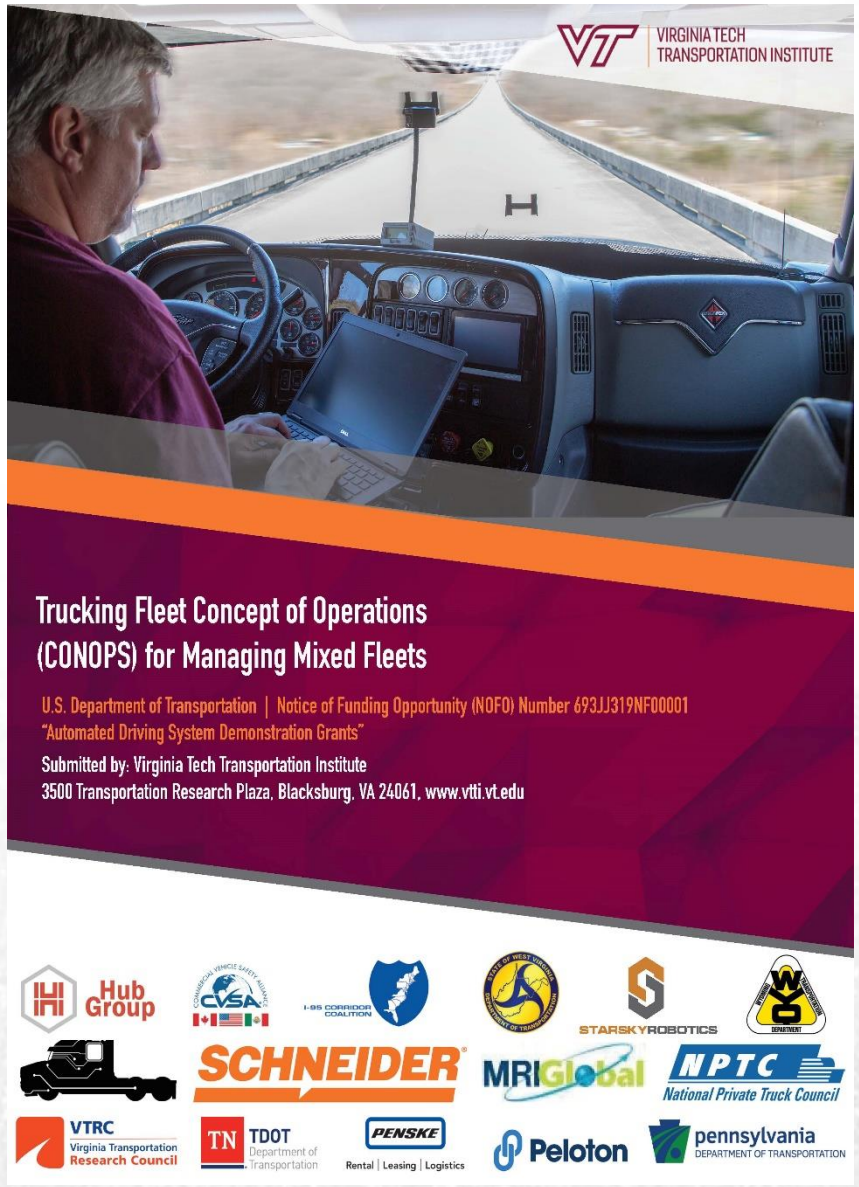


VTTI Team's ADS NOFO Award Focused on Commercial Trucks

Rich Hanowski, Ph.D.

Director, Center for Truck and Bus Safety

Virginia Tech Transportation Institute

Challenges of Driverless Vehicles

"Does your car have any idea why my car pulled it over?"

"So how exactly am I supposed to give a self-driving car a ticket?"

Project Team

Lead Technology Developer

- Pronto

RoadShow Technology Developers to include:

- Starsky Robotics
- Peloton

Trucking Fleets

- Schneider National
- Hub Group
- National Private Truck Council (representing 100’s of fleets)

Project Team (Continued)

State Department of Transportation

- Virginia
- Nebraska
- Pennsylvania
- Tennessee
- West Virginia
- Wyoming

Supporting Organizations

- Penske Truck Leasing/Logistics
- Travelers Insurance
- MRI Global
- Commercial Vehicle Safety Alliance
- I-95 Corridor Coalition

Core Program Goals: *Understanding the Ecosystem for ADS Deployment*

- Installation and Maintenance
- Inspection
- Driver State Monitoring (particularly for L3)
- Insurance
- Safety Metrics
- Roadway Infrastructure Ratings
- Data Security/Transfer
- Cybersecurity

Core Program Goals: (2) Data for Analysis and Rulemaking and (3) Collaboration

- (2) Data to include, and shared with the USDOT:
  - Dis-engagements
  - Crashes (including severity and preventability)
  - Harsh maneuvers
  - Traffic violations
  - Miles traveled
  - Driver inattention
- (3) Collaboration
  - 17 partners, including private and public organizations
  - Additional ADS providers will be invited to participate in Road Shows

ADS Public Outreach: Road Shows

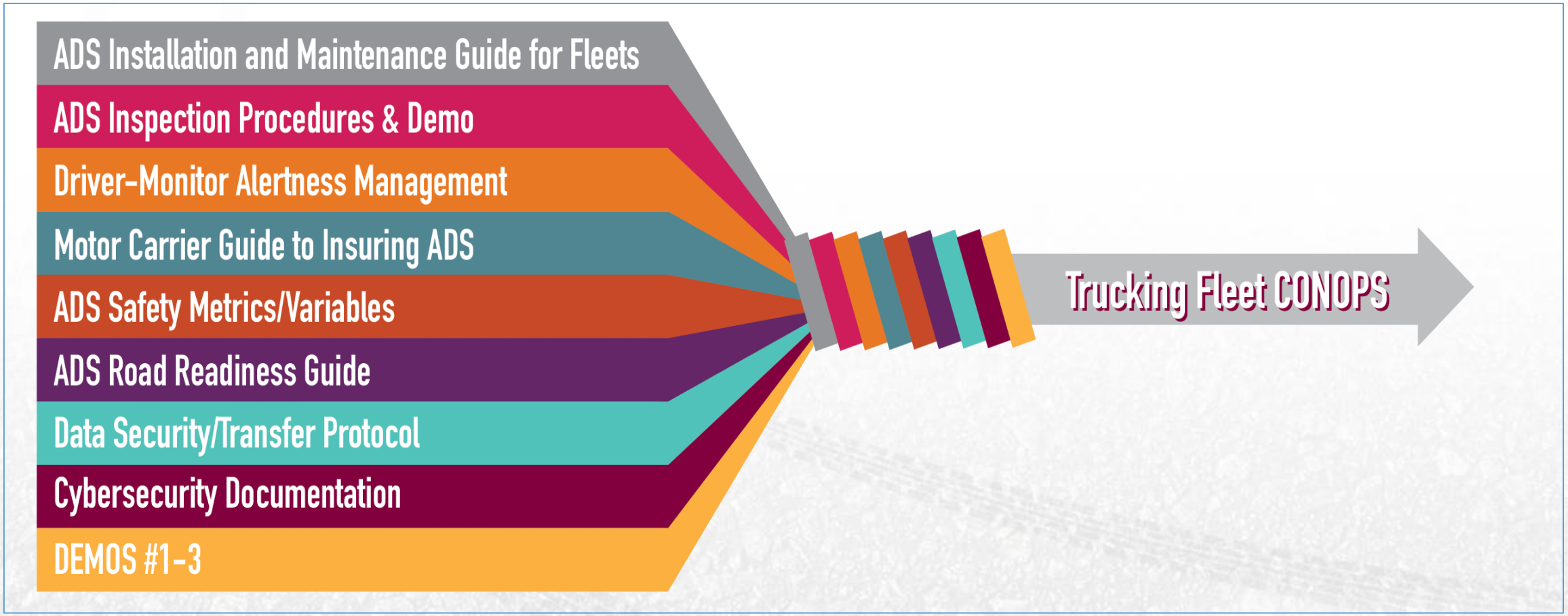
- Public outreach critical for ADS customers, government, insurance, inspection agencies, and the general public (who will share the road with ADS-equipped trucks)
- VTTI Team plans to hold several ADS Road Shows, likely in conjunction with key conferences and ADS-related events
- Beyond the VTTI Team's ADS technology developers, other truck-focused ADS developers will be invited to participate in the Road Shows

L4/L5 Cross-Country Road Test

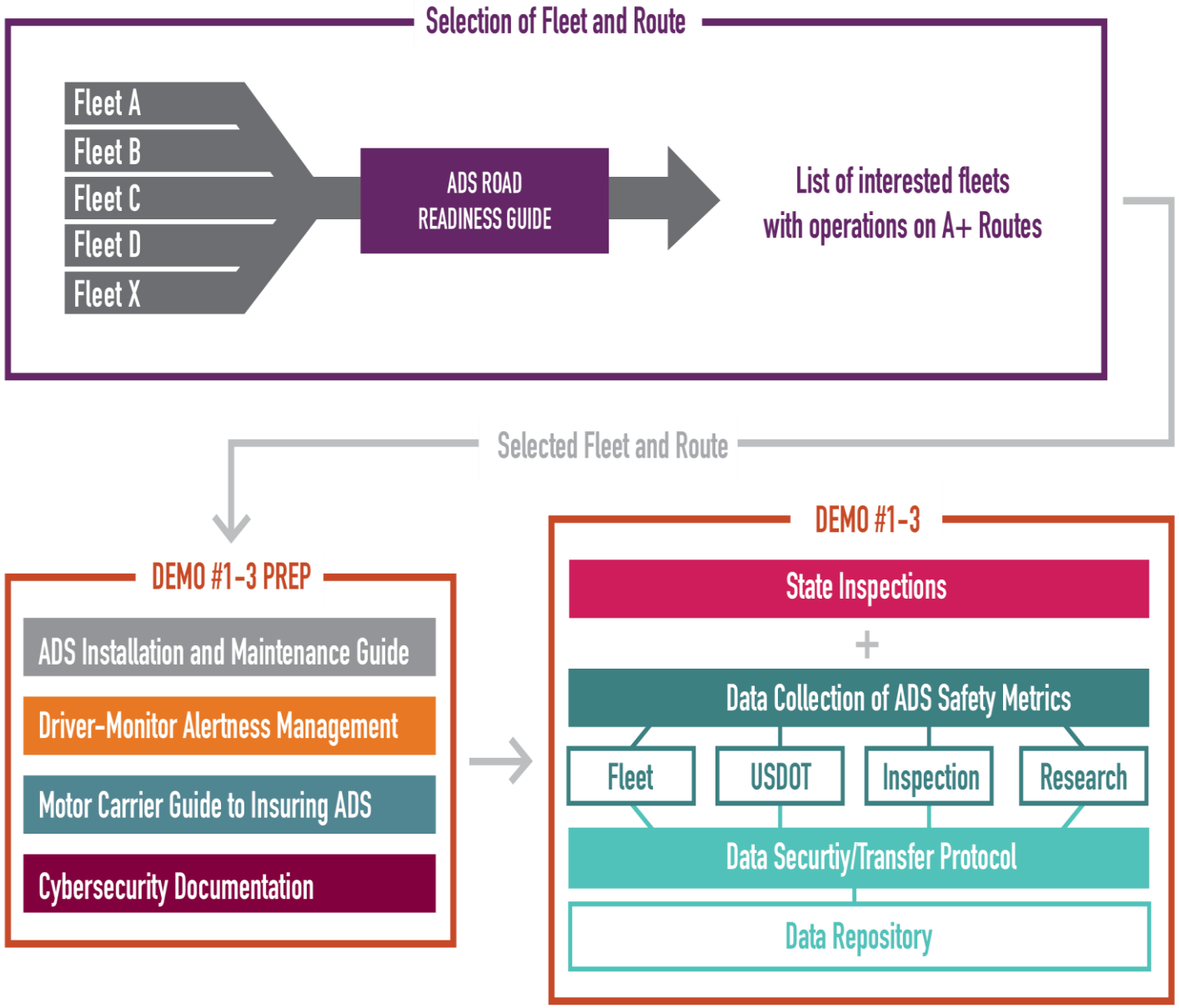
- First demonstration of its kind will exhibit an autonomous truck safely traversing the US, from coast-to-coast
- Pronto engineers were behind the first autonomous truck delivery in the US
  - Oct 2016 in Colorado in a live traffic environment
- Pronto conducted the first cross-country driver (light vehicle) that did not require human intervention
  - Oct 2018 from San Francisco to New York

Cross-Country Demo

Concept of Operations (CONOPS)



Applying the CONOPS

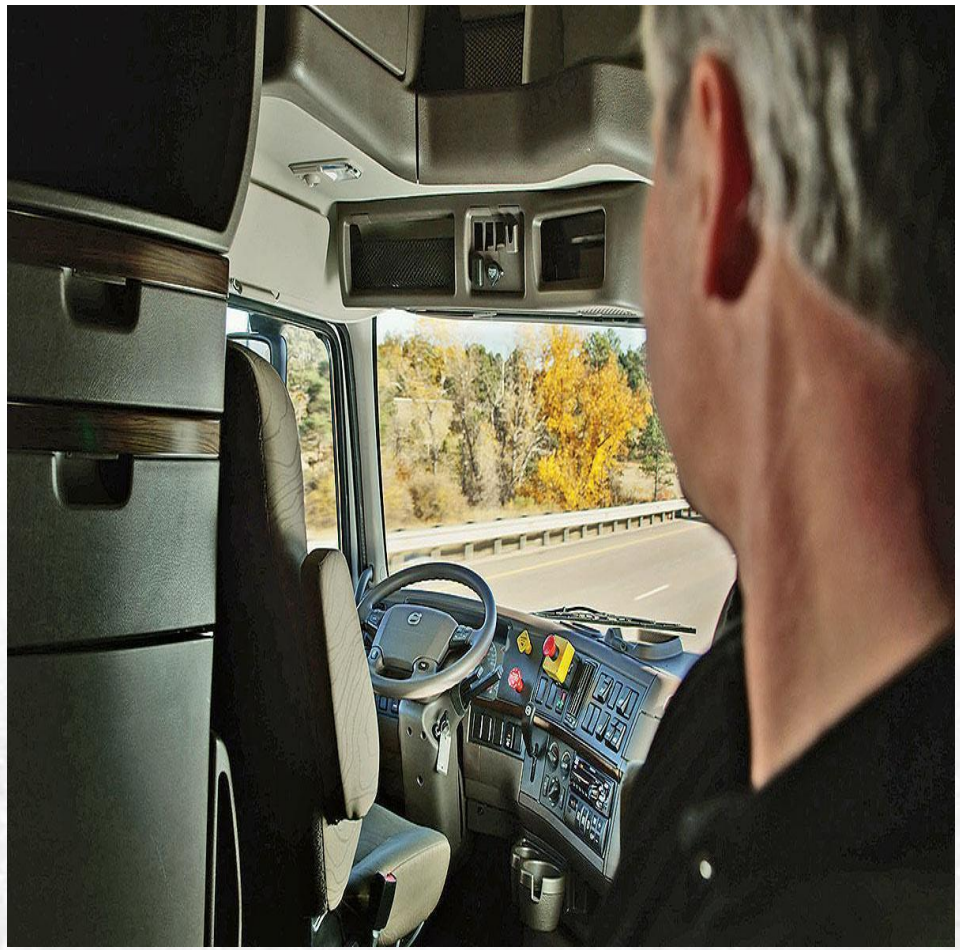


Applying the CONOPS: ADS *in situ* Demonstrations

- Automated Truck Queueing Operation
  - Concern for pickup/delivery wait times for drivers (“detention time”)
  - Generally, drivers not paid to wait in a queue
  - ADS presents an opportunity for L4 mode while the driver rests
- Intermodal Yard-to-Exit Operation
  - Significant inefficiency at ports and rail yards where cargo moved onto trucks (“drayage”)
  - ADS could automate a portion of the trucks that driver repetitive loops
  - Could implement “convoy” or “platooning” approach (connected vehicles) where single human driver controls multiple trucks

Applying the CONOPS: ADS *in situ* Demonstrations (Continued)

- Long-Haul Exit-to-Exit Operation
- Perhaps the use case that has been featured most prominently in the media
- Human driver would operate from a yard or distribution center (“first mile”) onto highway, where the ADS would take over until the end-point exit is reached
- Human would driver the “last mile” to the end-point location



Final Deliverables

Final report

CONOPS Document for fleets (and stakeholders)

Final briefing and outreach

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