

Summer 2017 Update

1. Federal Action
2. Notable Activities in Other States
3. Observations from Summer Conferences

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US DOT: Good News / Bad News

Good News

- Federally funded research and pilot projects continue
 - CV Pilots, Columbus Smart City, AV Research
- Possible regulation for V2V hasn't been pulled
 - However, it also still isn't finalized

Bad News

- Still no US DOT Modal Administrators
 - Biggest impact to CAV = lack of NHTSA leader
- Recently created AV Federal Advisory panel hasn't met under new Administration
 - Perception that govt isn't engaged



NHTSA Federal Automated Vehicles Policy

- Released September 20, 2016
- Comment Period closed November 22, 2016
- Two public workshops held
- Released Policy FAQs/Clarifications, January 2017
- As noted by Secretary Chao, new guidance coming in next few months that will:
 - *Support industry innovation and encouraging open communication with the public and with stakeholders;*
 - *Make Department processes more nimble to help match the pace of private sector innovation; and*
 - *Encourage new entrants and ideas that deliver safer vehicles.*



Status of Federal Legislation

- US House Energy & Commerce Committee approved HR 3388 – Safely Ensuring Lives Future Deployment and Research in Vehicle Evolution Act or the “SELF DRIVE Act.”
- HR 3388 still has to make it to the House floor for a full vote (sometime after recess this Sept), and then be reconciled with whatever the Senate puts forth on its own (that hasn’t occurred yet).
- Note that the Senate process will take time for the bill to start in committee, go through edits, make it to the full Senate floor, and THEN be reconciled with the House version.
- It’s still too early to predict specific impacts to state & local agencies, although most agree that states would still maintain traditional responsibilities such as licensing, registration, insurance and law enforcement.

Federal Update: Conclusions?

- Hurry Up and Wait
- US DOT won't move quickly or predictably
- US Congress won't move quickly or predictably
- Be prepared to analyze and react to moves as they happen
- Continued dialogue through working groups like this is critical during times of uncertainty



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State & Local Activities



- As recently as 2014 a majority of transportation agencies were in “wait and see” posture
- Today a majority of agencies are moving full speed with planning exercises, pilot projects, policy development, and engagement with private partners.
- Wide variety of capability/maturity exists
- Wide variety of definitions for “success”

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State and Local Pilot Activities

- Minnesota DOT recently advertised and selected a contractor to install DSRC roadside units and broadcast SPaT messages in the metropolitan Twin Cities area
 - *National SPaT Challenge, exploring signal priority for snow plows*
- Florida DOT has also recently advertised and executed several contracts for deployment of DSRC and broadcasting of SPaT messages, plus freeway DSRC implementation along I-75 in central Florida
 - *National SPaT Challenge, truck platooning pilots, transit signal priority*
- Rhode Island DOT put out an RFI earlier this summer seeking companies interested in testing and advancing CAV in their state
 - *A “CAV Expo” is planned for September 14-15 by RIDOT*



Closer to Home

- Pennsylvania DOT also has a multi-disciplinary working group, is working with Carnegie Mellon on pilots, and is developing a plan
 - *Pennsylvania Automated Vehicle Summit Sept 11-12 in State College*
- Virginia DOT is finishing a statewide CAV strategic plan, and considering more DSRC along US 50/I-66 corridor
 - *Governor McAuliffe has publicly proclaimed that the technology will “make us safer” in recent speeches*
- Massachusetts DOT also has a multi-agency working group and also recently completed a formal process for testing AV in the commonwealth
 - *Tech entrepreneur nuTonomy is based in Cambridge, MA, and will be doing a large-scale pilot test for autonomous taxi service in South Boston*



Connected Vehicle Pilots & AV Proving Grounds

- US DOT Connected Vehicle Pilots
 - *Tampa has progressed to the deployment testing stage, and recruitment of volunteers to install DSRC or test applications*
 - *Wyoming is also at the deployment testing stage, and are working out the details of their weather applications in advance of the coming winter season*
 - *New York City has encountered a number of deployment challenges (technological and institutional), but are progressing forward*
- Columbus Smart City
 - *The team is working through numerous Concepts of Operations and federal system engineering requirements. Deployment is expected to begin in 2018*
- January 2017 – US DOT announces 10 sites will be official AV Proving Grounds
 - *Existing programs like GoMentum Station (California) and American Center for Mobility (Michigan) have made considerable progress, while others are in various stages of start-up or limited testing.*



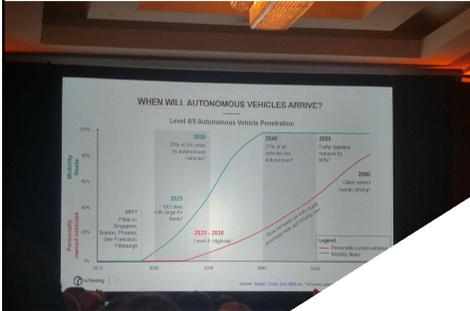
Demonstrating... Low Speed Shuttles

Low-speed autonomous shuttle demonstrations similar to the Ollie that was piloted in Maryland's own National Harbor

Companies like EasyMile, Navya, Local Motors, and more are exploring pilots

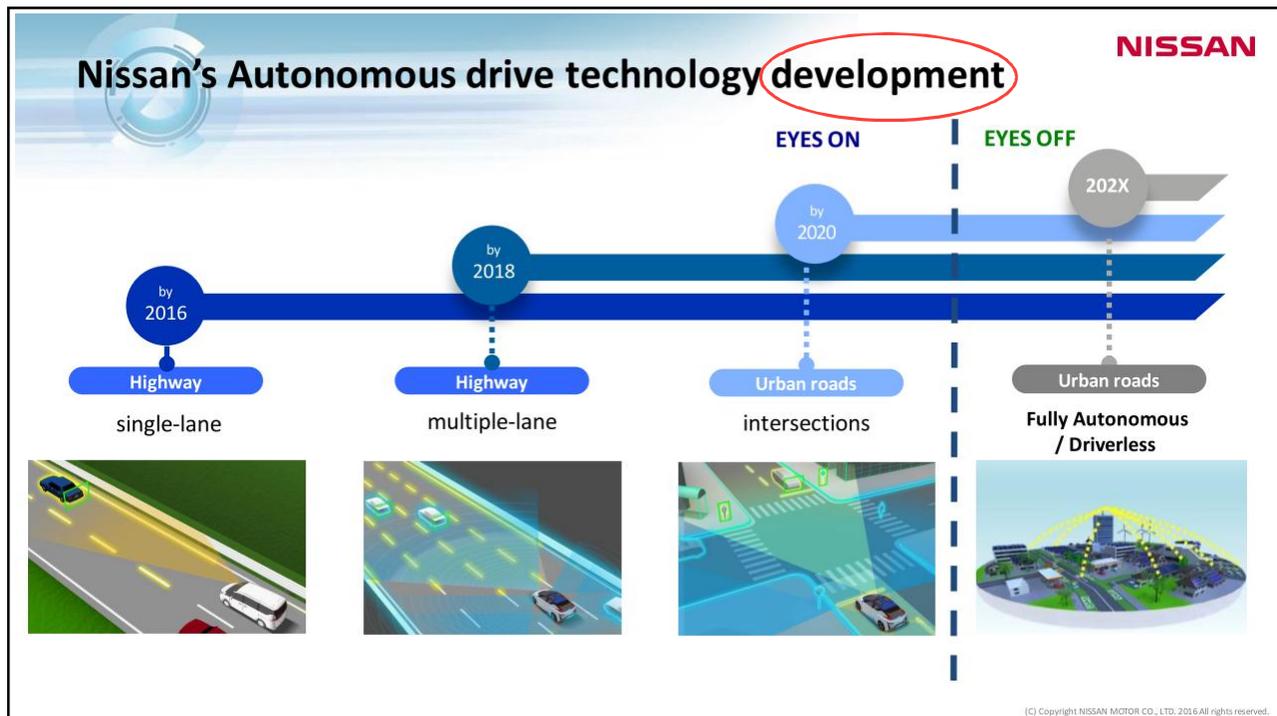
Transit operators and local agencies are excited about the opportunity to demonstrate solutions for first/last mile, parking connections, campus settings, etc

Observations from the Summer Conference Circuit



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- The hype continues, but tempered with some reality
- “It’s almost here” now balanced with a little bit of “still plenty of work left to do”
- Realization that we’re struggling to define ourselves within the industry and the negative impacts that will have with consumers
- Note: aggressive timelines still being proposed, but some being defined more precisely

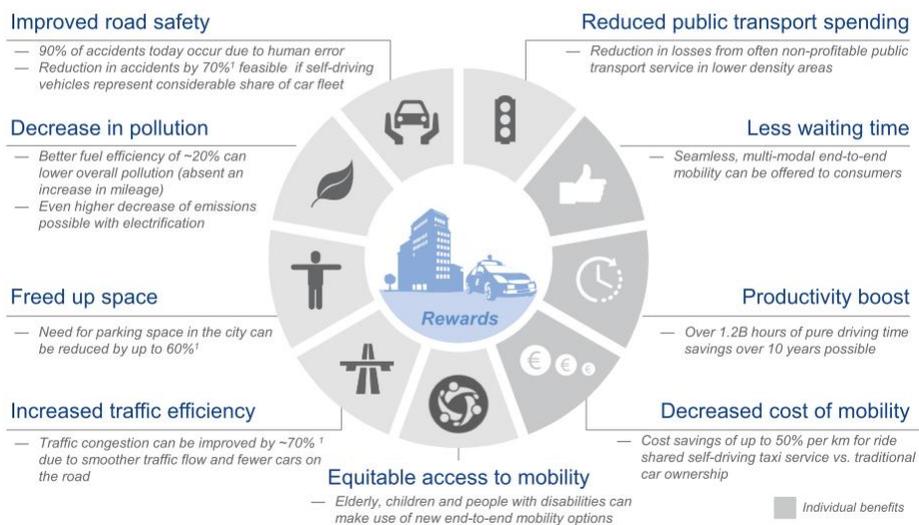


Defining the Benefits isn't Easy...

- The summer conference circuit included plenty of conversations about scenarios, modeling, and simulation.
- **Key Challenge: uncertainty and interrelationships**
 - vehicle ownership models (car sharing vs personal vehicle ownership vs mobility fleets)
 - vehicle propulsion models (electrification vs internal combustion vs hybrid)
 - automated connectivity (autonomous vs connected vs automated)
 - vehicle types (high speed vs low speed, truck vs car)
- Modeling often involves a small slice of the system – a managed lane corridor or a specific set of intersections – but CAV has the potential to impact all components of the system quite broadly, and you can't simply model one segment or element and get results that are actionable.
- The number of variables/assumptions is quite broad, which dampens the certainty of possible outcomes.



Are We Overselling The Impact/Benefits?



1. After 10 years; Note: Potential rewards calculated for a model city of ~5M inhabitants; Source: International Organisation for Road Accident Prevention, European Parking Association, UCS, World Economic Forum; BCG analysis

Policy, Regulation, and.....Patience!

- The most common regulatory themes were patience and flexibility. Don't rush into anything that is overly detailed and restrictive, because in the time it takes for legislation and policy to be enacted the needs and solutions could evolve multiple times.

“It is really, really, really hard regulating uncertainty.”

*- Alicia Fowler, Deputy Secretary and General Counsel,
California State Transportation Agency*



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Advice from Legislators

Florida Senator Jeff Brandes, Chair, Appropriations Subcommittee on Transportation	“Maximize options, consider adaptable language, include CAV in future transportation planning, and most importantly be prepared to scrap it all and either start over or make significant changes on a regular basis.” He noted that the first legislation he passed in 2012 was completely gutted in 2014, and then the new language was further modified in 2016.
California CA State Assembly member Susan Bonilla (retired), CA Director of Council for a Strong America	“We created a Tech Caucus to have dialogue and education. Relationships between the legislature and administration are critical, a personal connection can sometimes mean the difference between bad legislation and good policy.” She also had a great suggestion to avoid “irrelevant legislation” by including sunset language. She called it “great for a fast moving AV environment.”
Tennessee Senator Jon Lundberg, Vice Chair, Government Operations Committee	“Education for lawmakers is critical, they need to understand what’s happening in the industry and whether or not there are legislative barriers that need to be removed. If it’s not needed, don’t do it.” He suggests 3 year sunset rules in most AV-related legislation.
Colorado Representative Jeff Bridges, Colorado General Assembly	“Trust good people to make good decisions – assuming the legislature has accepted the administration’s leadership, don’t be overly prescriptive. Give them a framework to operate in, some wiggle room to adapt to changing times. And be prepared to go back and tweak it regularly.”

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Accept the Inevitable

- A graduated approach occasionally helps avoid the problem of the over-prescribing policy and regulation.

“When faced with great uncertainty, it is almost impossible to get it right the first time.”

- Dr. Nidhi Kalra, Senior Information Scientist,
Rand Corporation



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Telling the Story

- What we're attempting to do isn't simple!
 - The infrastructure owner-operators take 5-7 years from planning/design to ribbon cutting for a new facility that is designed to last 50-75 years.
 - Automakers take 3-5 years from planning/design to production for new vehicles that last an average of 11-12 years.
 - The technology sector can take as little as 8-10 months for a new product that is expected to be obsolete in less than 2 years.
- Assuming you can craft the perfect policy or legislation that is acceptable in all three spheres is next to impossible.

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Promoting Action is Encouraging

- There remains plenty of encouragement from many experts that pilot projects are a key element of the future. Not just to prove-out engineering hypotheses, but to demonstrate to the public that this isn't science fiction fantasy (stimulate the market).

“We need to show the public that this technology doesn't bite, let them touch and experience, similar to a petting zoo.”

- Dr. Karl Iagnemma, CEO, nuTonomy

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Don't Let The Unknowns And Complexities Paralyze Us!



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