

Getting Ready for Truck Platooning in the MAASTO States – Efficiencies, Trends, Regulation and Safety.



Governor Walker's Steering Committee on Autonomous and Connected Testing and Deployment.

March 28, 2018.

Ernie Perry, PhD
Mid-America Freight Coalition
UW – Madison
ebperry@wisc.edu

**Most all information and graphics are from
FHWA Talking Freight Series Presentations,
found at:**

[March 2017: Connected Trucks - Research and
Implementation Initiatives](#) New: 4/27/2017



The Rate of Adoption has Definitely Increased!



1939 Futurama, 1969
Futurama II



OTTO and the self driving
beer run



US DOT
CVHAS



2017 Annual Meeting – September 26, 2017



Truck Platooning in Kansas

- KDOT Truck Platooning Task Force – September 12, 2017 Kick Off Meeting
- Planning – Multimodal Group; Operations; Safety and Technology (ITS); Engineering and Design; Policy and Legislation; Chief Counsel
- Task Force also includes Kansas Turnpike Authority (KTA) and Kansas Highway Patrol (KHP)

- Understanding Truck Platooning – what it is and isn't
- Understanding Truck Platooning technology
- Research – Truck Platooning efforts in other states; at other State DOTs
- MAFC Truck Platooning Regulatory Model Study
- Safety – Highway Signage
- Understanding benefits to the trucking industry

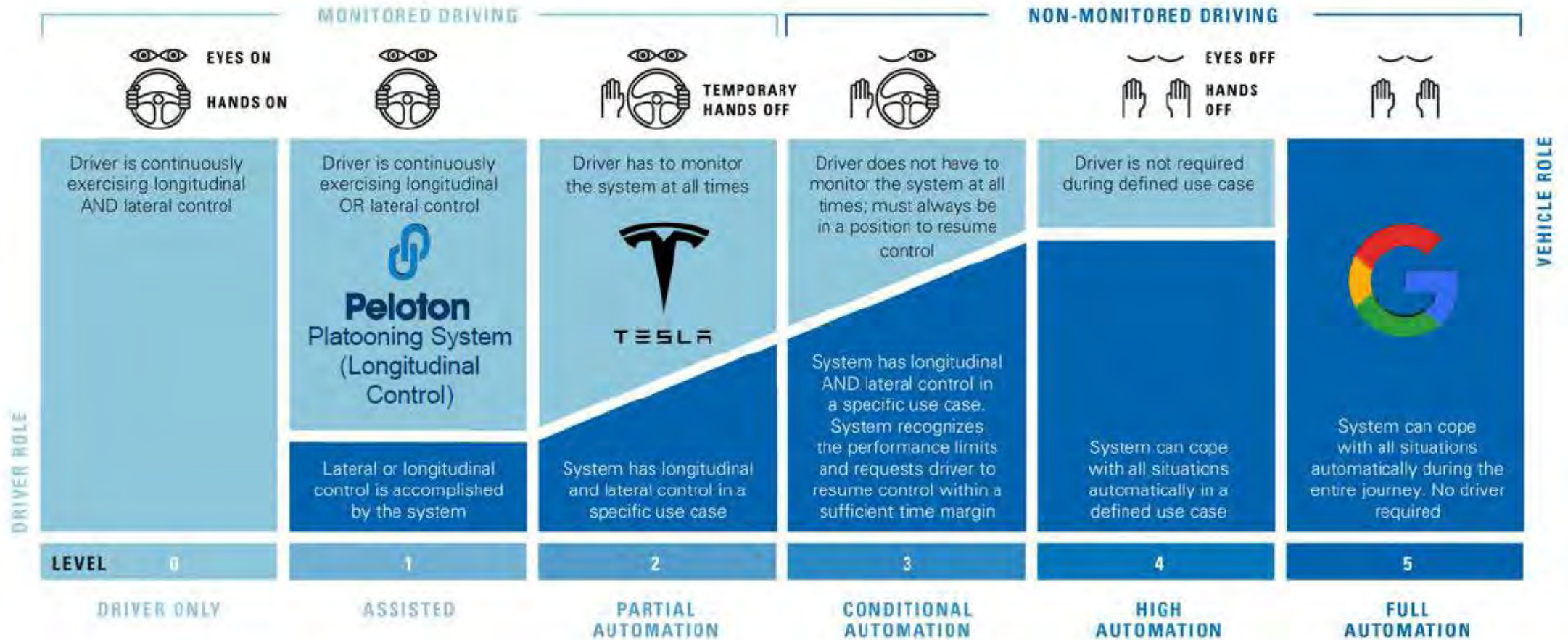
- Statutory – modifications; new statutes
- Rules and Regulations – need for modifications?
- Need for Truck Platooning special permits?
- Engagement of private sector freight stakeholders
- Identification of demonstration corridor
- Education Efforts – legislative and public
- Develop timeline and key milestones towards deployment

Truck Platooning is increasingly widely supported

Companies Involved in Near Commercial and/or Prototype Systems:



Range of Truck Automation



Graphic courtesy:

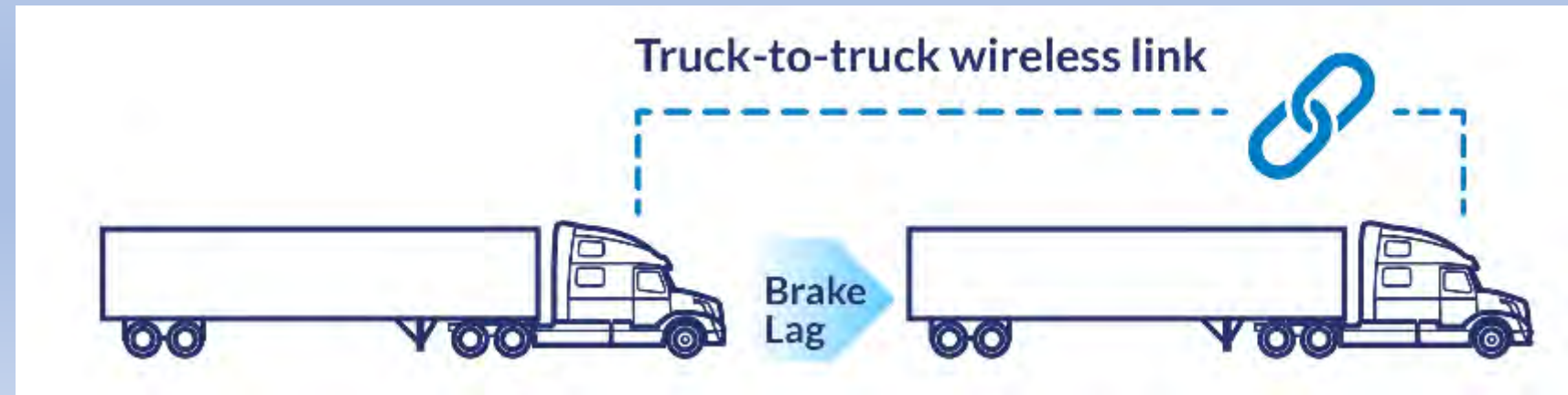


A Realistic Vision of Platooning?

- ✓ A Truck Train?
- ✓ More likely 2 Trucks.

Uncomfortable/unsafe for shared facilities due to:

- blockage of ramps,
- visibility issues with signage



Where should Platooning operate?

US Freight Arteries

Platooning focus: Multi-lane, divided, limited access highways



Market Opportunity: Many Types of Fleets Can Platoon

Many Trucks Travel in Groups Today...

LTL (Less than TruckLoad) Fleets:

Trucks travel hub-hub in groups by nature of operations



Private fleets:

Trucks travel in groups on high density corridors



Truck Load fleets:

Growing trend toward relay style operations w/ trucks in groups



...and can adopt platooning
with few changes to dispatching

I-710 Freight Corridor Concept



A dedicated four-lane freight corridor parallel to the I-710 freeway is currently proposed as part of the Gateway Cities Strategic Transportation Plan. Caltrans estimates that this 16-mile truck-only facility would be completed by 2025.



The Safest and most Efficient Route...



I-70 Dedicated Truck Lanes Feasibility Study

Efficiencies of Platooning

Freight Trucking Scale and Major Pain Points

US Freight Trucking: \$700 Billion in Revenues

- **Fuel Cost: \$100+ Billion for nearly 30 billion gallons of fuel**
 - **34%+ Operating Costs**
- **Accident Cost: \$90+ Billion and 113 million gallons of fuel**
- **Industry Net Profit: 3%**

- Preventing Accidents
- Saving Fuel
- Improving Mobility
- Improving Decisions



Enhanced
Fleet Economics
& Safety

Peloton System: Independently Validated Fuel Efficiency



Fuel savings of 10% on rear truck and 4.5% on front truck

Verified savings at 40 foot gap at 64mph (NACFE)

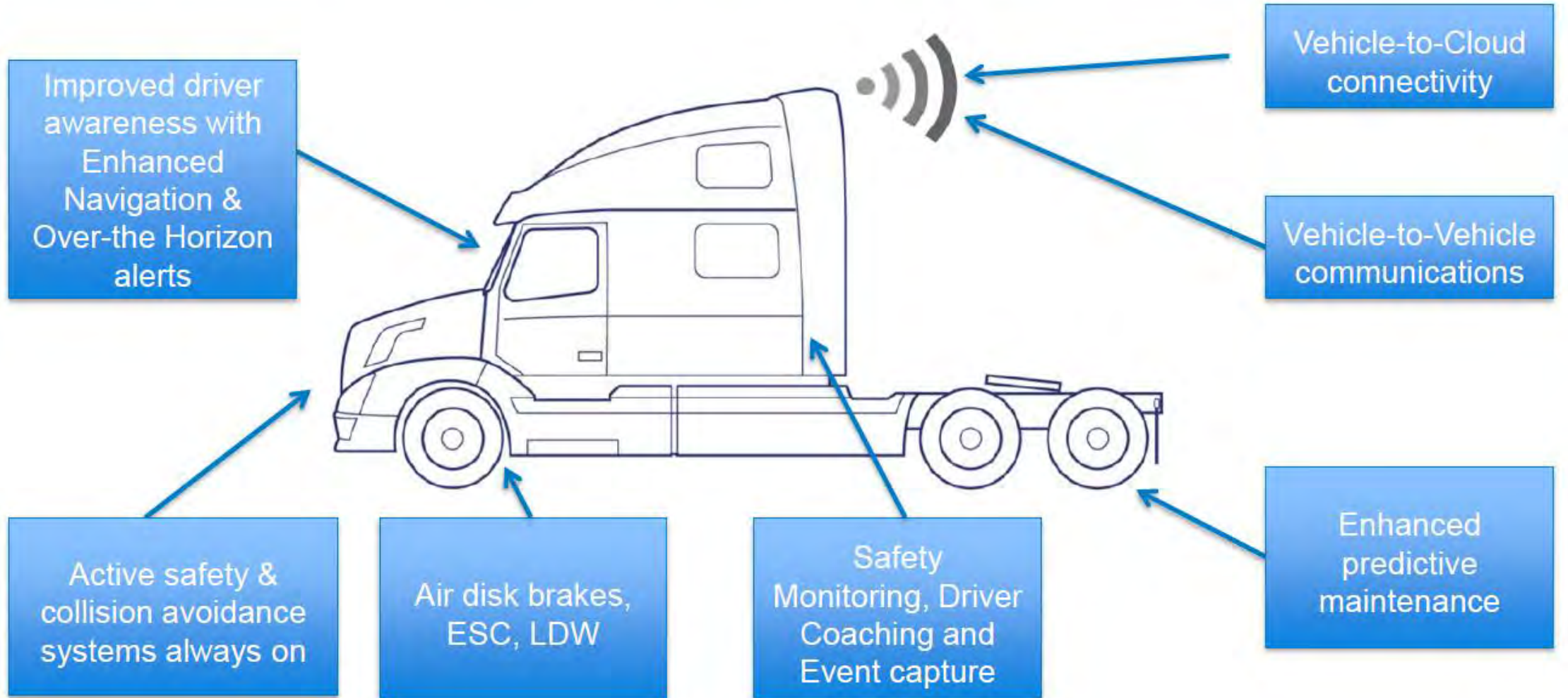
Further independently testing by US DOE and US DOT

NREL & FHWA tests confirming savings at varying speeds, gaps of 75ft +



Getting to the Safety Benefits

We Start By Making Individual Trucks Safer at All Times



Technology and Safety

Collision Avoidance Systems can prevent many crashes

- Commercially available radar-based **Forward Collision Avoidance and Mitigation (FCAM)** Systems can reduce the frequency and severity of these commercial vehicle rear-end crash types.
- Con-way study:
 - 30 months w/ 12,600 tractors
 - **71% reduction in rear-end collisions; 63% reduction in unsafe following behavior**
- Volvo/USDOT study:
 - 3 years w/ 100 trucks
 - **80% of drivers preferred to drive w/ collision avoidance systems**
 - 37% reduction in “conflicts” (i.e. hard braking, situations that could result in collision)



MERITOR WABCO

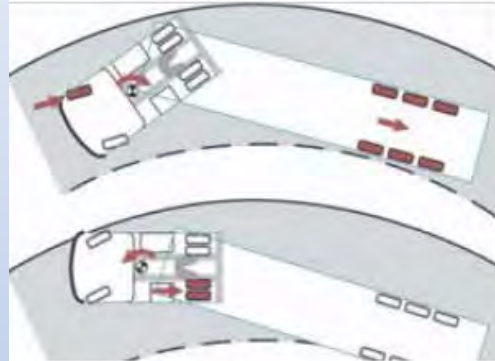
OnGuard™

Collision Mitigation System

Volvo Technology: Active Safety Systems in Production



A System of Safety



Electronic Stability Program



Forward Collision Warning – Automated Electronic Braking System



Adaptive Cruise Control



Lane Change Assist



Lane Keeping System



Volvo Dynamic Steering



So how do we help a well established private sector effort?

- Work with innovators and private sector to cooperatively implement truck platooning.
- Ensure regulations are fair
- Ensure regulations are harmonized



MAASTO Efforts

- Truck Platooning/autonomous vehicle working group
- Individual State efforts
 - Kansas working group, Michigan M City, Ohio Smart cities, Wisconsin Automated vehicle proving ground, Governor Walker's Steering Committee.....
 - MAASTO/MAFC Development of Midwest Platooning Regulatory Model
 - To provide uniform regulations, expectations and operations across our region
 - To lead the nation in establishing a regulatory model that is harmonized across states

Components of the MAFC/MAASTO Study

- ✓ General Literature review of benefits in areas of safety, cost efficiency, implementation trajectory
- ✓ Review of legislative efforts, regulations and efforts to modify regulations to support platooning
 - ✓ Lead by Chris Hundt of Michigan DOT and working group
- ✓ Industry perspectives – what do they expect of platooning/automation?
 - ✓ Team members will interview trucking and logistic companies across the MAASTO states.
- ✓ Identification of roadway constraints and appropriate regional corridors for platooning
- ✓ Final report with Maps, regulatory review, tiered model of regulatory changes

Thank You!



Ernie Perry, PhD
MAFC
UW-Madison
ebperry@wisc.edu
608-890-2301

