

# Opportunities and Benefits of Commercial Truck Platooning

Connected and Autonomous Vehicle Summit  
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# Trucking Today

**A network that powers  
our national economy**

**\$700B  
(70% of all freight)**

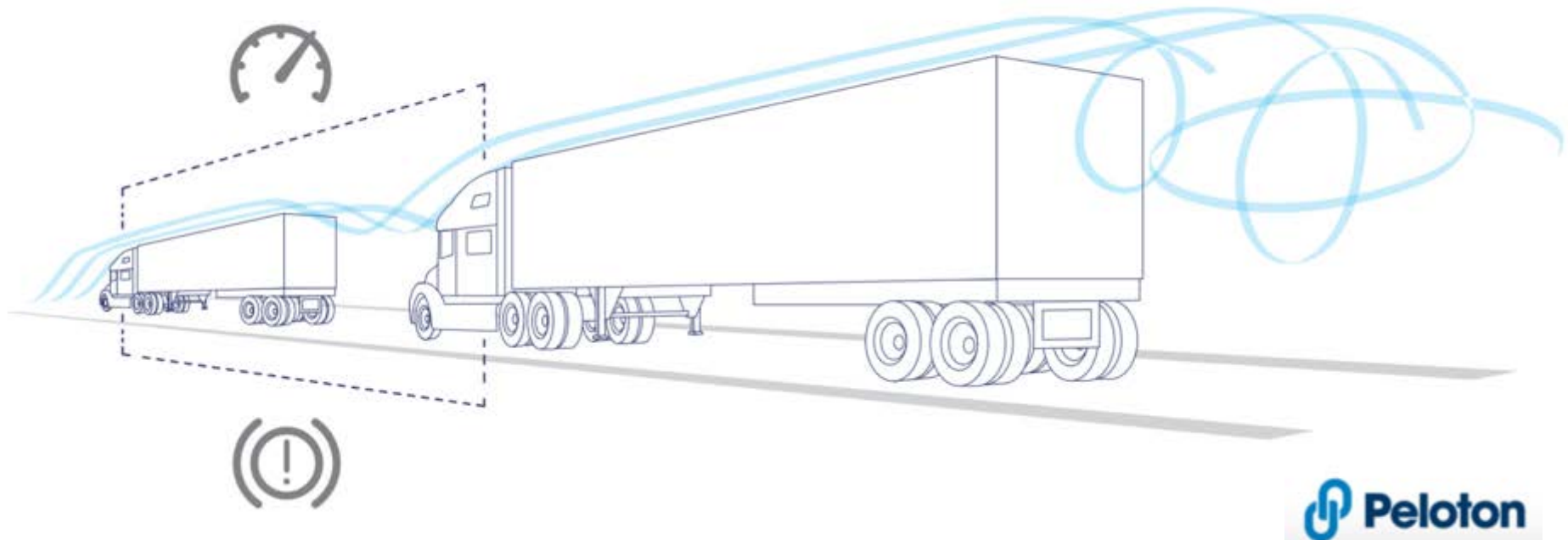
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**Low margin with  
concentrated expenses  
in fuel, crashes, and  
manpower**

**\$100B Diesel  
\$60B Crashes**



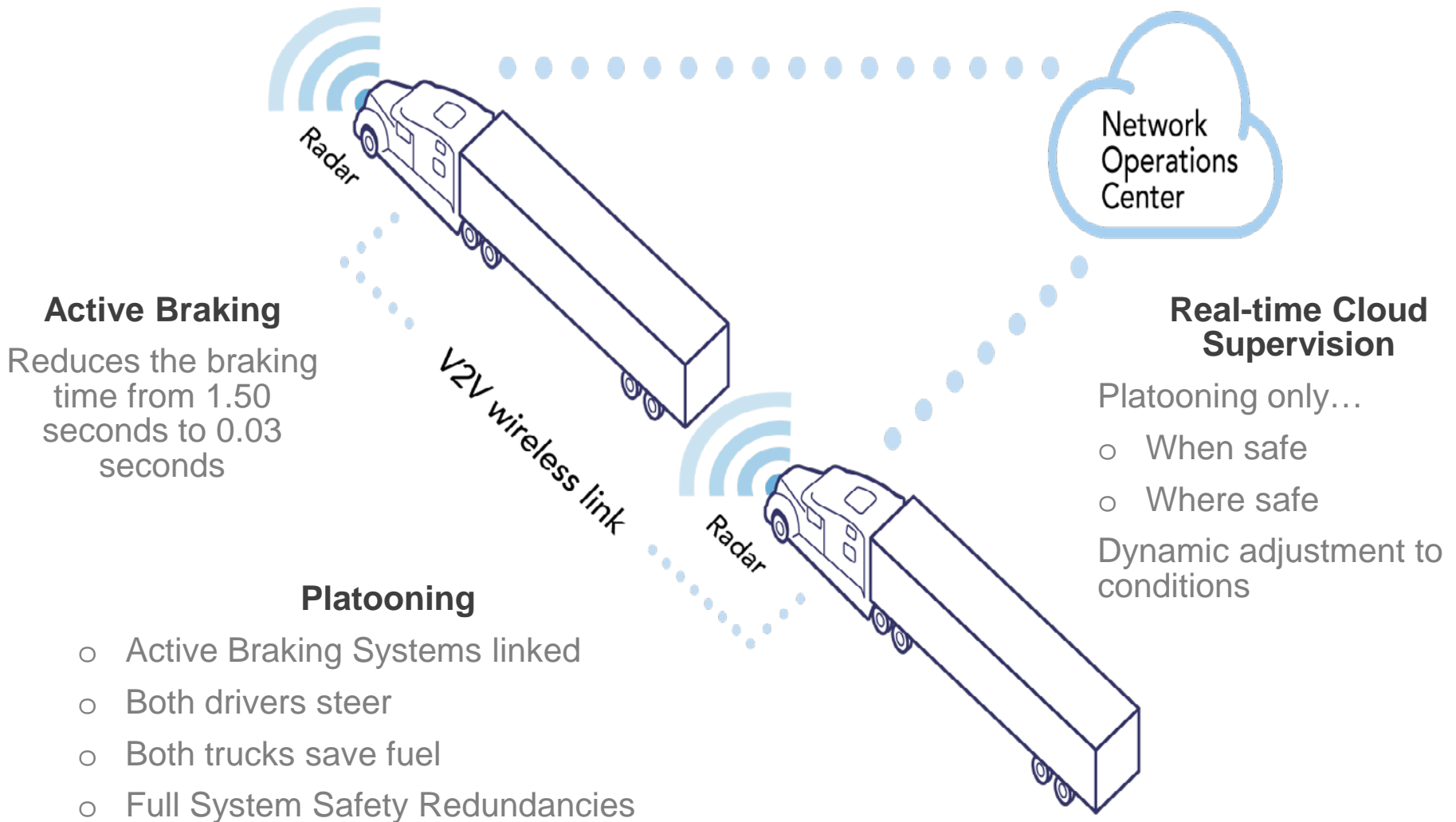
# Connecting Trucks – Platooning Benefits



## Benefits:

- Improved safety
- ~7.25% reduction in fuel consumption

# Connecting Trucks – Platooning Benefits

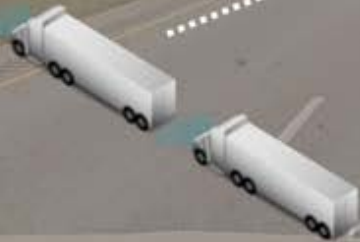


# Network Operations Center

Fleet Operations



Platooning



NOC



Hazards



Weather



Traffic

J1939 - DSRC - GPS - Radar - Video

# NOC for Safe Deployment

- Approval
  - Right roads
  - **Known** roads
  - Right conditions
- Adjustment
  - Following distance
  - Control gains and parameters
- Coordination
  - Finding platooning partners
- Data Collection
  - For development

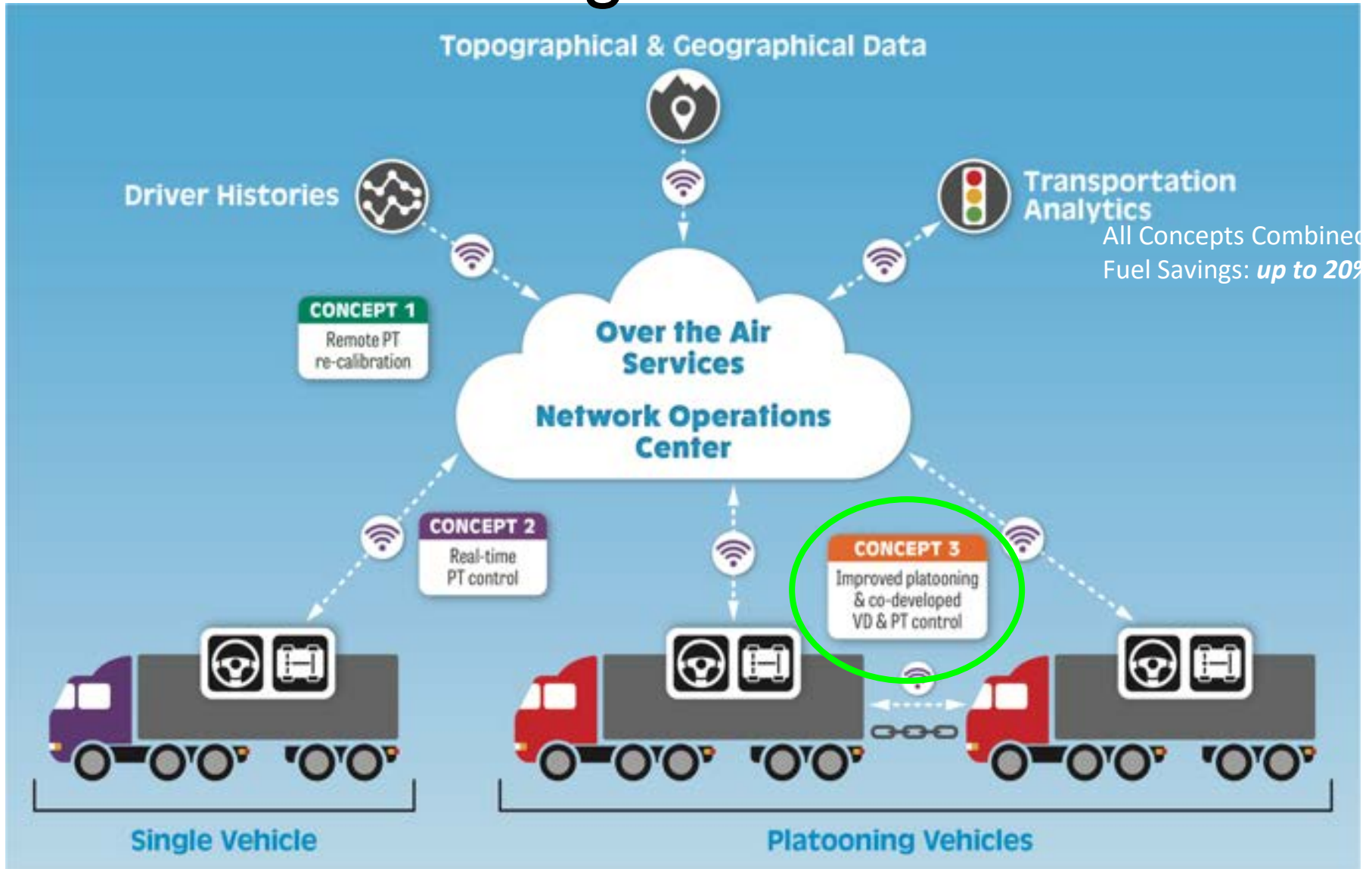
# Truck Platooning Research at Purdue

## More efficient two-truck platooning using connectivity-enabled controls

- Predictive cruise
  - Front driver “feet off”
  - Avoid torque saturation of rear truck
  - Compute optimal speed profile and gap
- Coordinated Shifting
  - Avoid disturbances in the platooning gap
- Full integration of platooning controller with ECU, transmission.
- Data considered:
  - Maps, grades, traffic, weather look-ahead information
  - Truck masses & powertrain capabilities
- Expected fuel savings: **12.25%**
- Sponsor: DOE ARPA-E

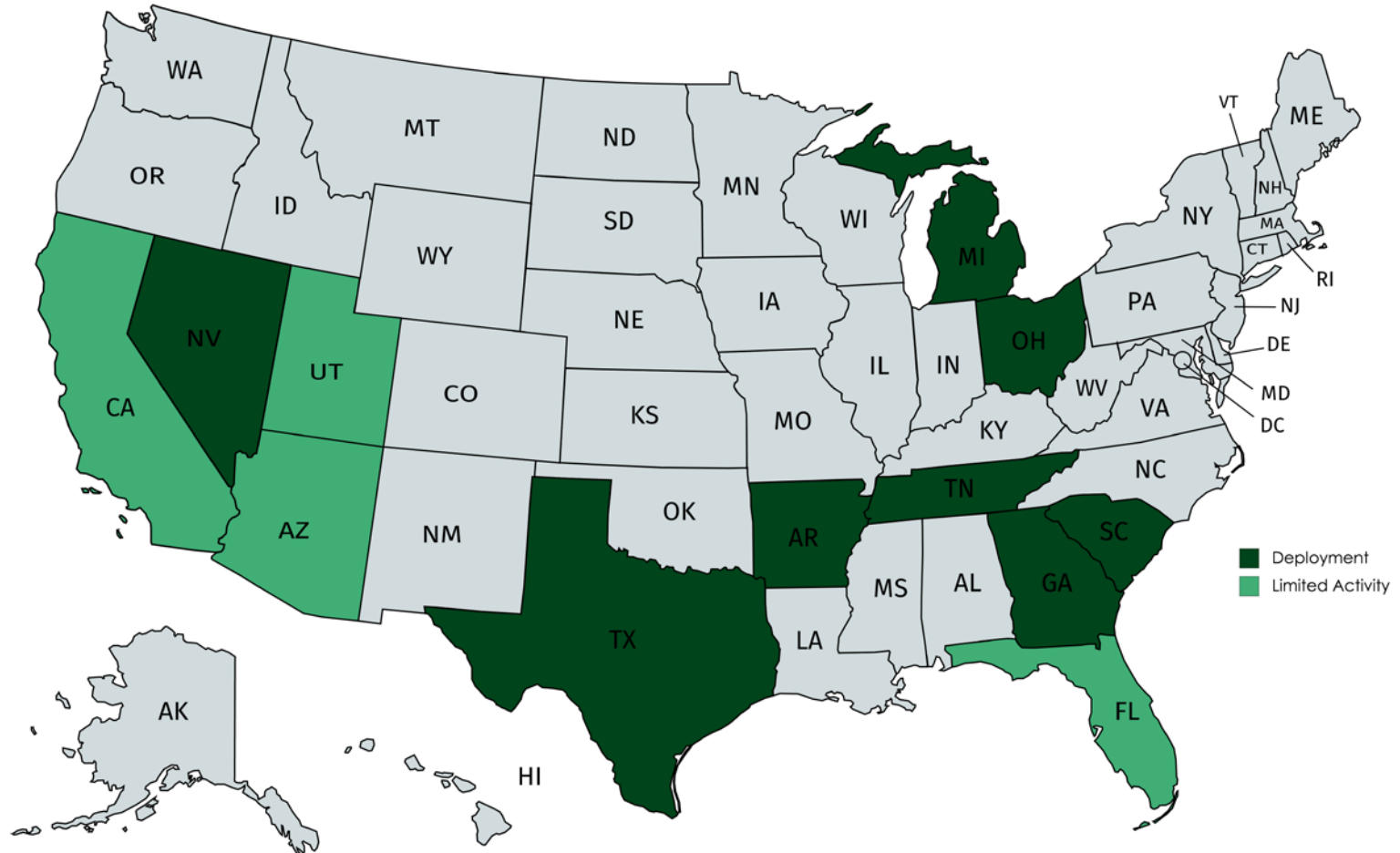


# Truck Platooning Research at Purdue





# Truck Platooning State Outlook



\* Nevada legislation will be signed into law on Friday, June 16, 2017.

# Potential Next Steps

- Define policies & procedures for full deployment (mid-'2018?)
  - Identify changes needed to Indiana Code (Summer – Fall 2017)
  - Work with USDOT/NHTSA to develop a state policy compatible with federal laws (??? - ???)
- Deploy a truck platooning testing/demonstration program as part of ARPA-E and other projects
  - Partners: Purdue, Cummins, Peterbilt, Peloton, ISP, IMTA, others?
  - Identify parameters for pilot program
  - Road to be used for controlled testing (e.g., US-231)
  - On-road ARPA-E project testing desirable by Dec. 2018
- Explore synergies with other states testing the technology (MI, OH), other Purdue research/partnerships (queue warnings, weigh-in-motion), other technology-driven initiatives (TPIMS)