
- All vehicle types and pedestrians will be considered



**Instrumented  
Roadside**



**Signal Phase  
and Timing**



**Aftermarket  
or Retrofit  
Devices**



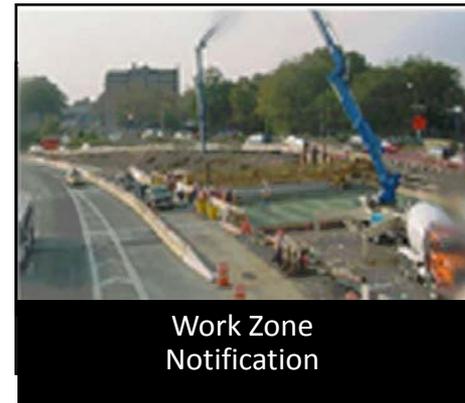
**Equipped  
Vehicles**

# Infrastructure and Safety

- Infrastructure based systems can serve as starting point for IntelliDrive<sup>SM</sup> applications, offering immediate benefits in some cases
- Many infrastructure based ITS technologies are already in use or under development to enhance Safety
  - Variable Speed Limits
  - Adaptive signal timing systems
  - Speed activated curve warning systems
  - Cooperative Intersection Collision Warning Systems (CICAS)

# V2I Safety Focus Areas

- Intersections
- Speed Management
- Run-off road and lane departure
- Enforcement and Operational Safety for Transit and Commercial Vehicles



# V2I Safety Plan

- Track 1 – Applications Analysis
  - Selection of Safety Applications (Sept 2010)
- Track 2 – Prototype Applications
  - Field Operational Test (FOT) Go/No-Go decision (2Q 2012)
- Track 3 – Communications and Mapping
  - Test and evaluate SPaT, issue SPaT Policy Guidance (2Q 2013)
  - Test and evaluate Mapping solutions
  - Test and Evaluate Communication Requirements
- Track 4 – Benefits Assessment
  - Perform FOTs based on selected safety applications (2013-2014)
- Track 5 – Deployment Planning (ongoing)
  - Development of Toolbox for practitioners and Public Agency Guidelines

# Current Activities

- Crash Analysis Study
  - Will help to identify high priority crash types and scenarios
- Roadway Geometry and Inventory Trade Study
  - Assess the current state of practice for mapping technologies both in public and private sectors
- Wireless Roadside Inspection and Smart Park for commercial vehicles
  - Pilot studies underway by FMCSA

# Planned Activities

- Migration Study
  - Identify infrastructure-based ITS safety countermeasures that can benefit from V2I Communication
- Concept of Operations documents
- Footprint Analysis
  - Identify the infrastructure required for deployment
- SPaT Prototype
  - Identify and test interfaces between Traffic Signal Controllers and Mobile Equipment

# Opportunities for Engagement

- IntelliDrive<sup>SM</sup> Industry Workshop planned for the week of July 19<sup>th</sup>, 2010 – open to public
- IntelliDrive<sup>SM</sup> V2I Safety Applications Selection Workshop, September, 2010 – open to public
  - Help US DOT select high priority safety applications and prioritize a list of applications to be pursued
- IntelliDrive<sup>SM</sup> Industry meeting for Signal Controller Industry – October, 2010

# V2I Challenges

Some of the major items:

- Industry adopted standards for national interoperability
- Security for wireless communication to/from infrastructure
- Scalability – how much data can be transferred
- Positioning Solution
  - Need High resolution for absolute positioning – lane level
- Mapping Solution
  - Who will be responsible for map updates as infrastructure changes
- Assessing benefits of FOTs

# Questions?

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