Urban Truck Platooning:

The Future of Freight Mobility in Cities and Urban Regions

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- CDM Smith's national technology practice leader
- Planning, design, testing, evaluation, and deployment of ITS & technology
- Leading CDM Smith's R&D to identify, model, and measure "alternative futures" in urban mobility
  - Developing adapt analytical tools to assess technology impacts and help with preparedness
- Managing landmark projects:
  - Smart Columbus Truck Platooning Deployment
  - Florida DOT CV Technologies for Truck Size and Weight Enforcement and Permitting
  - Assessment of Freight Advanced Traveler Information System (FRATIS) in Los Angeles, Dallas, and Southeast Florida
  - Ohio DOT Modeling Impacts of CV/AV on Travel Behavior and Highway Capacity
  - Port of Los Angeles Deployment of FRATIS Technology for Port Operations

Driver Assistive Truck Platooning (DATP)

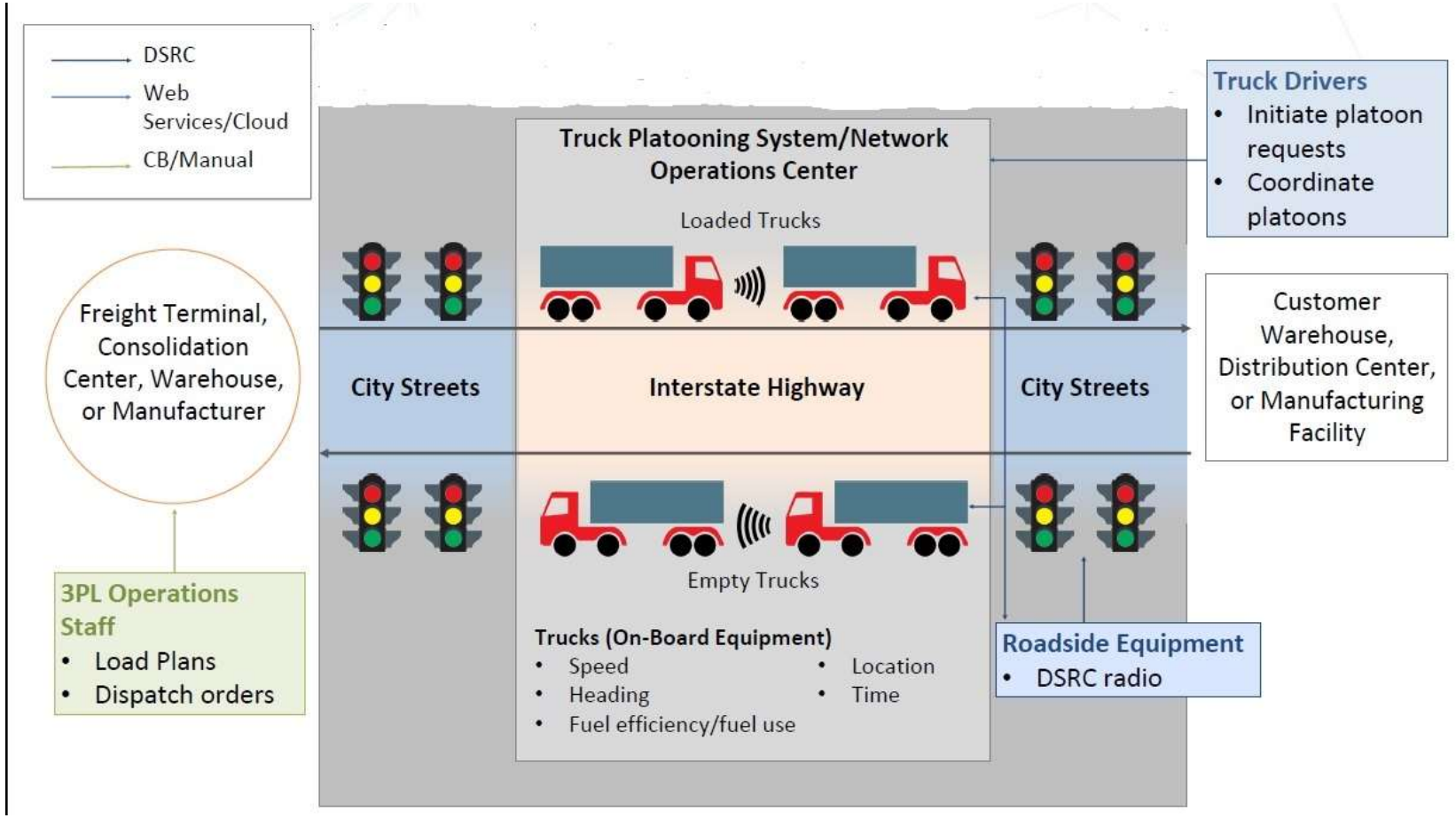
Overview

- DATP is a wireless technology that links trucks together such that the following truck mirrors the lead truck's braking and acceleration, thus allowing for shorter following distances.
- One of 9 projects in USDOT-sponsored Smart Columbus effort
- Builds on past truck platooning technology tests and demonstrations
- Deploy two-truck platooning with two participating logistics companies (ODW and FST Logistics)

Driver Assistive Truck Platooning (DATP)

Map of Columbus

Columbus DATP Truck Platooning Concept



Driver Assistive Truck Platooning (DATP)

Expected Benefits

- Reduce fuel consumption and emissions
- Improve logistics operational efficiencies to reduce freight costs
- Improve freight traffic flow and operational efficiency along a freight-intensive highway corridor.
- Potential performance measures identified in Smart Columbus truck platooning concept study

Driver Assistive Truck Platooning (DATP)

Potential Performance Measures

1. Platoon frequency
2. Truck travel time
3. Freight induced congestion
4. Truck queuing
5. Efficiency/volume of goods moved
6. Truck accidents/safety
7. Fuel savings
8. Emissions/air quality
9. Training
10. Adoption

Driver Assistive Truck Platooning (DATP)

Current Status

- Concept defined in Columbus including truck platooning user needs.
- Platooning technology being acquired for implementation at the two Columbus carriers.
- Project working out deployment and performance measurement details.
- Provide a testbed for the potential efficiency benefits and advance the state of practice in truck platooning.

Key Truck Platooning Tests and Demonstrations

- NACFE and Peloton tests - 2013 and 2014
- NREL, TxDOT, TTI Uvalde, Texas - 2014
- USDOT, ATRI, Auburn University - 2014-15
- TNO Europe Platooning Challenge, Scandinavian countries - 2015-16
- FHWA, Caltrans, and PATH - March 2017

NACFE and Peloton

- 2013 and 2014, North American Council on Freight Efficiency
- 2-truck platoons on highways in Utah, Nevada, and Michigan
- Peloton Technology and CR England motor carrier
- 10% fuel savings following truck; 4.5% lead truck
- Produced advances in Peloton's technology

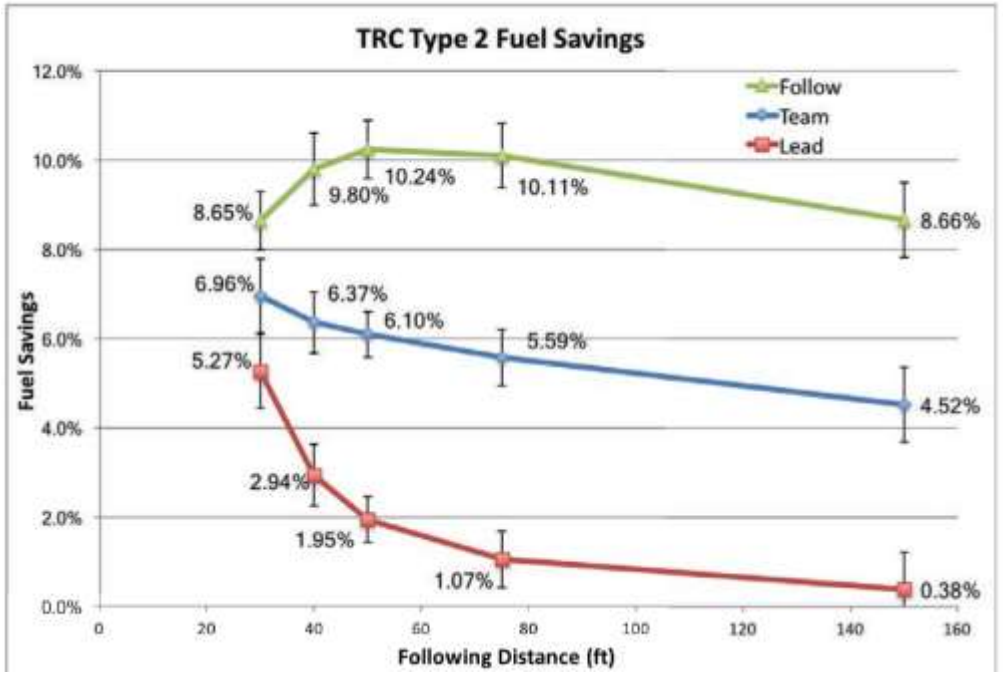
NREL, TxDOT, TTI

- 2014, National Renewable Energy Laboratory
- 2-truck platoons at Continental Tire test track at Uvalde, Texas
- Peloton Technology on Peterbilt trucks at various following distances (best was 50 ft)
- Detailed measurements of fuel savings

USDOT, ATRI, Auburn University

- 2014-15
- 2-truck platoons on test tracks in AL and OH
- Peloton Technology on Peterbilt trucks at various following distances
- Included trucking industry and driver surveys

  Helped confirm appropriate following distance (50 ft) and fuels savings (10.24% following, 1.95% leading)



TNO Europe Platooning Challenge

- 2015-16
- 2-truck and 3-truck platoons on Europe's highways across country boundaries
- Consortium of governments and truck manufacturers
- Successful platooning of different brands of trucks

FHWA, Caltrans, and PATH

- 2017, Partners for Advanced Transportation Technology
- 3-truck platoons on Freeways near Port of LA
- PATH technology on Volvo trucks
- Confirmed following-truck fuel savings for third truck

Integrating Truck Platooning – Key Players

- Truck drivers need notification of platooning opportunities while driving
- Logistics operations staff and dispatchers need to be able to coordinate daily truck movements and plan daily operations to enable platoons
- City or state traffic agencies and planners may wish to monitor platooning operations to facilitate traffic control and measure benefits of platooning
- A network operating center, within a company or run by a third party for multiple trucking companies, may help get the most out of truck platooning

Safe Truck Platooning Deployment Considerations

- Legislation to allow truck platooning
- Operational considerations to support future deployment
- Consensus on vehicle markings
- Weather
- Time of day
- Training, education, and awareness
- Equipment on each truck to implement truck platooning

Implications for State/Local Agencies

- Legislative changes for following distance
- Traffic planning on corridors
- Law enforcement cooperation
- Freight planning
- Public awareness

Conclusions

- Truck platooning has been proven to save fuel and reduce emissions
- There are potential efficiency benefits to truck platooning if widely used and integrated with the supply chain planning process
- Thought needs to be given to network control of platooning to help ensure smooth operation and benefits
- State and local agencies need to be involved in both facilitating platooning and assuring its safe use on highways

Questions

Thank You

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