Cooperative and Automated Driving in the United States

Opportunities and Challenges

Gerald Conover
Managing Director
PRC Associates, USA
representing ITS America
Agenda

- Introduction / Agenda
- The “Big News” from America
- Currently Implemented ITS Solutions
- Cooperative Driving
- Automated Driving
- Political Overview
- Opportunities for Authorities
- Conclusion
- ITS World Congress – Detroit 2014
The Big News from America

- The US federal government plans to require vehicle-to-vehicle communications systems on future cars and light trucks.

- “NHTSA is finalizing its analysis of the data ... . The report will include analysis of technical feasibility, privacy and security, and preliminary estimates on costs and safety benefits.”

- “NHTSA will then begin working on a regulatory proposal that would require V2V devices in new vehicles in a future year.”

- Bottom Line:
  - Regulation targeted for publication by end 2016 CY.
  - Likely applied starting in the 2021 model year (our estimate).
Currently Implemented I.T.S. Solutions

• In Vehicles
  o Navigation
  o Telematics
  o Driver Assistance Systems

• On the Road
  o Adaptive Traffic Signal Control
  o Variable Message Signs
  o Traffic and Roadway Monitoring
  o Electronic Toll Collection
  o Travel Demand Management

  o Coming Next
    o Cooperative Driving (2021 MY)
    o Automated Driving (in degrees, 2025-2035)
Cooperative Driving
Safety Pilot Model Deployment
Infrastructure Communications

20th ITS WORLD CONGRESS
TOKYO 2013

THE FUTURE NETWORKED CAR
V2I Mobility Applications

• Lane-specific traffic flow prediction; dynamic traffic signal timing
• Inform the visually impaired when to cross
• Manage public transit; transit signal priority
• Travel information for commercial vehicle operators
• Integrated transit operations; passenger connections; dispatching; dynamic ride sharing.
Issues with Cooperative Driving

• Will drivers accept intervention?
• Will insurance companies and trial lawyers accept or attack these systems?
• How will these systems work in mixed traffic, where a lot of vehicles are not equipped?
• Are the data secure? Susceptible to hacking?
• How long will it take to get more than half of the car parc?
Automated Driving
Pre-Conditions for Automation

• High levels of situational awareness
• The ability to crunch a lot of numbers very quickly
• High-speed, highly accurate actuators
• Data reliability and security
Automated Driving

THE FUTURE NETWORKED CAR

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How Long Will It Take?

Self-driving car evolution

- **L5: Self-driving Only**
  - **Self-Driving Car Only**
- **L4: Full Self-driving**
  - **Self-Driving & Human-Driven Car**
- **L3: Limited Self-driving**
  - Auto Pilot: Road Train
  - Auto Pilot: Parking
  - Auto Pilot: Highway
  - Auto Pilot: Traffic Jam
- **L2: Partial Autonomy**
  - Park Assist
  - ACC & LKA
- **L1**
  - Autonomous Braking: Many Systems
  - Adaptive Cruise Control

Source: IHS
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The Future Networked Car

PRC Associates
Political Situation

• 3,700 road agencies in the United States – state, county, city, village

• The federal Highway Manual provides guidelines

• Specifications are varied and fragmented

• We must sell one agency at a time.
Map of Counties in the United States
Political Situation

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Opportunities for Authorities

• Embrace new technology

• Recognize that ITS solutions save money in the long run

• Consider group purchasing or at least standardized specifications

• Set performance specifications rather than commodity directives
Conclusion

• America is on the cusp of a mobility revolution

• Could “Vision Zero” be a possibility?

• Could road traffic become more environmentally friendly?

• Could the roadways become a real network?
2014 World Congress Update

- Program Status and Keynotes
- Special Events
- Sponsors
- Exhibition Status
- Technology Showcase & Tours
- Invitation

#ITSWC14

Reinventing Transportation in our Connected World
Sept. 7-11, 2014 | Detroit, Michigan | www.itsworldcongress.org
Program Sessions

- CTO Summit (5 sessions)
- Plenary Sessions (3)
- Executive Sessions (12)
- Town Halls (2)
- Special Interest Sessions
- Technical and Scientific Sessions
- Interactive Sessions

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Keynotes

- Opening Ceremony—GM CEO
- High Level Policy Roundtable—HNTB and AASHTO CEOs
- Monday Plenary—Ford Chairman
- CTO Summit—Delphi CEO
- Wednesday Plenary—Verizon CEO
- Thursday US DOT Plenary—US DOT Secretary
- Thursday Closing Ceremony – A Surprise

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Special Events

- Opening Ceremony & Reception (Sunday)
- Special Awards (throughout the World Congress)
- Exhibit Hall Ribbon Cutting (Monday)
- Exhibit Hall Networking Receptions (Monday)
- Youth Connections Activities (throughout the World Congress)
- Emergency Responder Day (Tuesday)
- Public Day (Tuesday)
- Taste of Michigan Showcase Event (Tuesday)
- World Congress Gala (Wednesday)
- Closing Ceremony (Thursday)

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Special Event Venues

Cobo Center Grand Ballroom

Cobo Center Atrium

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Sept. 7-11, 2014 | Detroit, Michigan | www.itsworldcongress.org
Exhibition Hall

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Sept. 7-11, 2014 | Detroit, Michigan | www.itsworldcongress.org
Technology Showcase

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Reinventing Transportation in our Connected World
7-11 September 2014

Please Come to Detroit
Cooperative and Automated Driving in the United States

Thank you for your attention

Gerald Conover
Managing Director
PRC Associates, USA
representing ITS America
gconover@iname.com