CAT Coalition Technical Resources Working Group Quarterly Meeting

May 6, 2020

11:00-12:30 (Eastern)

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Agenda

11:00-11:05	Welcome and Introductions
11:05-11:15	Outreach and Knowledge Transfer, Resources Recap
11:15-11:25	IOO/OEM Forum Work Plan and Linkages to Resources WG
11:25-11:30	Partner Reports from USDOT, ITSA, ITE
11:30-11:55	FHWA Roadway Automation ConOps
11:55-12:05	CV Deployment Environment
12:05-12:25	SPaT Implementation Resource
12:25-12:30	Next Webinar, Member Updates, Closing

Outreach and Knowledge Transfer, Resources Recap, IOO/OEM Forum Work Plan and Linkages to Resources WG

Faisal Saleem, Tom Kern, and Jeremy Schroeder

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Ongoing Commitment to Outreach & Knowledge Transfer

- Suggestions from WG Members on Ways to Enhance Impact:
  - Proposed new WG Members
  - Communications with/involvement in other initiatives
  - Knowledge resources to include on CAT Coalition website
    - SPaT deployment, related to the full V diagram
    - OBU deployment documentation for Connected Fleet Challenge
    - Cybersecurity and network security resources
    - New or planned SPaT deployments, or updates

Resources WG Recap

- Data Hub and Code Hub Resources
  - Website to access or share ITS and CAV data or code
  - https://www.its.dot.gov/code
  - https://www.its.dot.gov/data

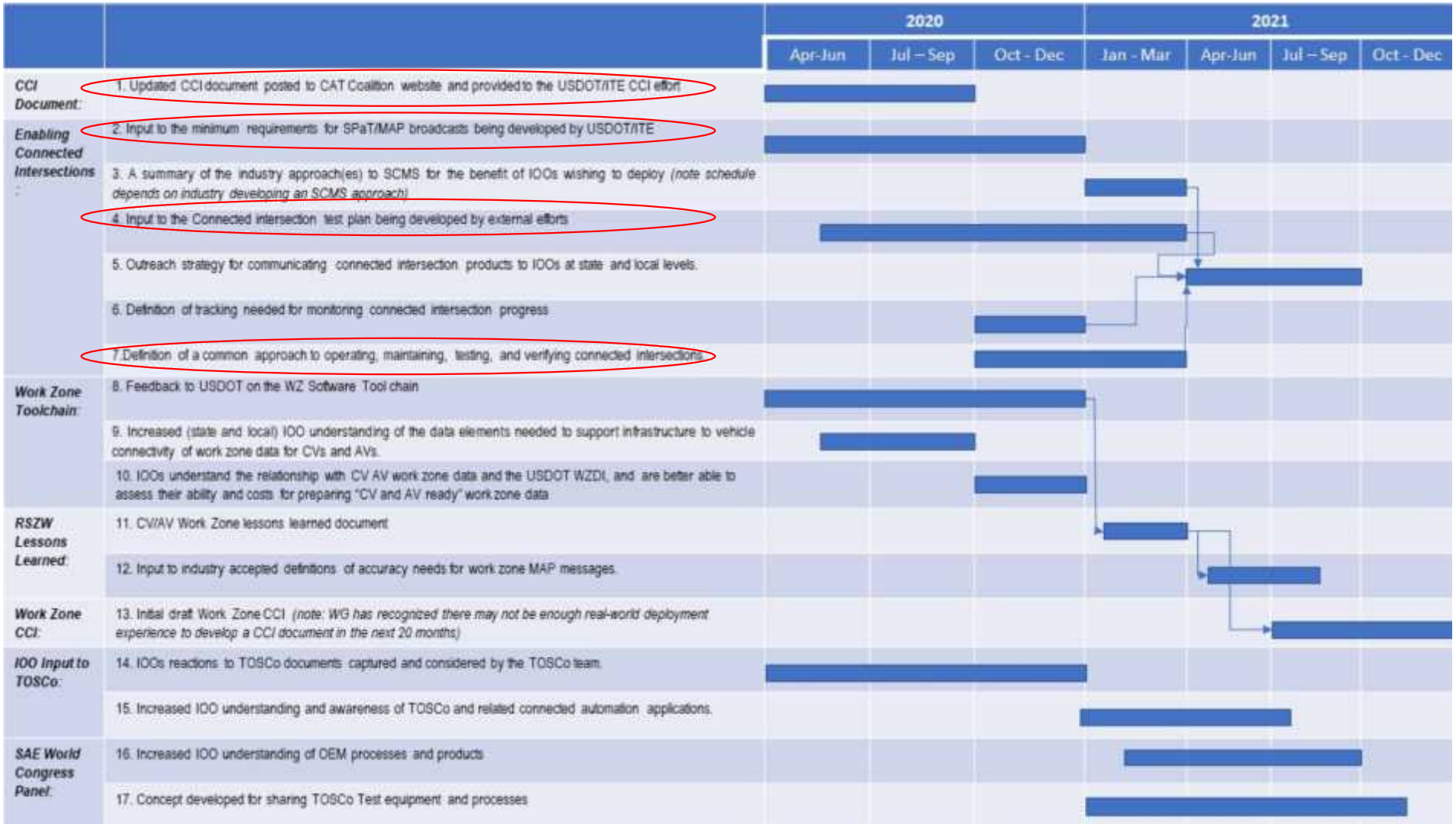
- CV Deployment Environment Resource
  - Discussed second drafted chapter on In-Vehicle Systems and Vulnerable Road Users
  - Volunteers will review and provide input to each section before sharing with WG members

Resources WG Recap

- NEMA TS 10 CV Infrastructure Roadside Equipment
  - Give IOOs confidence to proceed with “future proof” CV infrastructure deployments
  - Procure on basis of user needs and associated requirements
  - Give effect to USDOT policy: preserve spectrum, technology neutral
  - Ensure Day One applications include infrastructure applications
  - Describes the following attributes of roadside equipment
    - Physical: hardware platform, mechanical and environmental
    - Software: communications stack, security, minimum set of standard messages
    - Interfaces: terrestrial and wireless
    - Performance: latency and computational capacity

IOO/OEM Forum Work Plan Activities

IOO/OEM Forum Work Plan Activities Pertinent to Resources Working Group



IOO/OEM Planned Outreach to Resources Working Group

		2020			2021			
		Apr-Jun	Jul – Sep	Oct - Dec	Jan - Mar	Apr-Jun	Jul – Sep	Oct - Dec
Resources WG	1. React to draft SPaT/MAP requirements & CCI Clarifications	5/6	8/12					
	2. React to Connected Intersections Test Plan	I		11/11				
	3. Receive briefing / provide reactions to approach for operating and maintaining connected Intersections							

Introduce IOO/OEM Forum Linkage

Planned webinar & date

Partner Reports from USDOT, ITSA, ITE

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FHWA Roadway Automation Concept of Operations

John Corbin, FHWA and Ginny Crowson, Athey Creek

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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

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ConOps Purpose and Need

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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

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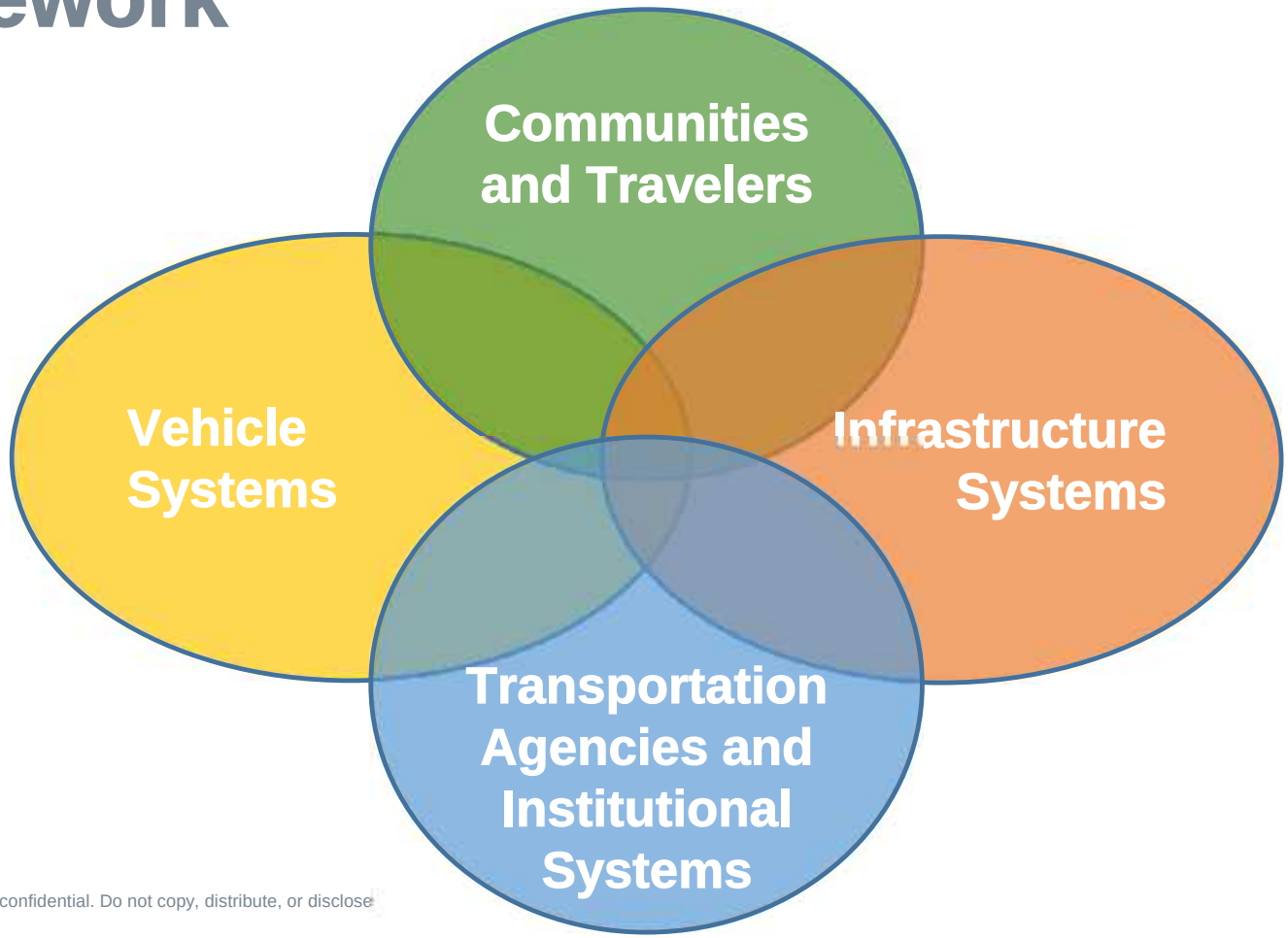
Roadway Automation Readiness Framework



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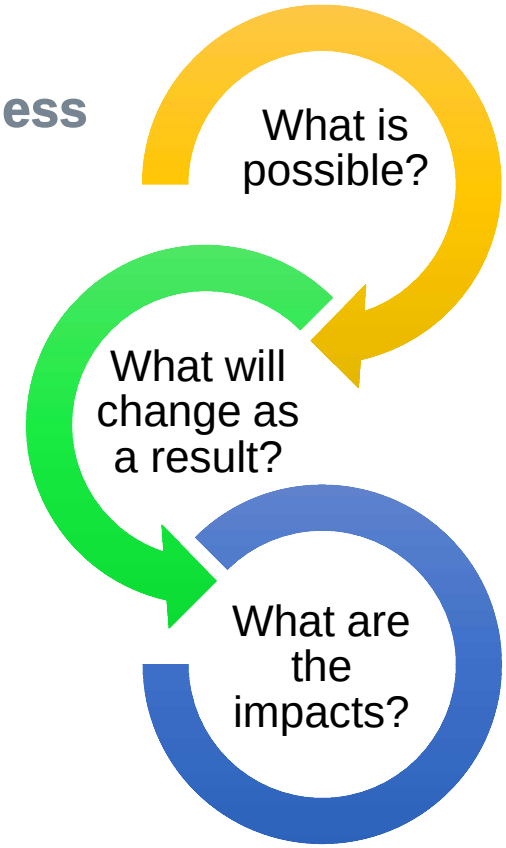
Concept of Operations Purpose and Need

- **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



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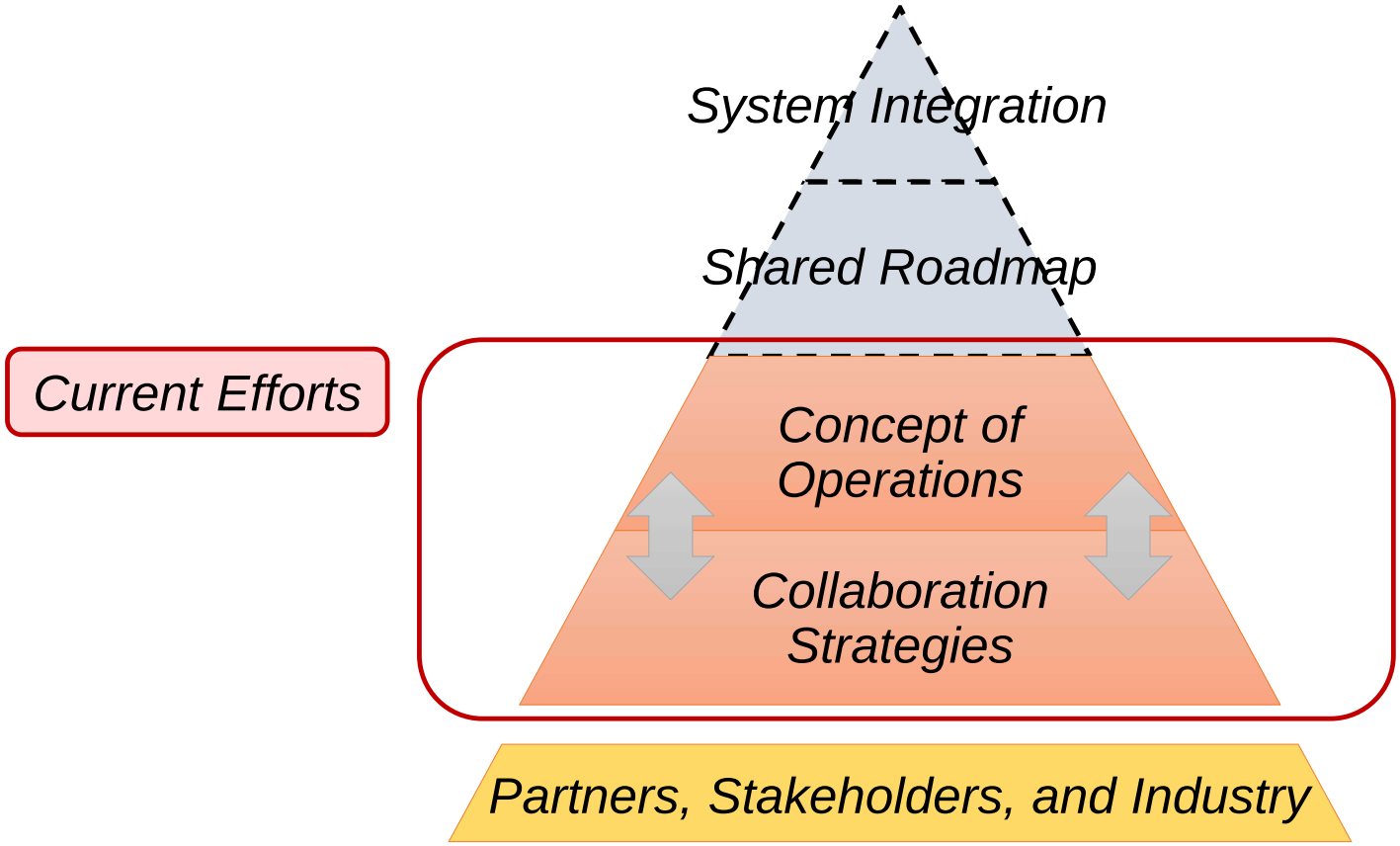
Coordination for Automation Readiness



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Overview of ConOps

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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

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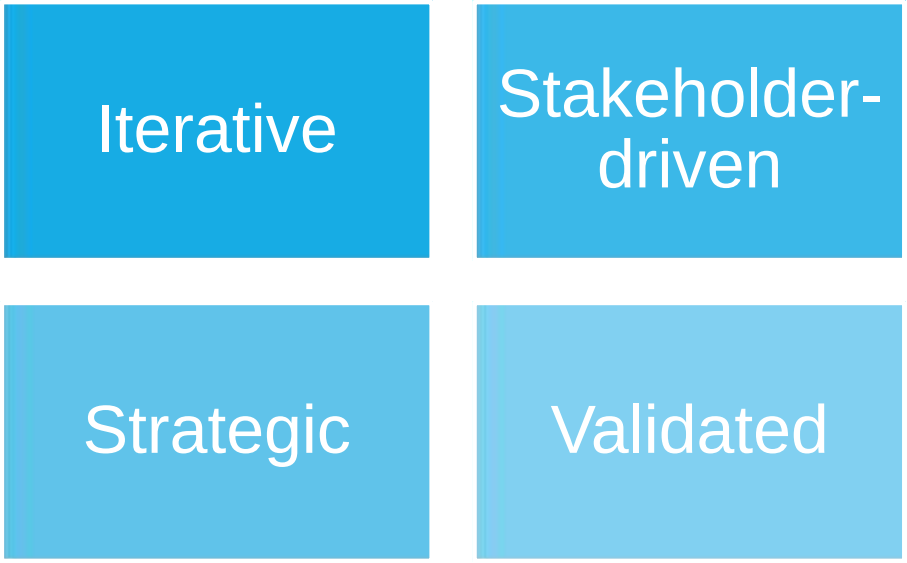
Not a Traditional ConOps

- **It is not…**
  - Standards document
  - Legislative/regulatory guidance
  - Technology plan
- **It is a plan for…**
  - Integration
  - Implementation
  - Sustained coordination



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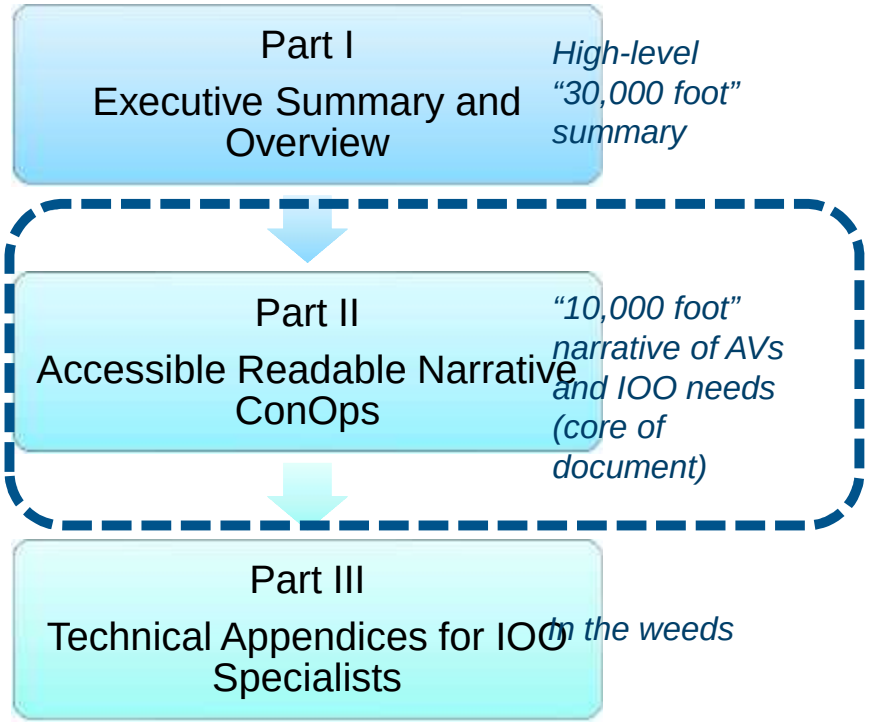
Proposed ConOps Structure



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

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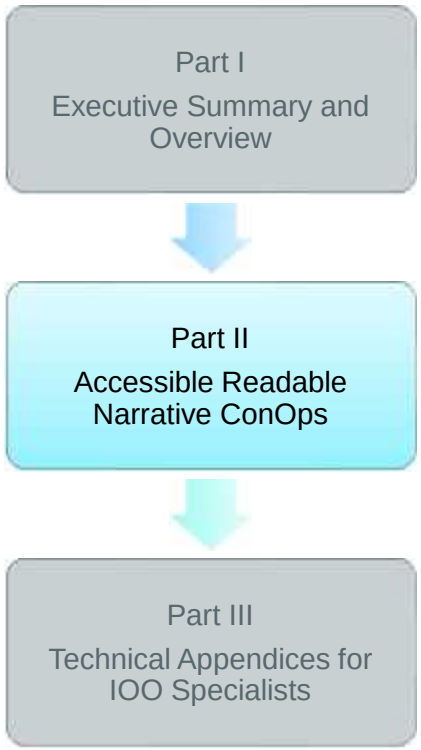
Part II – Concept of Operations
(Accessible, Readable Narrative)

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



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Context and Integration Case Development

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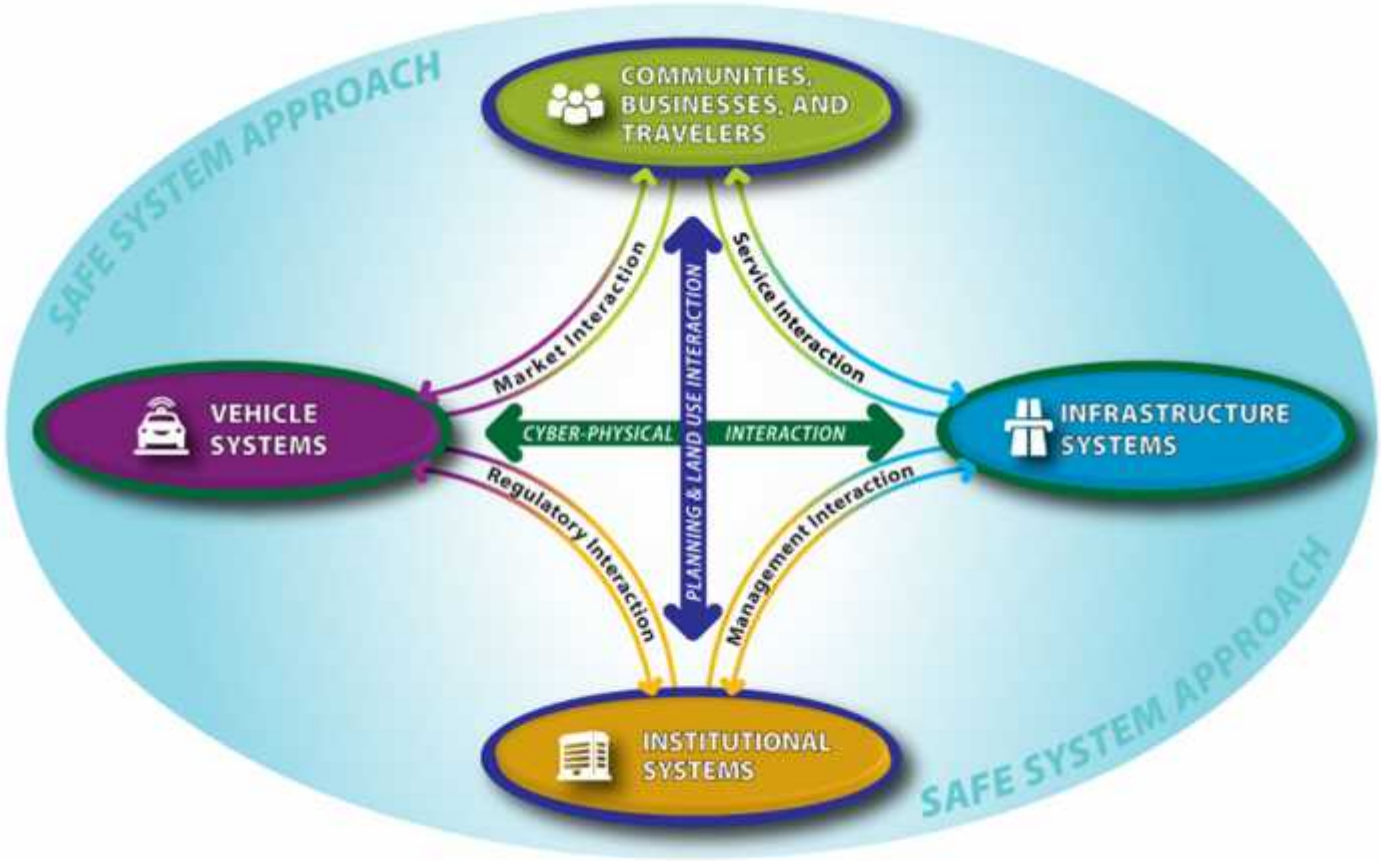
ADS and Roadway Automation Context



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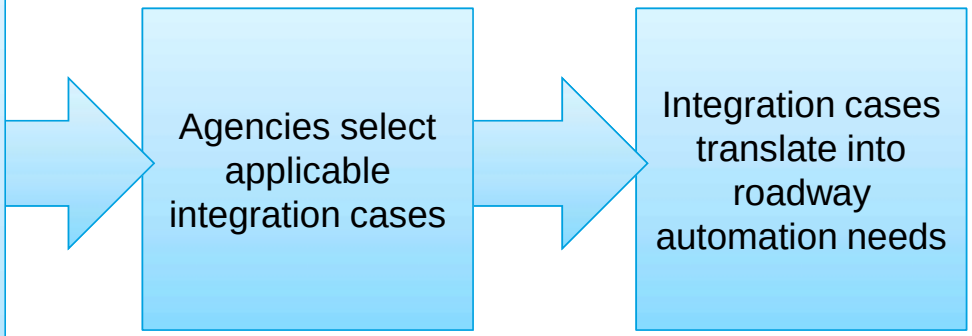
ADS Integration Cases

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



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

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Feedback and Discussion

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Feedback

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

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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

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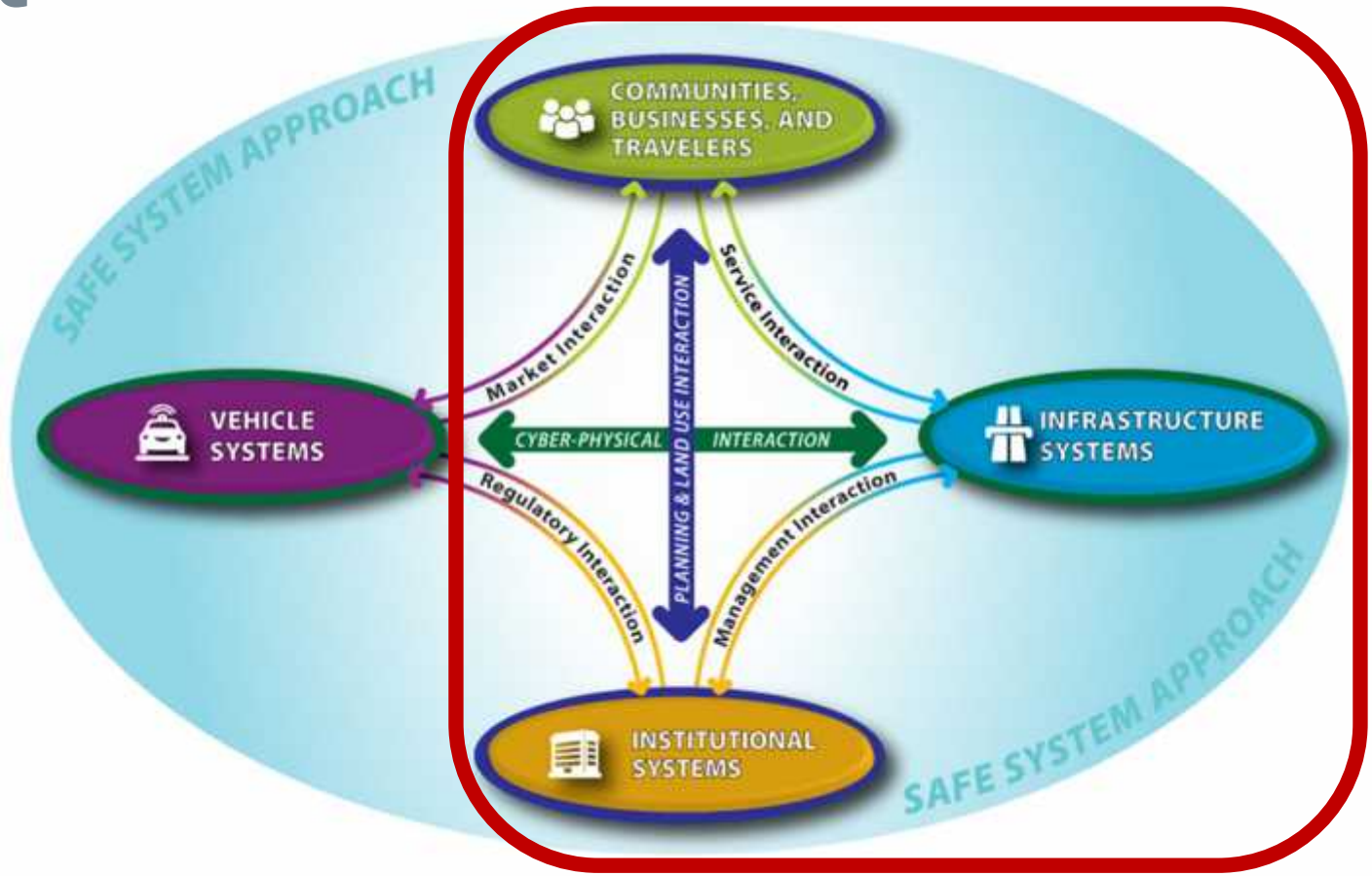
Discussion Questions – Resources WG

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



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Questions?

CV Deployment Environment Discussion

Jeremy Schroeder, Athey Creek

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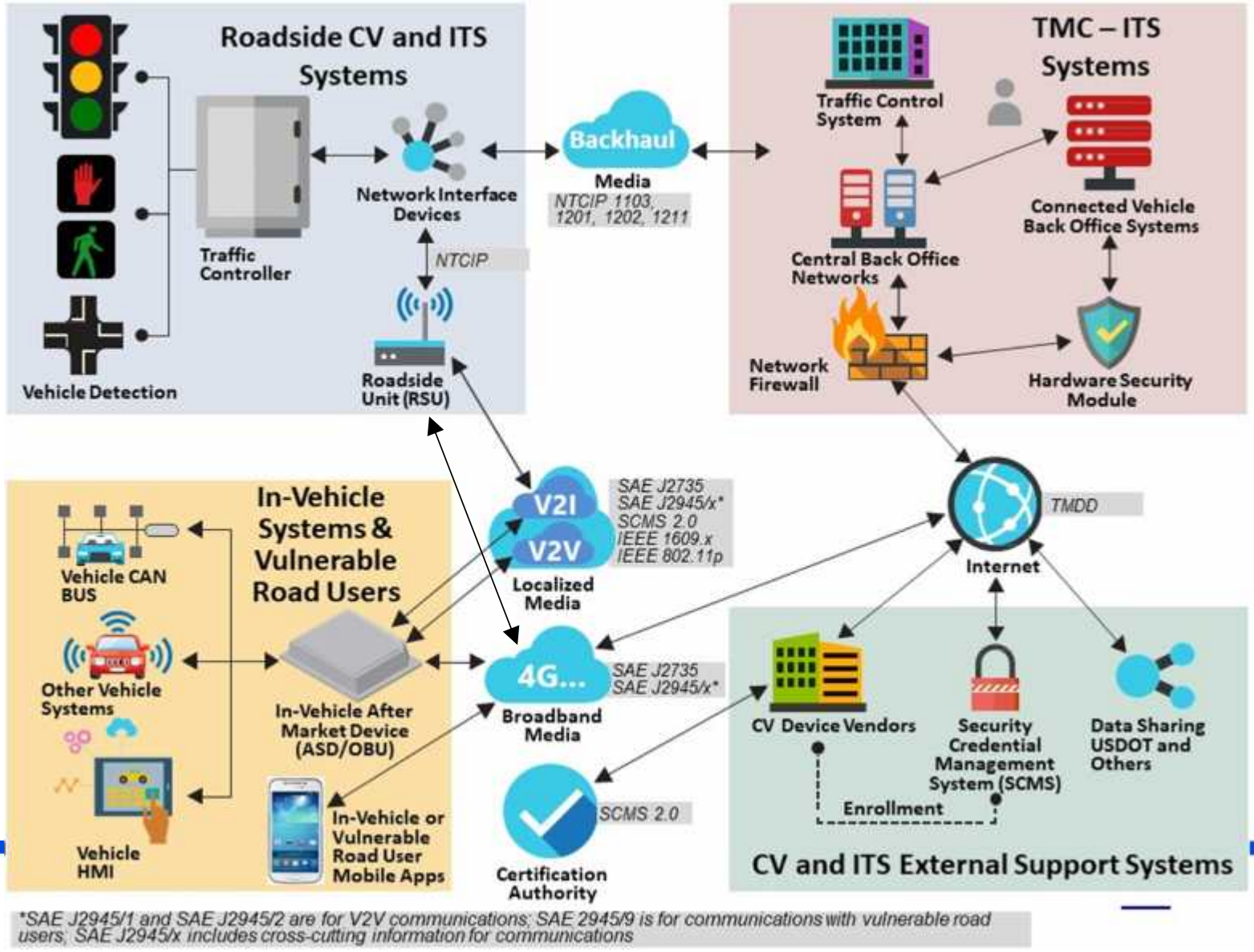
CV Deployment Environment

- Resource Objective
  - Provide a full-picture, high-level overview of the CV environment.
  - Leverage experiences from CV deployers to document what is needed for an interoperable CV deployment:
    - Systems, including lifecycle considerations
    - Connections
    - General considerations
    - Reference to standards and other resources, where possible



*SAE J2945/1 and SAE J2945/2 are for V2V communications; SAE 2945/9 is for communications with vulnerable road users; SAE J2945/x includes cross-cutting information for communications

CV Deployment Environment

- Status and next steps
  - **Roadside CV and ITS Systems** and **In-Vehicle Systems and Vulnerable Road Users** sections sent to WG members for additional review and comments with **Executive Summary** section
  - **TMC-ITS Systems** reviewed by volunteer group, will be shared with WG members for additional input
  - **CV and ITS External Support Systems** and **Communications** shared with volunteer group

SPaT Implementation Resource

Barbara Staples, Noblis

Closing Remarks

Any deployment updates or lessons learned to share with the group?

Any other closing comments or questions?

Next Resources WG Meeting

August 12, 2020

11:00-12:30 (Eastern)