



# National Roadway Integration of ADS Concept of Operations



CAT Coalition Working Group Engagement

May - June 2020



# Agenda

- **ConOps purpose and need**
- **Overview of ConOps**
- **Context and integration case development**
- **Feedback and discussion**



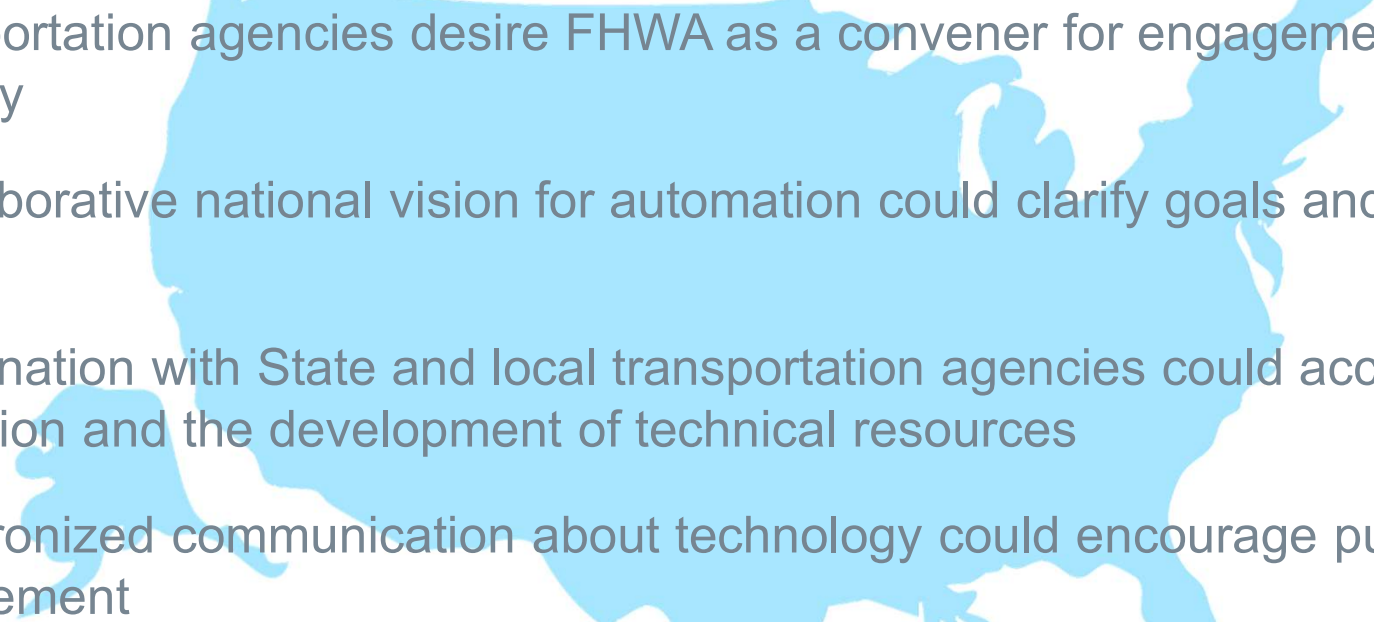


# ConOps Purpose and Need

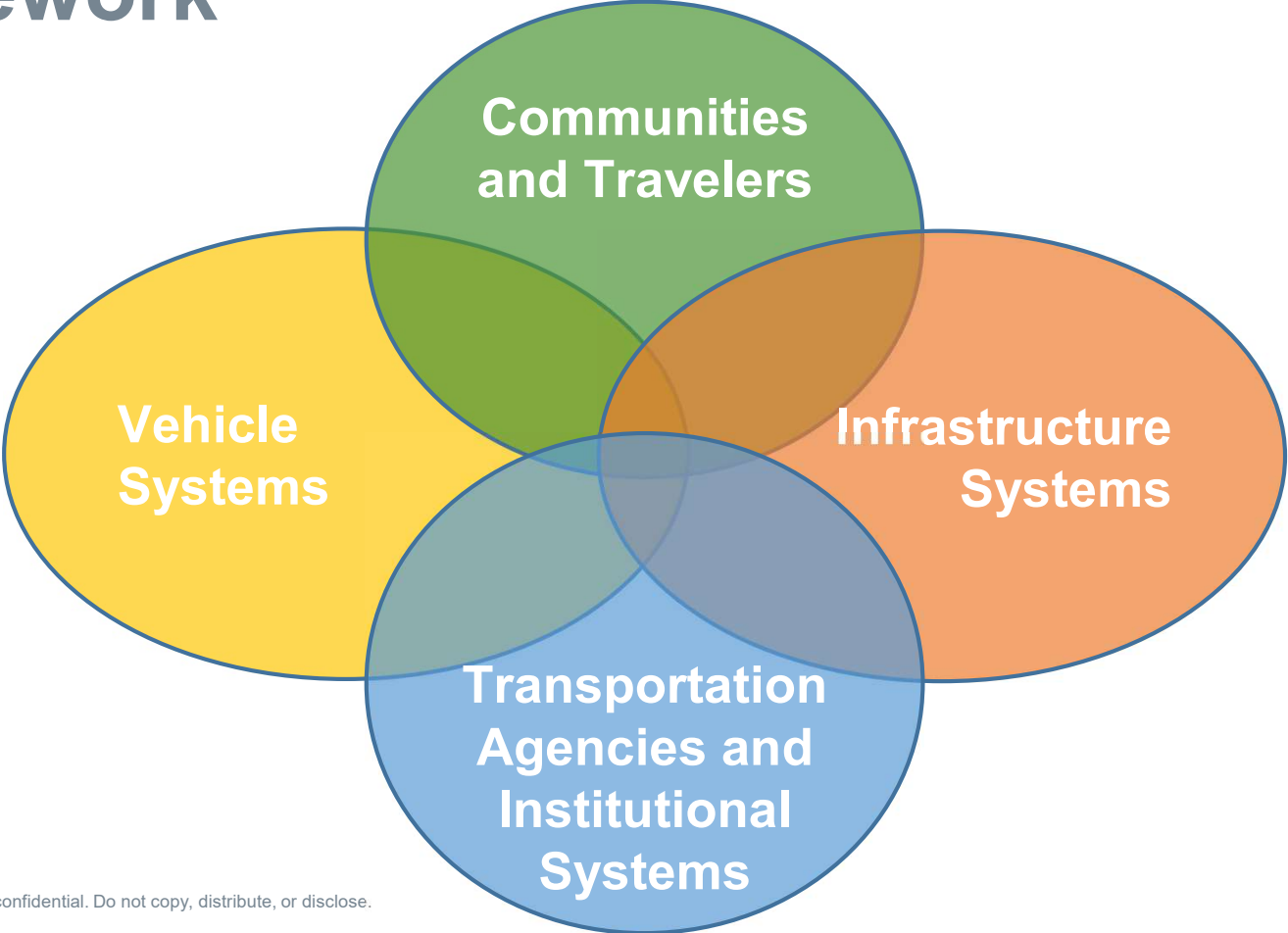




# Stakeholder Engagement: Primary National Opportunities

- 
- Transportation agencies desire FHWA as a convener for engagement with industry
  - A collaborative national vision for automation could clarify goals and focus action
  - Coordination with State and local transportation agencies could accelerate education and the development of technical resources
  - Synchronized communication about technology could encourage public engagement

# Roadway Automation Readiness Framework



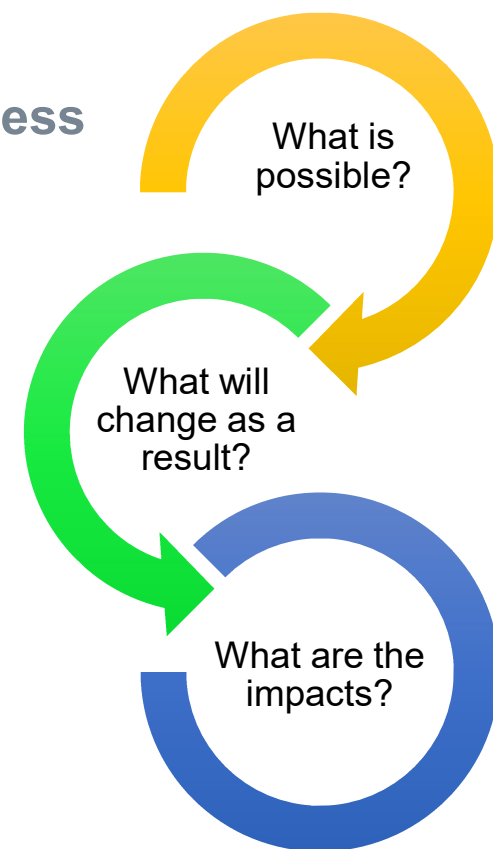
# Concept of Operations Purpose and Need

## ▪ Delineating the “what” in preparing for automation readiness

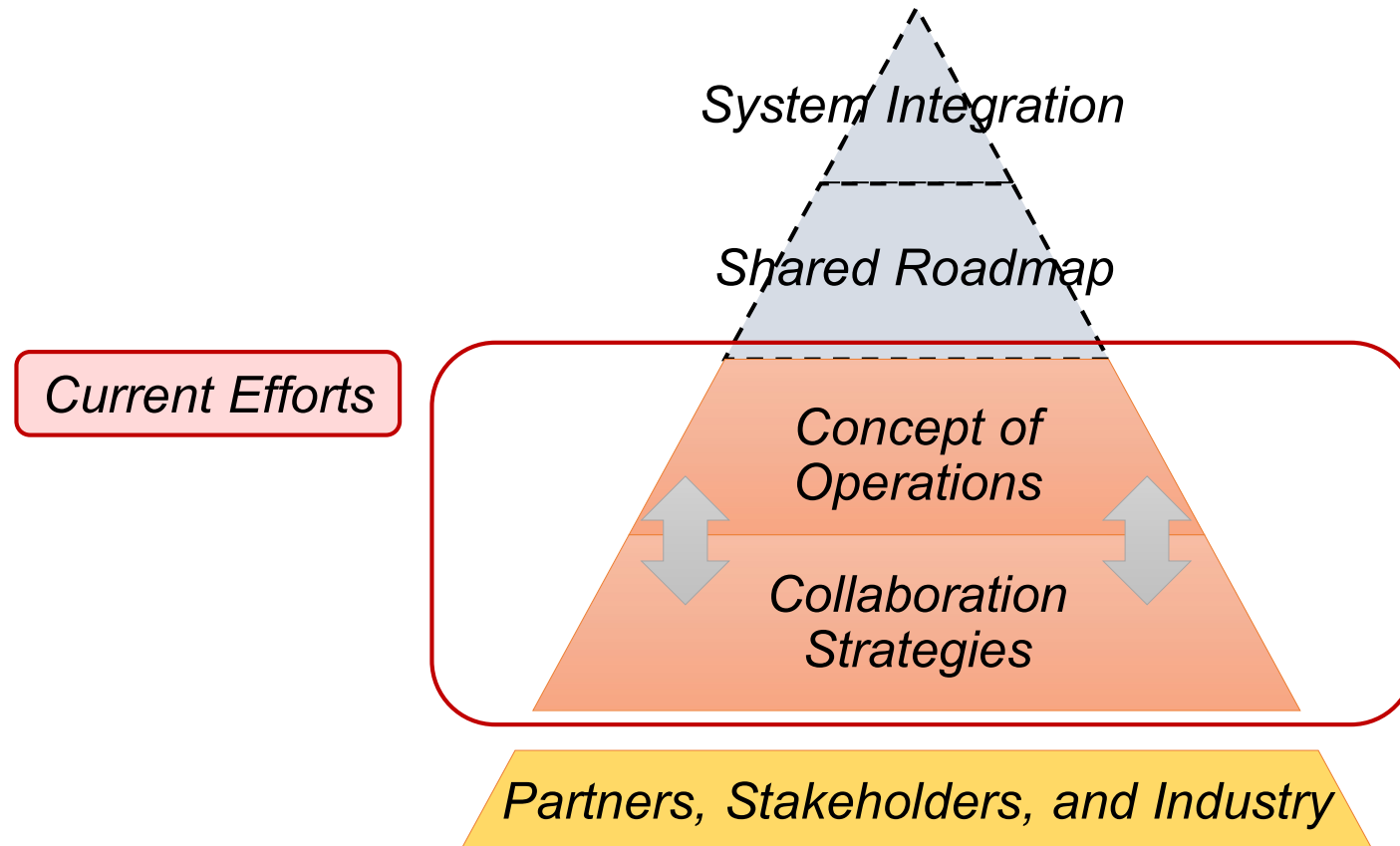
- Mixed fleet operations
- Use cases based on operational design domains
- Changing requirements for infrastructure owner operators

## ▪ Definitional document

- Provide methodology for describing automation and related interactions within the vehicle-roadway system
- Enable organizations to speak the same language
- Support conversations for organizational and infrastructure planning



# Coordination for Automation Readiness

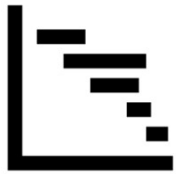




# Overview of ConOps







# The ConOps as a Project

- **Project duration Oct 1, 2019 – Sept 30, 2021**
  
- **Primary tasks**
  - Task 1. Project Management
  - Task 2. Background Documentation and Foundational Research
  - Task 3. Stakeholder Engagement
  - Task 4. ConOps Requirements Development
  - Task 5. ConOps Development
  - Task 6. ConOps Implementation Plan



# Not a Traditional ConOps

## ▪ It is not...

- Standards document
- Legislative/regulatory guidance
- Technology plan

## ▪ It is a plan for...

- Integration
- Implementation
- Sustained coordination

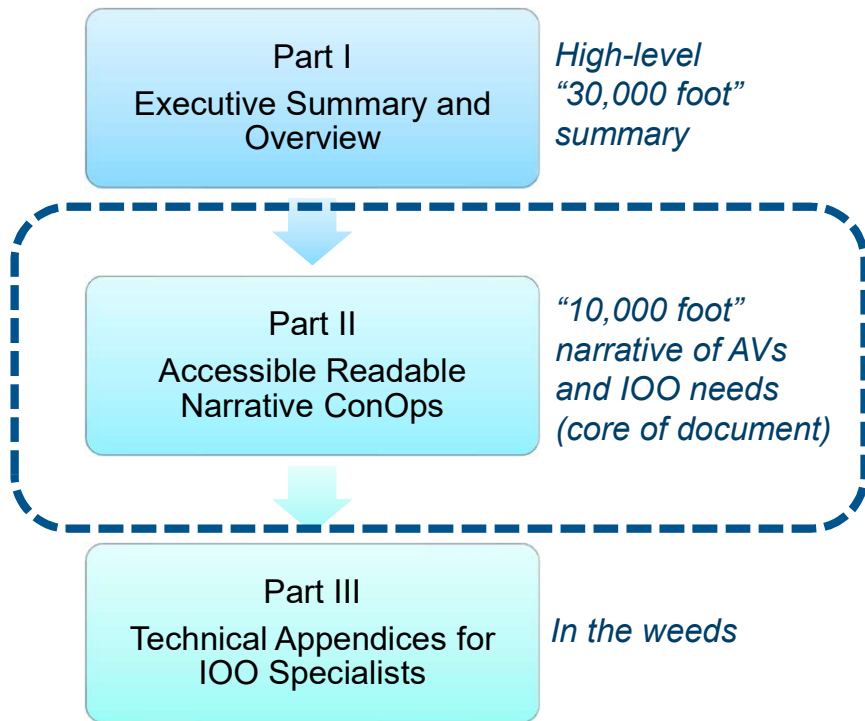
Iterative

Stakeholder-  
driven

Strategic

Validated

# Proposed ConOps Structure

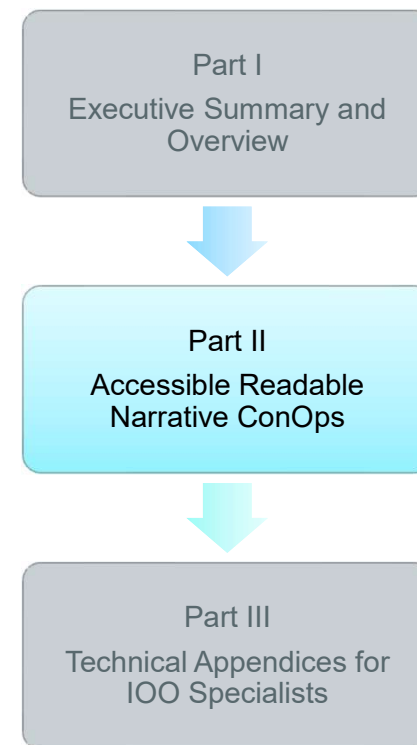


| Purpose  | Audience                             |
|--|--------------------------------------|
| Info to support decision making  | Upper management and decision makers |
| Comprehensive understanding of ADS, likely forms of deployment and major impacts on IOOs     | IOO staff                            |
| Details in standalone appendices (topics and number of appendices TBD based on requirements) | IOO technical specialists            |

# Part II – Concept of Operations

(Accessible, Readable Narrative)

1. Introduction and Overview
2. Key Terms and Concepts
3. National Initiatives and Relationships
4. Motivations for this Document
5. How IOOs Can Use This Document
6. **ADS and Roadway Automation Context**
7. **ADS Integration Cases**
8. Highway Automation System Integration Requirements
9. Sample Operational Scenarios
10. Assumptions, Constraints, Unknowns
11. Impacts

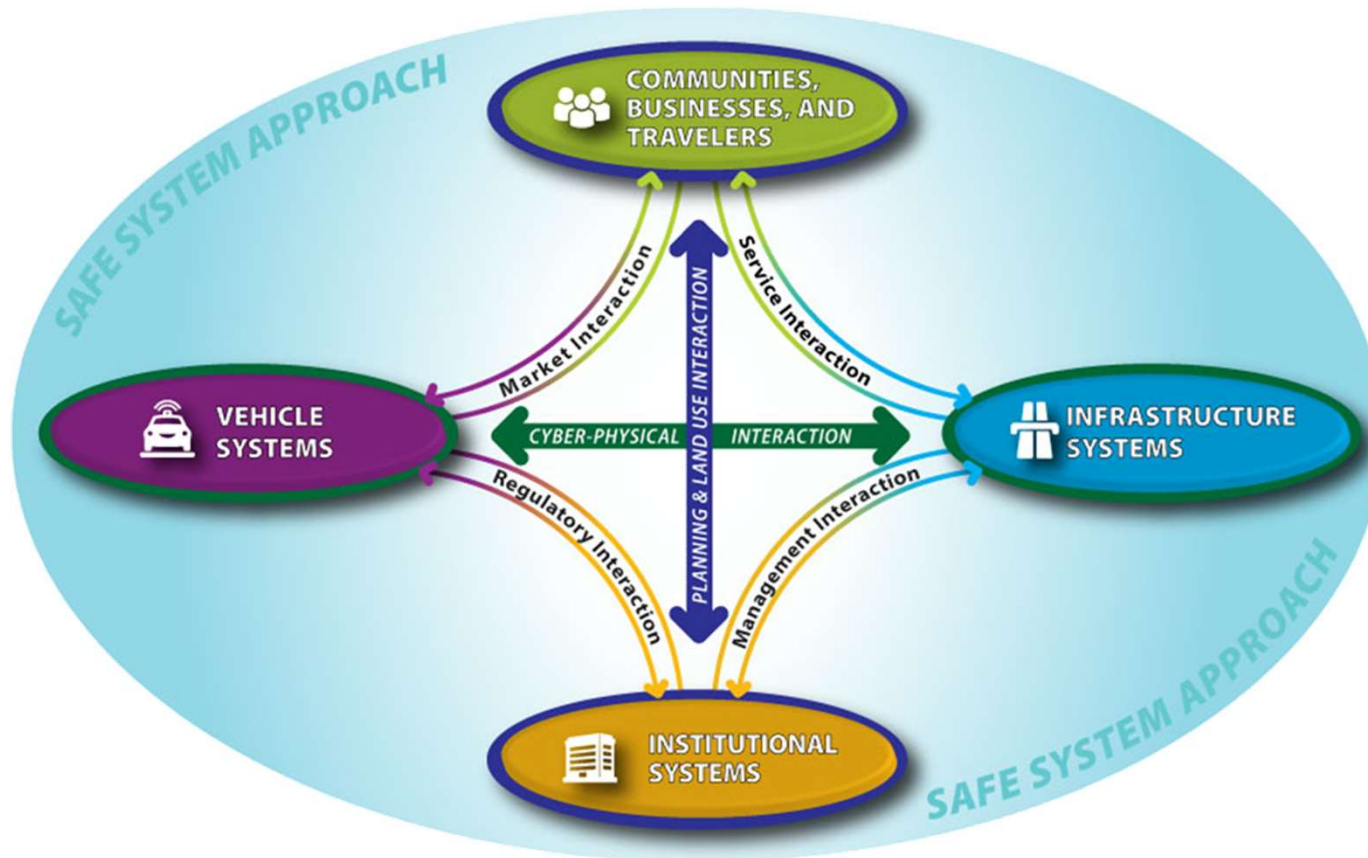




# Context and Integration Case Development



# ADS and Roadway Automation Context



# ADS Integration Cases

## Freight and Packages

- Automated Long-Haul Freight
- Automated Local Freight Delivery
- Automated Home Package and Goods Delivery

## Transit

- Automated Fixed Route Transit
- Automated On Demand Transit

## Individual Commuting & Travel

- Automated Ride for Hire
- Automated Personal Vehicles

## Agency Operations

- Automation of Fleet Vehicles

Agencies select applicable integration cases

Integration cases translate into roadway automation needs

- ADS integration cases will grow and evolve
- ConOps provides structure to add new ADS integration cases or to modify existing ones



# Feedback and Discussion







# Feedback

- **Any general feedback on...**
  - Proposed structure of the ConOps?
  - ADS and roadway automation context?
  - ADS integration cases?

# Discussion Questions

- **Which integration case will most impact the roadway environment by 2035 and why?**
- **What aspects of fleet vehicle automation will impact safety and efficiency?**

## **Freight and Packages**

- Automated Long-Haul Freight
- Automated Local Freight Delivery
- Automated Home Package and Goods Delivery

## **Transit**

- Automated Fixed Route Transit
- Automated On Demand Transit

## **Individual Commuting & Travel**

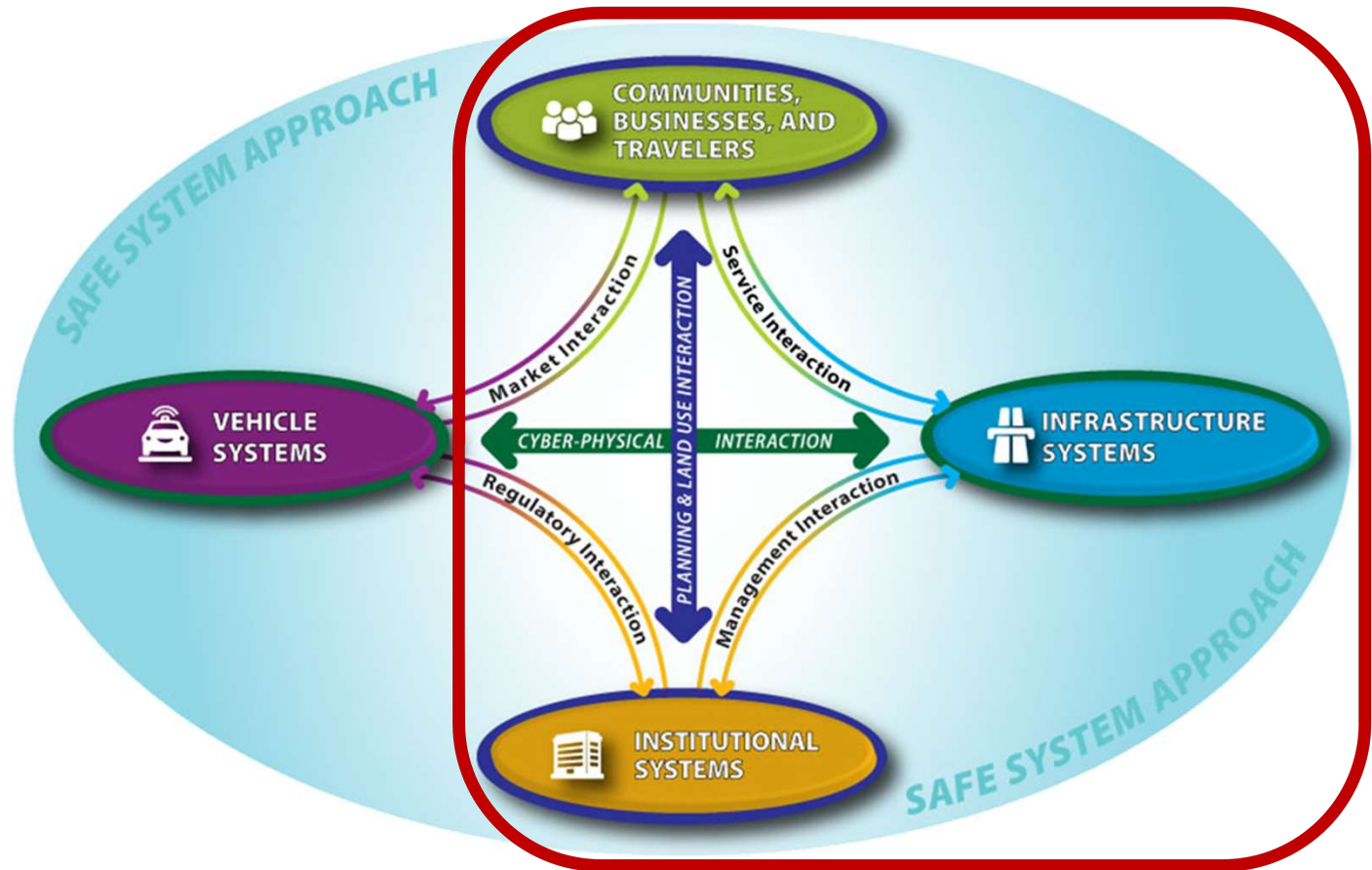
- Automated Ride for Hire
- Automated Personal Vehicles

## **Agency Operations**

- Automation of Fleet Vehicles

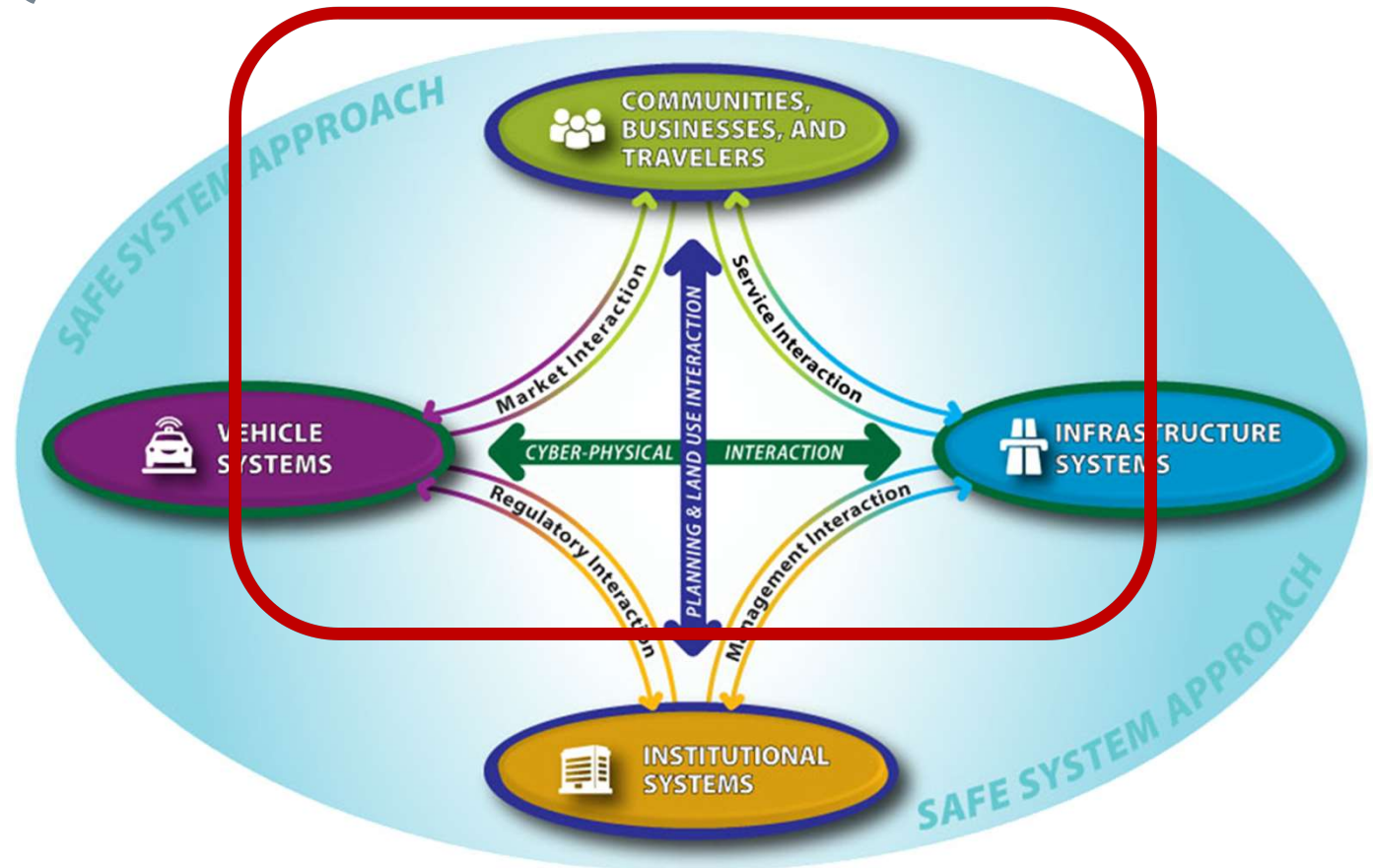
# Discussion Questions – TR WG

- What do we know about the impacts?
- What do we still need/want to know about the impacts?



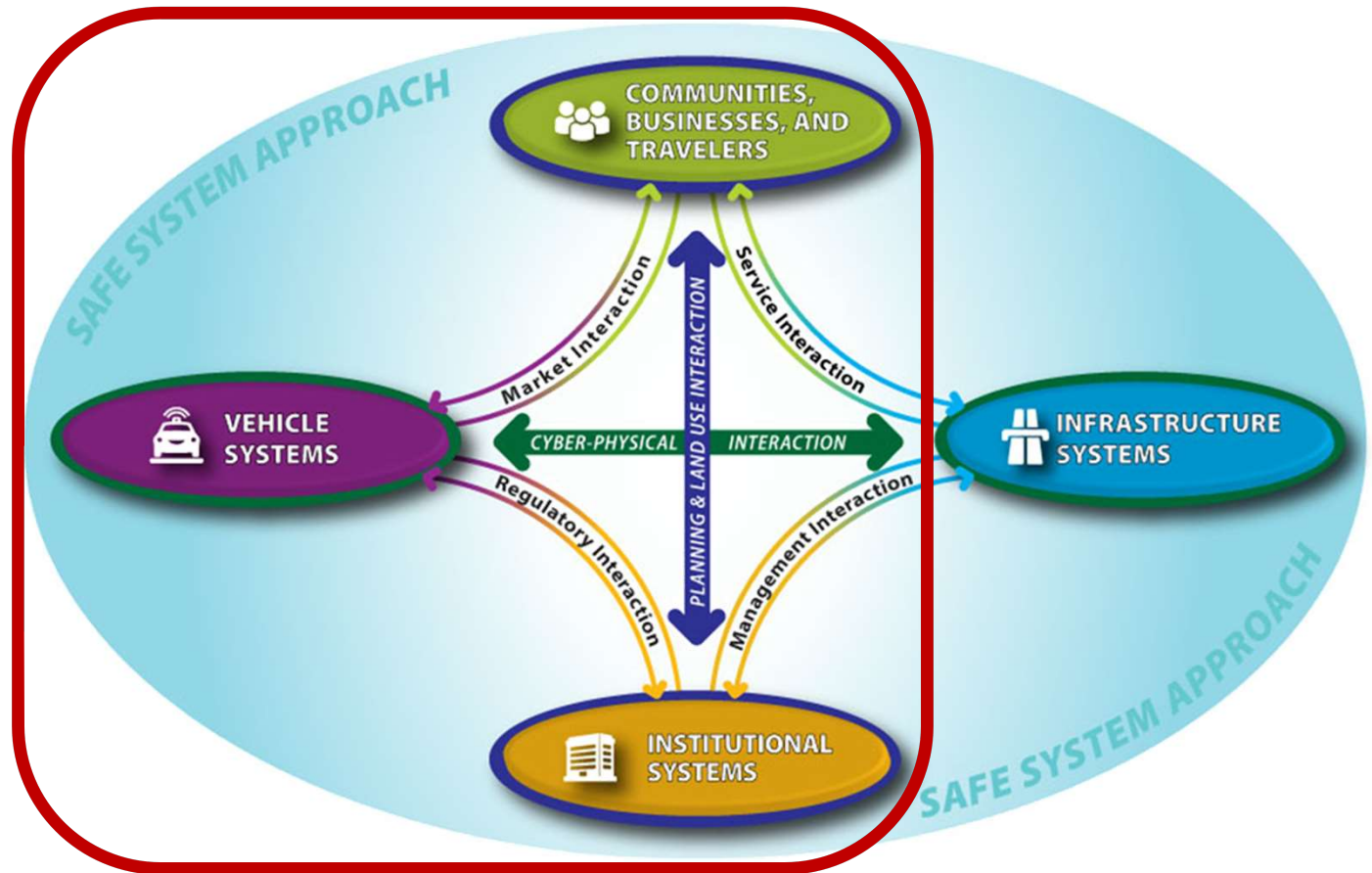
# Discussion Questions – PS WG

- What do we know about the impacts?
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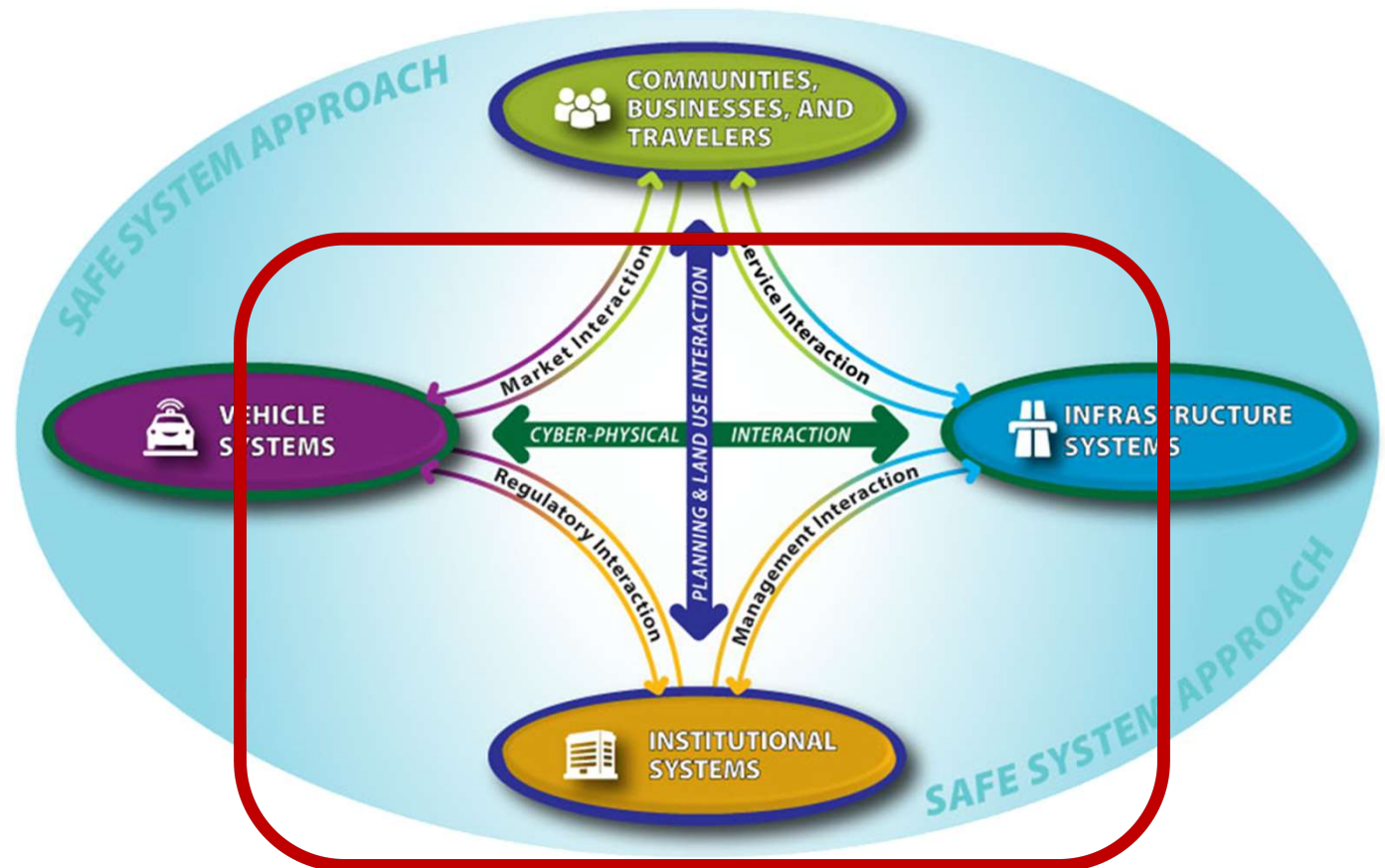
# Discussion Questions – IOO/OEM Forum

- What do we know about the impacts?
- What do we still need/want to know about the impacts?



# Discussion Questions – PLR WG

- What do we know about the impacts?
- What do we still need/want to know about the impacts?



# Questions?

