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Interoperable Integration of Automation into the Highway Transportation System

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Agenda

- Panel Introduction
- Introduction to ITS Architecture and Standards
- National Dialogue on Highway Automation & FHWA Automation Initiatives
- Automation Integration Challenges from a Site Deployer Perspective
- Automation Integration Challenges from a Vehicle Industry Perspective
- “Architecture for Automation” Overview/Future Plans
- **Questions/Open Discussion**

US DOT ITS Architecture & Standards (A&S) Programs

- A&S products support safe, secure, efficient and interoperable deployments of ITS technologies:
 - **ITS Reference Architectures** provide frameworks to guide planning and interoperable deployment of ITS and identify candidate interfaces for standardization
 - **ITS Voluntary Technical Standards** define interfaces within architectures to enable desired interoperability and support efficient implementation
- A&S products are **“Essential utilities”** – Necessary but not sufficient to support large-scale deployment
 - Looking forward, **reference implementations** for key services under consideration

Panel Introduction

- Steve Sill, ITS Architecture and Standards Program Manager, ITS Joint Program Office, US DOT [*Moderator*]
- Mark Kopko, Special Advisor - Transformational Technology, Pennsylvania Department of Transportation
- Rob Brown, Director of Public Affairs, TuSimple
- Cliff Heise, Vice President Federal and Research Programs, Iteris, Inc.
- John Corbin, Connected Automated Vehicle Program Manager, FHWA Office of Operations, US DOT



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Focusing the Discussion

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Focusing Our Discussion

- Many well-articulated long-term visions
 - Greatly enhanced safety, mobility and system efficiency
- How to best achieve? Initial steps? Key considerations? Pitfalls?
- Stipulate *for purpose of this discussion*:
 - Automation will perform at least as well as humans
 - Deployments and participation will be voluntary
 - Not essential or required to allow operation of automation on highway system
 - Connectivity/cooperation can offer a benefit

Interoperability Over the Long Term

- The ability of two or more systems or components to exchange information and use the information that has been exchanged
 - IEEE Std. 610.12-1990
- In the automation and connectivity context
 - Interoperability among millions of participants
 - Requires very robust standards, interfaces, security ... and broad consensus
- Consider life cycle benefit-cost of entire system – note diversity
 - More than just absolute performance at a point in time
 - Need to support “orphaned” – but suitable – communications technologies
 - Benefits accrue from broad implementation
- ***Consensus is essential!***
 - Continue and expand successful cooperation to date
 - Information exchanges via developers, standards organizations, outreach, ...

Starting Point for Discussion

- Initial rollout should focus on:
 - Few key information flows
 - Broad availability
 - Benefits accrue at square of penetration in many cases
 - Build support
 - Low risk, low cost
 - Seamless, reliable, consistent interoperability is essential
- Advanced and targeted services can follow
 - Must get the initial rollout “right” first

Top <5 Information Flows?

- Basic Safety Message
- Signal Phase and Timing
- Probe Data
- Operational & Regulatory Information
- What else?



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Thank you!

Questions / Discussion?

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