Washington State Transportation Commission
October 17, 2017

Bruce Agnew, Cascadia Center
Scott O. Kuznicki, Transpo Group
The Future of Transportation

ACES

Autonomous  Connected  Electric  Shared
ACES transportation will be safer, smarter, cleaner, less congested, and with better access for all.

“The mix of sharing, electric, and driverless cars could disrupt everything from parking to insurance, oil demand and retail.”

Professor Tony Seba, Stanford
(Bellevue Chamber, Oct 10th, 2017)
The ACES Northwest Network is a unique collective working to bring Automated, Connected, Electric, and Shared vehicle technologies to the Puget Sound region.

Tom Alberg
Madrona Venture Group
Bryan Mistele
INRIX
CO-CHAIRS
ACES Northwest Network
Goals

• Make Bellevue a global leader in every element of ACES.
• Enable people who live, work, and/or play in Bellevue to travel where, when, and how they want in a safe, efficient, inexpensive and reliable manner.
• Use new and emerging technologies to solve transportation problems of today and tomorrow.
• Make Bellevue less congested, safer, cleaner, and more attractive to business than ever before.
Global Resources in Puget Sound
Convergence of Tech

Pegasus

NVIDIA
Automation Leads to Autonomy

- Stability Control
- Adaptive Cruise Control
- Automatic and Emergency Braking
- Lane Departure Warning
- Automated Parking
- Optical VLD machine vision
- “Telematics” and constant connectivity
ACES is Accomplishing Now

Seminar Series

AUTOMATED – CONNECTED – ELECTRIC – SHARED

THE FUTURE OF MOBILITY IS NOW

Autonomous Shuttles for Local Mobility

Mercer Island Community and Event Center
10:30 a.m. to 12:30 p.m.
Friday, October 20th, 2017
FREE EVENT · NO RSVP REQUIRED · ALL ARE WELCOME
• Expand transportation electrification initiatives
  • Metro’s Proterra electric fleet
  • WSDOT grant program for charging station network
  • Leverage private funding and solar capacity
• Support flexible electric van pools on I-405 corridor to provide mobility to lower income workers on Eastside (City of Bellevue lead)
• Support curb management in cities to support shared mobility services and seamless last-mile connections to conventional transit services
• Promote transit partnerships with private providers for first-mile/last-mile connections to encourage transit use
• Modernize 1991 Commute Trip Reduction Act to accelerate technology
ACES Legislative Caucus

HOSTED BY INRIX, October 20th, 2017

• Accelerate expansion of I-405 between Bellevue and Renton to provide critical link between tech hubs in Bellevue and Renton and commerce centers in Kent Valley

• Harmonize statewide business licensing for shared mobility services and reduce barriers to shared ride services

• Collaborate with Microsoft’s Cascadia Innovative Corridor to support Madrona’s I-5
  • featured at PNWER Winter meeting in Victoria, BC, on November 7th

• Leverage Governor Inslee’s Task Force to show coordination between Legislature, WSTC, FHWA, and Congressional delegation

ENSURE WASHINGTON STATE IS READY FOR NOW
Governor Inslee’s Task Force
“Light Touch” toward AV regulations
Fostering innovation from our strong private sector
“Automated vehicle safety technologies signal the next revolution in roadway safety. We see great potential in these technologies to save lives—more than 30,000 people die on our roads every year and we can tie 94 percent of crashes to human choice—transform personal mobility and open doors to communities that today have limited mobility options.”

National Highway Traffic Safety Administration
Autonomous cars need good roads and technology infrastructure

- Pavement markings and delineation
- Smooth, clear pavement
- Traffic signing that is uniform and properly placed
- Active mapping systems
- Low-latency communications systems

“Cars of the future need roads of the future”

Reema Griffith
Washington State Transportation Commission

Toward Zero Deaths . . . Sooner
Beyond Good to Excellence

“Achieve superior competence in your strategic areas of focus and obtain confidence from the ACES community.”

The **WSDOT Maintenance and Preservation Budget** is a critical driver for a uniform state of good repair.

Pavement markings, pavement conditions, and traffic signing must be maintained to ensure that machine vision systems have the best possible information for efficient and safe operations for human drivers and self-driving transport.

This is a 20-year commitment to both worlds.
Beyond Good to Excellence

WSDOT’s profiled markings are LIDAR-compliant and benefit human drivers, too.

Invest more in consistency rather than more in width.
• Maximize utility of HOV network while extending and improving it
• Ensure capacity expansion serves only efficient and environmentally-responsible technologies
• Coordinate with other needs on I-5, including capacity and seismic retrofits
• Transform corridor for the movement of people and goods
SHARE WITH HOV

NOW

DEDICATED LANE IN EACH DIRECTION

2025

MAJORITY OF LANES DEDICATED TO AVS (ONE LANE AVAILABLE FOR NON-AVS)

2030

EXCLUSIVELY AVS

2040
Flexibility

• Build out the capacity that is needed to relieve congestion and maximize throughput
• Consider market economics in pricing and preferential use schema
• Find new ways to use road capacity without sacrificing safety and flexibility
• Maximize investment in network
Moving People and Goods

**Efficiency Gains**
- Fuel consumption
- Labor costs
- Shift Work
- Utilization of labor

**Reliability Gains**
- Less environmental impact
- More options for movement
- Fewer crashes
- Continuous operation/drayage
Truck Platooning

European Truck Platooning Challenge 2016
Creating next generation mobility
Lessons Learnt
HOW IT WORKS

Incorporates vehicle detection, anti-collision and lateral control technologies for safety.

Driver in first container truck leading 3 driverless trucks.

Coupling and de-coupling to allow other road users to cross between platoon vehicles.

Lead vehicle linked to the platoon via wireless communications.

PSA
The World’s Port of Call
NVIDIA is collaborating with PACCAR
To bring AI-enabled autonomous driving

NVIDIA Drive PX 2
Oregon and Nevada Lead the Way
German automaker Daimler AG’s trucks division said it would test on U.S. roads a new technology called “platooning”, which allows large digitally-connected trucks to save fuel by driving close to each other in a row.

Portland, Oregon-based Daimler Trucks North America LLC said on Monday it received permission from the regional regulatory body, Oregon Department of Transportation, after successful trials in its proving ground in Madras, Oregon.

Reuters
September 25th, 2017
Autonomous and Electric Drayage
Zero-Emission Electric Drayage Trucks Coming to California

California's South Coast Air Quality Management District, which includes the ports of Los Angeles and Long Beach, announced that it would receive $23.6 million from the state for a zero-emission drayage truck development and demonstration project in association with air-quality districts in the San Francisco area, Sacramento, San Diego and the San Joaquin Valley.

The project involves 43 zero-emission battery electric and plug-in hybrid drayage trucks serving major California ports, the district said, and demonstration trucks and charging infrastructure will be used in all five air districts.

Transport Topics
May 9th, 2016