



# FMCSA's Advanced System Testing Utilizing a Data Acquisition System on Highways (FAST-DASH) Program

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# Overview

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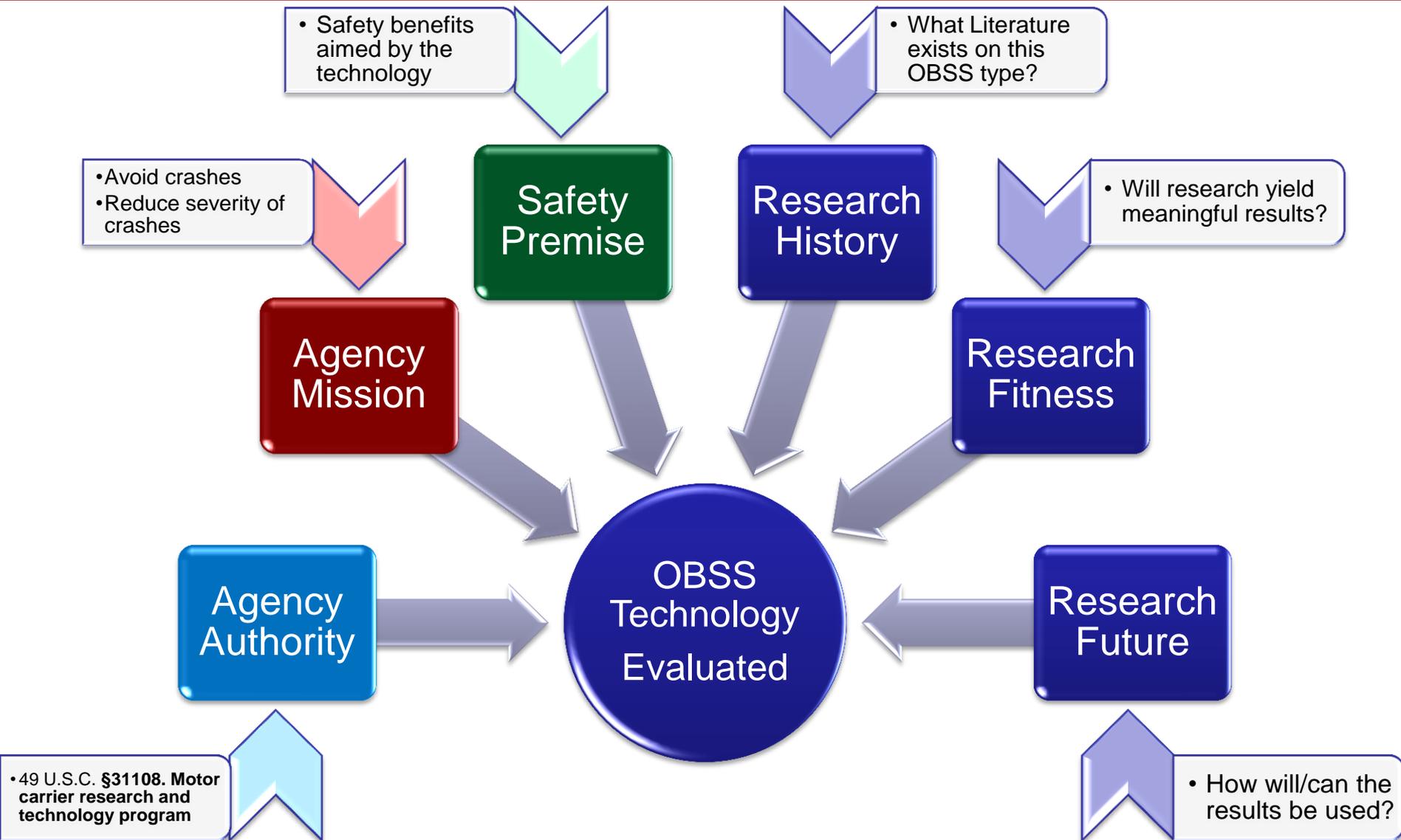
- **FMCSA's Onboard Safety System Research Area**
  - Priorities
  - Research Decision Factors
  - Examples
- **FAST-DASH Program**
  - Objectives
  - Structure
  - Timeline
  - Use of Naturalistic Driving

# Onboard Safety System Research Area

- Promising vehicular technologies, their premise, potentials and deployment of proven onboard safety systems (OBSS)
  - In-service focused
  - Critical Factors of importance
    - Safety benefits
    - Unintended consequences
    - Reliability.
  - Agency Authority, Reach, Impact, Enforcement
  - Total cost of ownership,
    - Purchase price
    - Installation cost
    - Maintenance cost
    - Operational cost impact.

An OBSS is a Commercial Motor Vehicle technology that provides a consistent and measurable net safety benefit to the driver, motor carrier and highway transportation.

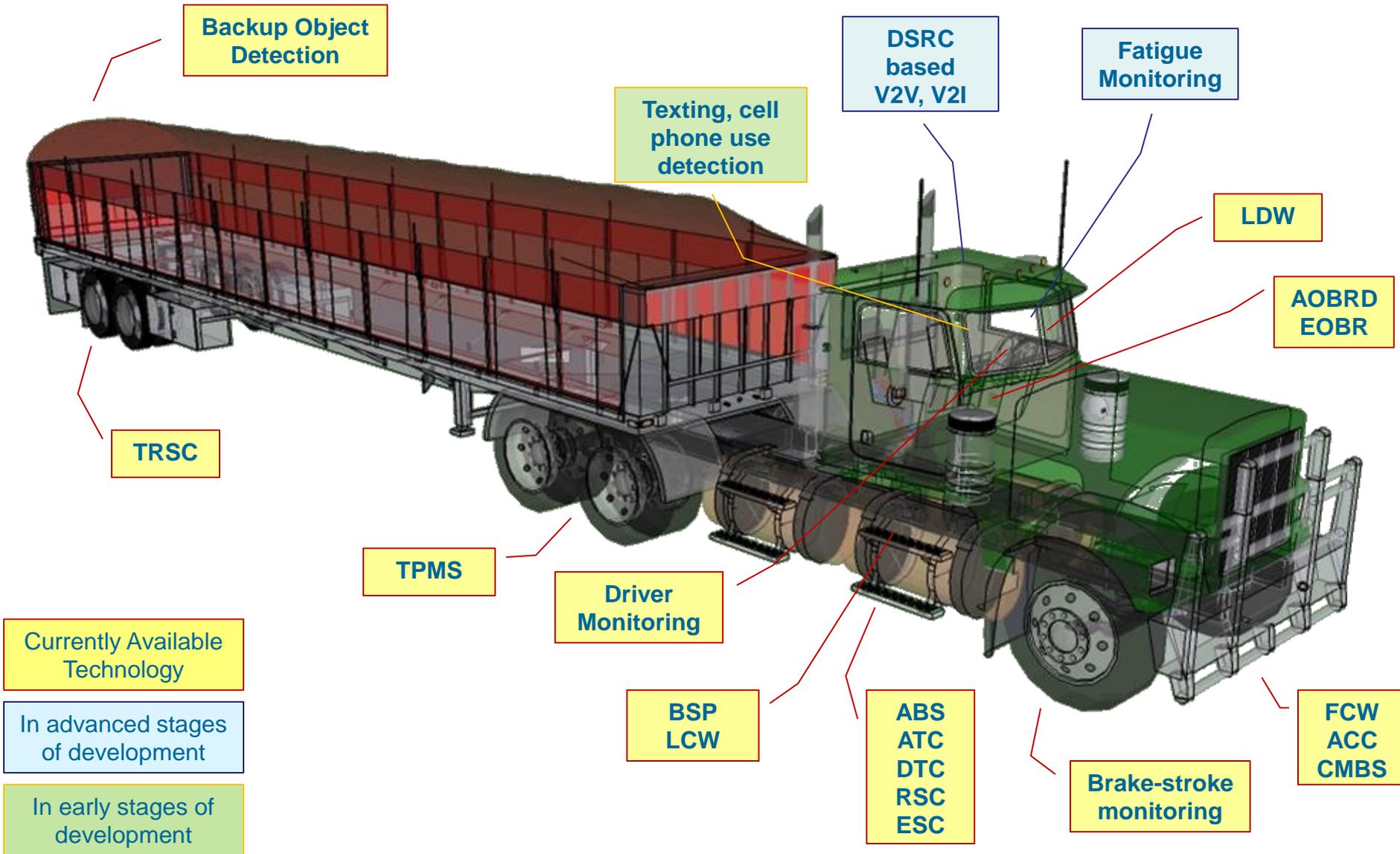
# Onboard Safety System Research Decision Factors



# Onboard Safety System Categories

- By pre-crash scenarios
  - Running red light, road edge departure/maneuver, changing lanes/same direction, drifting/same direction, etc
- By conflict zone
  - Front, rear, side, blind-spot, etc
- By conflict type
  - Rollover, fatigue, loss of control, blind-spot, etc
- By action type
  - Training, coaching, warning, intervention, etc
- By vehicular platform
  - Tractor based, trailer based, floating device, etc.

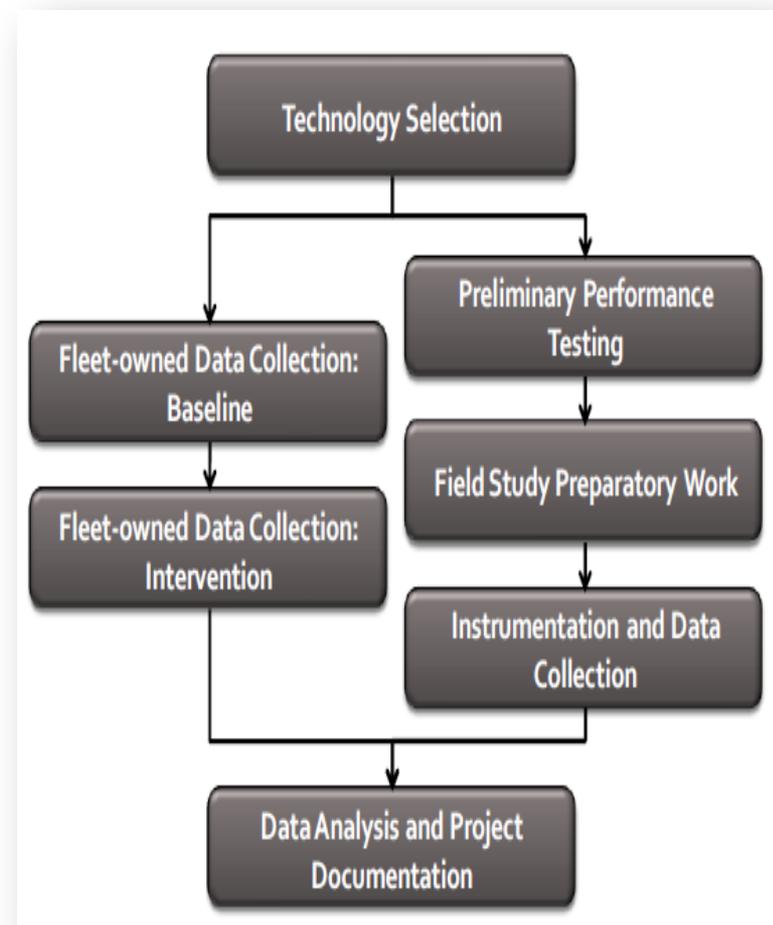
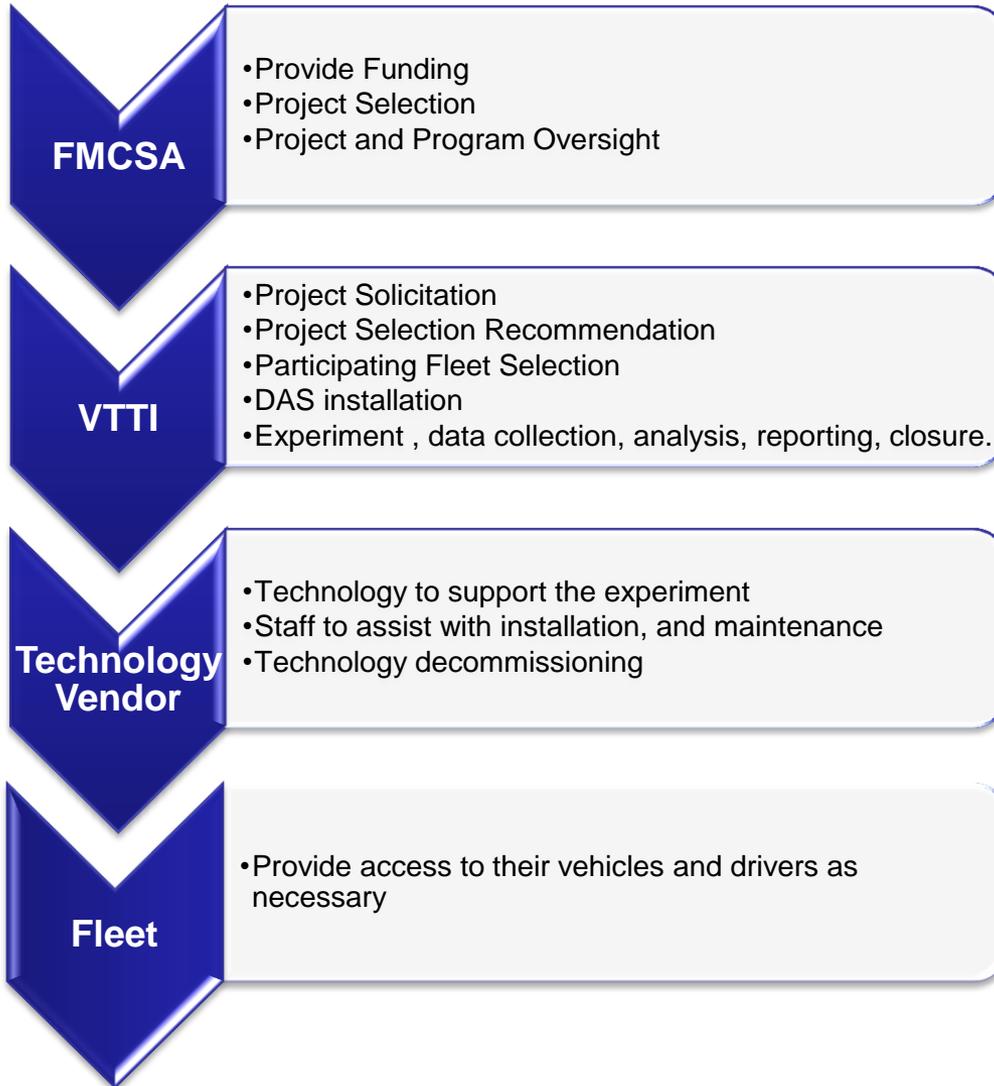
# Examples of Onboard Safety Systems



# FAST-DASH Program Objectives

- 5-year cooperative agreement between FMCSA and VTTI
- **A Technology Transfer Program**
- **Independent & Quick Turnaround** testing and reporting
- Targets to test Marketed or near market-ready technologies
- Research plan / Experimental Design includes:
  - Static functionality testing on Smart Road
  - 6-month Naturalistic Driving FOT with 20 DASs on Fleet Vehicles
  - Conflict based safety effectiveness assessment
  - Analysis of participating Fleet's accident risks from their records.

# FAST-DASH Program



# First Project under FAST-DASH Program

- First Project underway
  - Blind spot object detection and warning system
  - Data collection finished
  - Analysis and reporting planned for the rest of CY12.
  - Final Report anticipated in early CY13
- Primary Decision Factors
  - Pre-crash scenario study<sup>1</sup> by Volpe Center shows that in heavy trucks the leading pre-crash scenario was Changing lanes / same direction (13%)
  - There are no documented results with robust BSW systems in the literature



<sup>1</sup>Frequency of Target Crashes for IntelliDrive Safety Systems, DOT HS 811 381, October 2010, NHTSA.

# Naturalistic Driving Data Supports Evaluation Studies

- ~20 Vehicles at participating fleet instrumented with SHRP2 DAS, collects data from:
  - Multiple cameras, forward radar
  - Vehicle databus
  - Onboard safety system being tested.
- 6 month data collection
  - ~2 month baseline, ~4 month with system enabled
  - 2k-8k miles/per month per vehicle data acquisition.
- Assessment of safety benefits
  - Critical events relevant to the technology.



## For Additional Information, please contact

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VTTI's FAST-DASH site:

- <http://www.vtti.vt.edu/ctbs-fast-dash.php>