ADS Safety Metrics Research

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U.S. Department of Transportation
Federal Motor Carrier Safety Administration

Federal Motor Carrier Safety Administration

2024

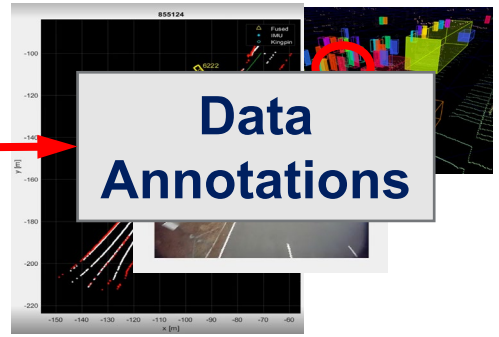
SAFETY
RESEARCH
FORUM

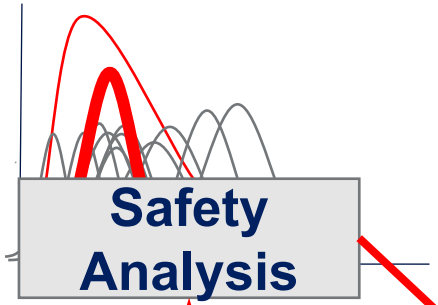
VIRTUAL EVENT

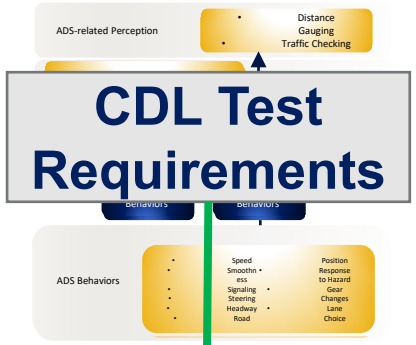
Project Goal

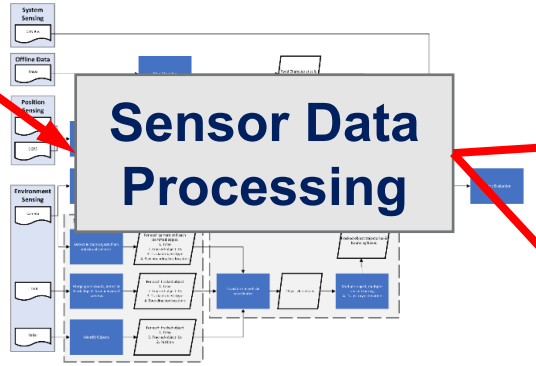
Collect field operational data using state-of-the-art technology to characterize driver behaviors as a benchmark for comparison to ADS heavy trucks.

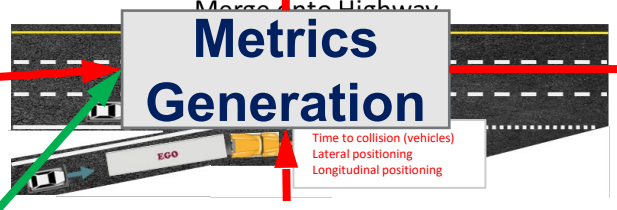
Project Overview

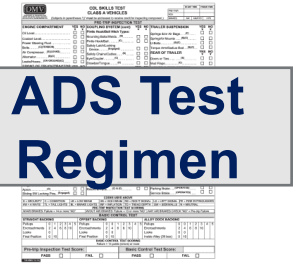


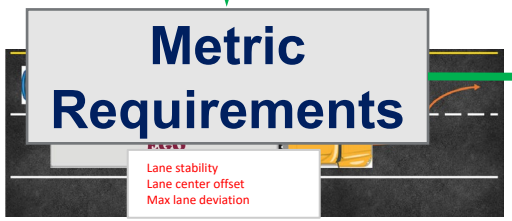


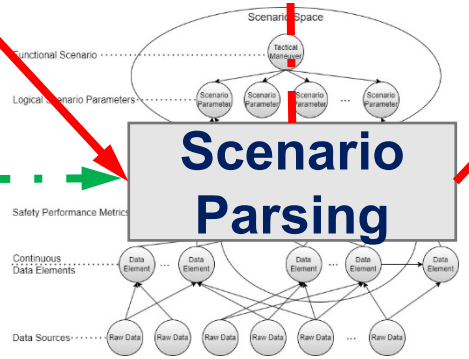




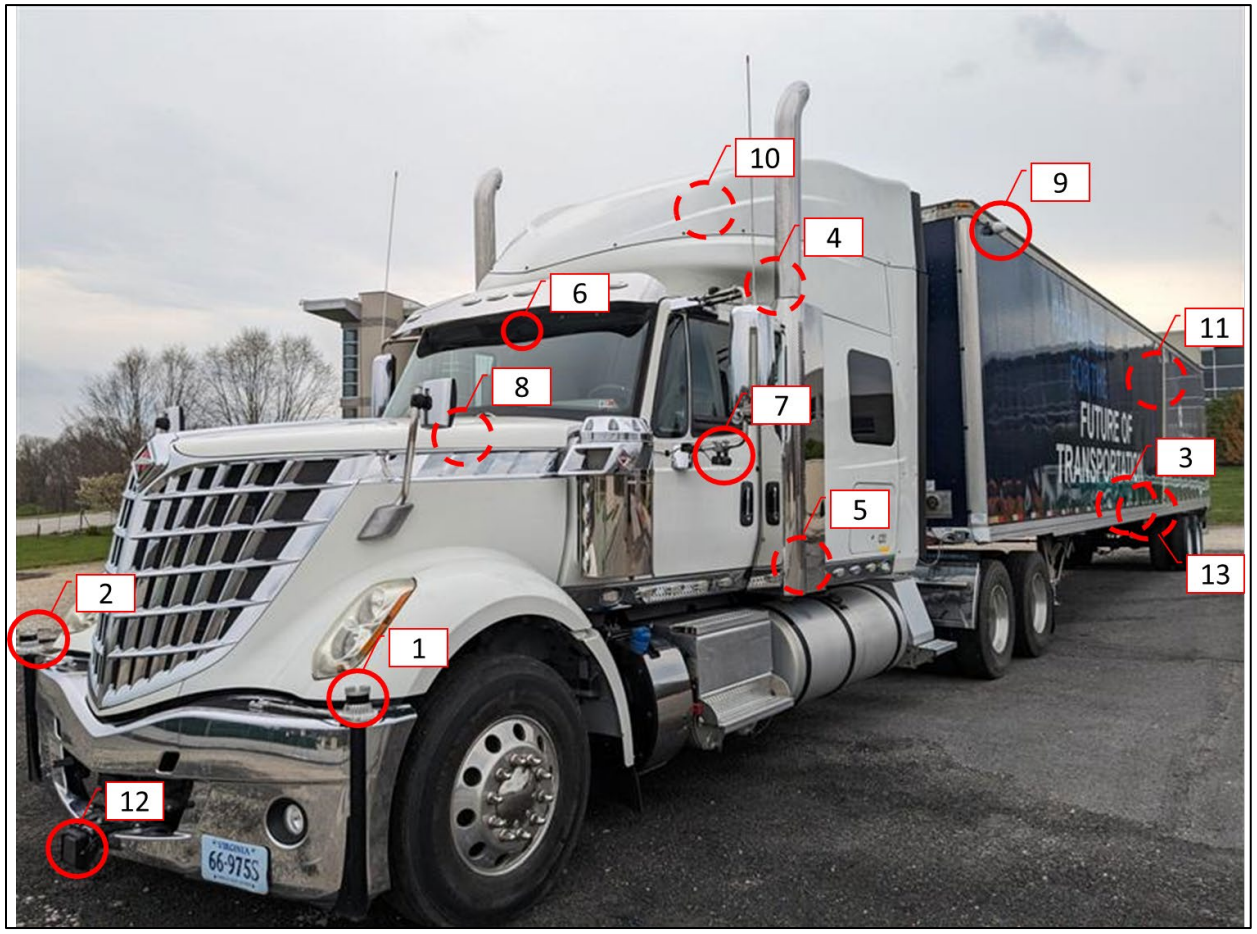


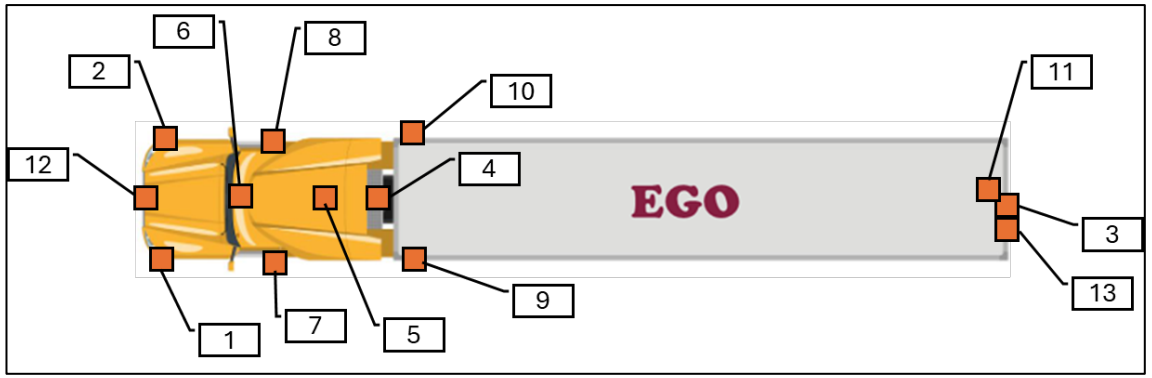






Heavy Truck Installation on Research Vehicle





1 – Driver-side Front LiDAR
2 – Passenger-side Front LiDAR
3 – Rear Trailer LiDAR
4 – Rear Tractor LiDAR
5 – DGPS/IMU
6 – Forward/In-cab Camera
7 – Driver-side Tractor Camera
8 – Passenger-side Tractor Camera
9 – Driver-side Trailer Camera
10 – Passenger-side Trailer Camera
11 – Rear Trailer Camera
12 – Forward Radar
13 – Rear Radar

Phased Approach to Data Collection and Analysis

1 PILOT TESTING

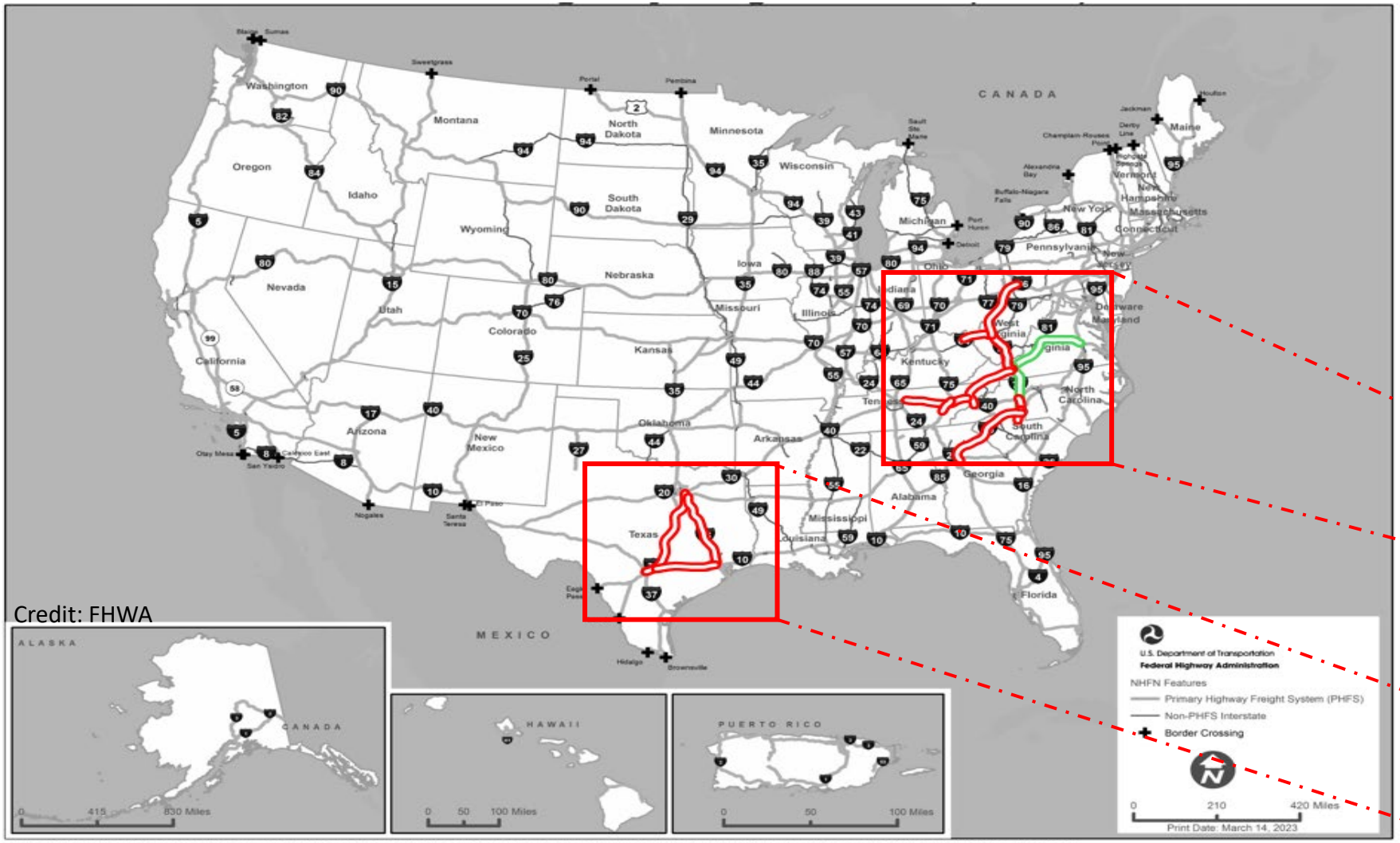
- Collect data on 9 participants
  - 6 Class 8
  - 3 Class 3-6
- Information collection request approval
- Create data annotations
- Evaluate and refine processes
- Identify initial evaluation criteria

2 FULL DATA COLLECTION

- Collect data on 72 participants 48 Class 8
  - 24 Class 3-6
- Integrate improvements from pilot testing
- Revise evaluation criteria
- Automatically process data and generate driving scorecards

- ***Will generate more than 3 million miles (50,000 hours) of naturalistic data***
- ***More than 3 Petabytes total***

Naturalistic Data Collection



Credit: FHWA

Route Legend

- Data collection is underway on the route highlighted in green

Pilot Data Collection

Planned Full Data Collection

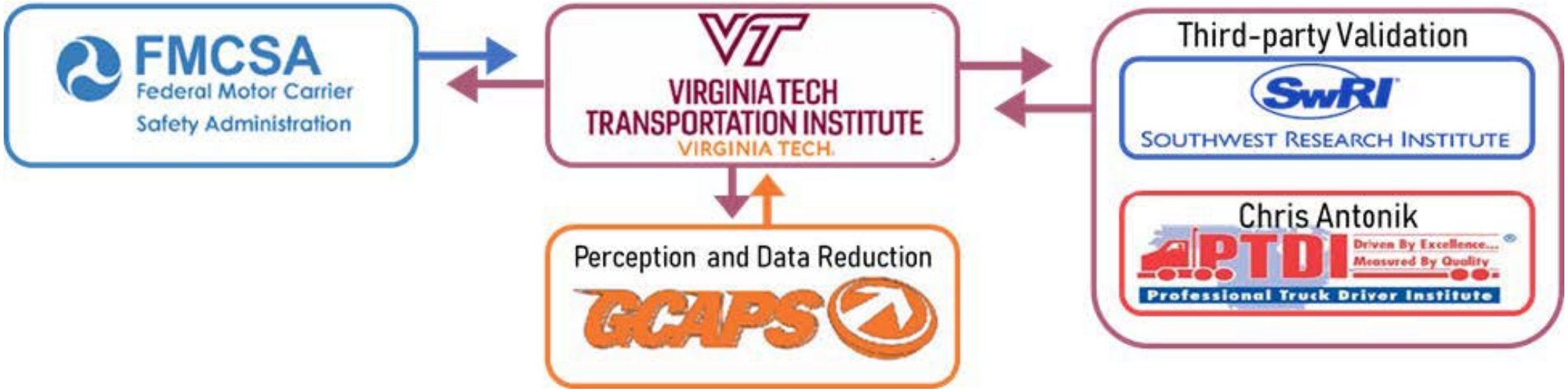
Note: PHFS and the Non-PHFS Interstate mileage is based on the U.S. Department of Transportation, Federal Highway Administration, All Roads Network of Linear Referenced Data (ARNOLD) - 2019 geospatial database.
Non-PHFS Interstate mileage can fluctuate based on changes made to the Interstate System. The mileage for Non-PHFS Interstate is based on the Interstate Mileage reported in the National Highway System (NHS) as of October 17, 2019.
The mileage for CRFCs and CUFCs is based on the State reported data as of January 27, 2023

We will be successful if…

We have the database, analysis tools and research results to determine:

1. The evaluation criteria for an ADS driving performance test
2. Preliminary performance thresholds associated with safe driving
3. The amount of driving data needed to confidently assess the driving performance of ADS-equipped CMV withing their ODD
4. The practicality and limitations of this assessment methodology

Research Team



Contact Information

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