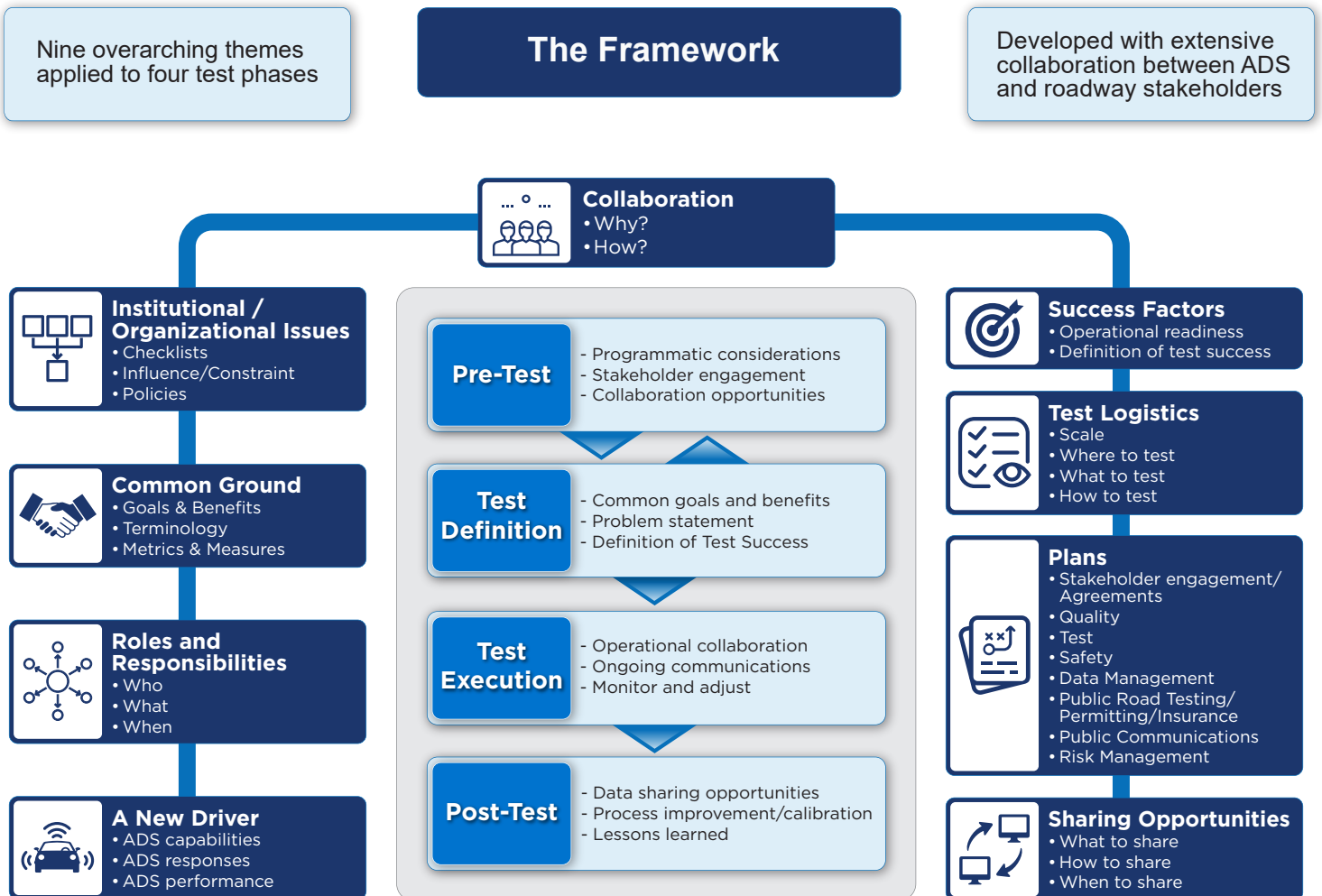




U.S. Department of Transportation  
Federal Highway Administration

# Collaborative Research Framework for Automated Driving System Developers and Infrastructure Owners and Operators

Testing and evaluating automated driving systems (ADSs) under various roadway scenarios is a key component that can contribute to successful deployment on our Nation's roadways. Understanding the capabilities that need to be implemented, either in the ADS or roadway domains, requires collaborative testing to support and enable a safe and efficient deployment of ADSs.



## Why Collaborate?

Collaboration among ADS and roadway stakeholders, such as departments of transportation (DOTs), will:

**Ensure** more comprehensive testing of vehicles equipped with ADS technologies

**Enable** better identification of issues and potential solutions

**Accelerate** development and deployment of ADSs

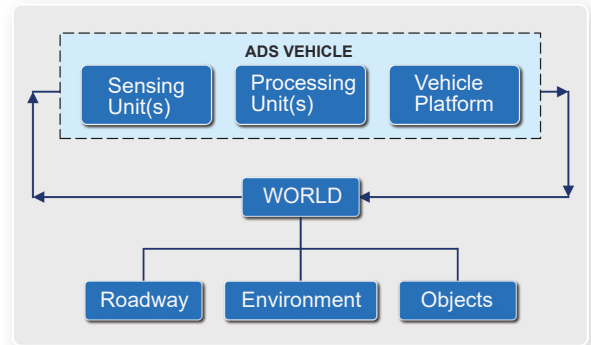
**Lead** to outcomes that benefit ADS developers and roadway stakeholders

## How Is the Framework Used?

ADS and roadway testing require a range of data for system evaluation and performance.

- The Framework facilitates common ground for collaboration:
  - Taxonomy of SAE J3016B – compatible data sources
  - Interactions between ADS vehicles and the surrounding World
    - Roadway
    - Environment
    - Objects

The Framework forms a methodology for stakeholder collaboration when designing and conducting ADS Vehicle testing and evaluation, as follows:



### Pre-Test Phase

#### Objectives

- Identify the test or evaluation problem statement
- Initiate and engage stakeholder collaboration activities
- Address safety concerns, test approvals, and/or logistics for the test

Pre-Test and Test Definition phases occur at the same time.

#### Key Activities

- Conduct public outreach
- Identify stakeholders
- Negotiate data sharing
- Assess integration challenges
- Determine testing grounds
- Obtain proper authorization

### Test Definition Phase

#### Objectives

- Define the technical and data facets of the collaborative test program
  - Stakeholders collaborate to define:
    - Common goals and benefits
    - Definition of the test's success
    - Test problem statement

Test Definition and Pre-Test phases occur at the same time.

#### Key Activities

- Develop test plans
- Identify key metrics
- Define evaluation criteria
- Determine data management requirements
- Schedule resources

### Test Execution Phase

#### Objectives

- Execute test or pilot as defined in the Test Plan
  - Collaboration among the stakeholder groups is critical during test execution and monitoring activities.
  - Including necessary stakeholders is an effective means of addressing adjustments made during test execution.

#### Key Activities

- Execute test plans
- Monitor progress
- Identify gaps
- Adapt to changes
- Communicate issues

### Post-Test Phase

#### Objectives

- ADS and roadway stakeholders finalize testing and evaluation activities
  - Stakeholder collaborations include:
    - Discussions of lessons learned
    - Formulation of process improvements and new ideas for subsequent testing using shared data and lessons learned

#### Key Activities

- Analyze data
- Document conclusions
- Evaluate processes
- Share results

## Interested in Learning More About This Project?

### Contact Information

John Harding

FHWA Connected/Automated Vehicles and Emerging Technologies Lead  
(202) 366-5665 | John.Harding@dot.gov



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