Smart Mobility and Smart Cities at a Crossroad

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carnaas.org
PRESENTATION OUTLINE:

1. CAR OVERVIEW
2. SMART MOBILITY AND SMART CITIES
3. PNT AND SMART CITIES
4. MOBILITY AND CITIES POST COVID-19
5. EX-URBAN (THE NEW CITY)
6. WRAP-UP
CAR Capabilities: Mission, Research, Programs, & Events
MISSION:

To conduct independent research and analysis to educate, inform and advise stakeholders, policymakers, and the general public on critical issues facing the automotive industry, and the industry’s impact on the U.S. economy and society.
The Center for Automotive Research conducts leading-edge research that impacts the future of the global automotive industry by informing corporate leaders and policymakers and facilitating communication across the industry.
PROGRAMS

CAR fosters communication and support to promote the auto industry and the issues it faces today by bringing together communities automakers, suppliers, technology companies. This unique coalition of industry organizations meets regularly to identify opportunities and provide solutions to help meet the challenges presented to the automotive industry.
CAR Events are designed to disseminate key research, update stakeholders on critical industry issues, and foster discussions among industry thought leaders to share their insights and solutions to meeting the challenges of an ever-evolving global automotive industry.
How can we help?

Ask Us
Leverage CAR staff as your resource for data, insights, content, context, strategic planning, and more... Just Ask

Research & Content
CAR economic forecasts, data and presentation support, private access to exclusive content for planning and analysis

Speaking Engagements
Public and private speaking engagements, strategic planning sessions, board, or finance meetings

Collaboration
Engage with CAR and network with industry stakeholders through collaborative working groups & events
Smart Mobility Technologies and Applications

Connected and Automated ITS
- Automated Transit
- Infrastructure-enabled Self-driving Cars

Connected ITS (C-ITS)
- Automated Tolling
- Probe Vehicle Data for System Administration
- Emergency Vehicle Signal Preemption
- Transit Vehicle Signal Priority
- Automated Incident Reporting (Auto 911, eCall)
- V2V/V2X-enabled Warnings and Messages (DSRC)

Connected Only
- GPS Navigation
- Cellular Connectivity (IoT)
- Smartphone Linking (Bluetooth, Wi-Fi, etc.)
- Infotainment
- Telematics

Automated ITS
- Personal Rapid Transit
- Automation-enabling Infrastructure (Standardized Signage, Lane Markings, Digital Maps, etc.)

ITS Only
- Remote Traffic Monitoring
- Roadside Weather Stations
- Adaptive Signal Control
- Incident Detection and Response
- Dynamic Message Signs
- Reconfigurable Lanes
- Demand-responsive Tolling

Connected and Automated
- Cooperative Automation (Platooning) without Public Infrastructure
- Automated Driving Systems (ADS) (Autonomous Vehicles)

Automation + ITS
- Active Safety Systems (ABS, ESC, AEB)
- Automated Parking
- Adaptive Cruise Control
- Traffic Jam Assist
- Lane-keeping

Automation Only
- Automated Transit
- Infrastructure-enabled Self-driving Cars

Connected Only
- GPS Navigation
- Cellular Connectivity (IoT)
- Smartphone Linking (Bluetooth, Wi-Fi, etc.)
- Infotainment
- Telematics
Private Vehicles Can Only Scale So Much
Many cities are reducing reliance on personal vehicles

- Quality public transit
- Multimodal integration
- Infrastructure for TNCs (Lyft/Uber) and other mobility services
- Public/private partnerships
- Micromobility and pedestrian infrastructure
- Regulations, policy, incentives
- *Open streets for social distancing*
Solutions Will Vary with Local Context

- Urban, Rural, Suburban
- Demographics
- Climate
- Culture
- *COVID-19 Threat*
Position, Navigation, and Timing in an Autonomous Future
• V2V & V2I Communication
• Autonomous Navigation & Collision Avoidance
• Location Based Services
• Smart & Resilient Infrastructure

PNT Applications in Smart Cities
Opportunities for PNT in Smart Cities

- New and Improved Infrastructure
- Decreased Carbon Footprint
- Ensured Safety by Location
- Infrastructure Monitoring
COVID-19 Global Pandemic

- Global social and economic interruption
- SARS-CoV-2 virus spread by aerosol and surfaces
- People may be asymptomatic but contagious
- Accelerated adoption of home delivery
- Substantial adoption of telework... will it stick?
- Escaping urban environments – rise of suburbia/ex-urban
- We are in a time of extreme uncertainty.
Cities Post COVID

- During COVID-19 some cities closed some of their streets completely or partially (slow street) to through traffic to allow social distancing.
- Post COVID, some cities planning to keep streets closed.
- Would this idea remain in place in the following months and years?
- How will this impact communication strategy? Is 5G still OK with multi-modality?
WHAT ABOUT EX-URBAN AND RURAL?

1. No DSRC
2. No 4G, 4G LTE, 5G
3. Only Satellite GNSS
THANK YOU

CENTER FOR AUTOMOTIVE RESEARCH