Early Implementation Alternatives for Automated Vehicles: An Interactive Scenario Planning Session

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Agenda

• Introduction and Presentation of Scenario Planning Exercises (30 minutes)
• Active Group Scenario Planning (2.5 hours)
• Final Group Presentations (30 minutes)
Scenario Planning Exercises

• Planning problem and general solution includes automated vehicles
• Groups of 10-12 people work on one scenario
• Each group member assumes a stakeholder role
• Group members negotiate and develop an implementation plan
Automated Vehicle Scenarios

1. Complete Streets
2. First- and Last-Mile Transit Access
3. Road Trains in Managed Lanes
4. Heavy Duty Truck Platoons

• The first three have local sites and the last is hypothetical.
• Design a plan and address implementation challenges
Stakeholder Roles

• Government (federal, state, regional, and local)
• Interest groups (disabled, equity, housing, environmental, tax payers, AAA, homeowners)
• Labor (taxi, bus drivers)
• Transit Agencies
• Technology Providers
• Automobile Manufacturers
• Commercial Vehicle Operators
• Insurance Industry
Scenario 1: Downtown Complete Streets and an Automated Shared-Ride Only Zone

- By 2040, complete streets ubiquitous in downtown LA
- Rapid market penetration of personal AVs over past 5 years
- Exponentially increased capacity & vehicles on highways to downtown LA
- Downtown streets are now near gridlock
- City wants to limit vehicle access to fleet of small, electric, automated shared-ride vehicles
Downtown Los Angeles
Parking

• Autonomous vehicles don’t require street-level parking and will use very little of the current parking capacity in the city.
• Demand is high for new downtown space, and there is huge interest in converting parking structures to more profitable uses.
Scenario 2: Automated Vehicles for First and Last Mile Access

• By 2025, South Coast rail transit networks links major employment and population centers
• But in the suburbs, beyond ¼ mile station radius, development density is low and it is too expensive to serve by traditional shuttles
• To increase rail access at a lower cost, the region now wants to implement a fleet of automated vehicles
Scenario 3: Automated Road Trains

- By 2020 network of high occupancy (HOV) lanes are congested
- AV technically viable but market penetration slow
- Region wants integrate AV road trains to expand capacity and reduce congestion
- Your task is to develop a feasible implementation plan that meets both design needs and interests
Scenario 4: Automated Heavy-Duty Truck Trains

Problem

- Freight truck travel is expected to grow rapidly to 2040
- Significant contributor to congestion in urban areas and on intercity routes
- Negative impact on regional and US economic competitiveness
- HDV truck platoons to increase existing highway capacity
Background on Automated Road Trains

Definition:

• Vehicles closely follow and mimic lead vehicle, which is driven by professional driver.

• Vehicles can accelerate or break at the same time and travel with short distances between vehicles.

• Platoons can be formed in advance, in-route, or even through re-routing.
Visualizing Automated Vehicle Road Trains

- Car Joins Platoon From Rear
- Truck Joins Platoon From Front
- Car Joins Platoon
- Car Leaves Platoon
- Truck Joins Platoon
- Truck Leaves Platoon
- Other Vehicle Tries to Enter Platoon

Symbols:
- FV
- PFV
- OV
- FV/LV
- PFV/PLV
Business Model

Payment
• Monthly Subscription
• Pay-as-You-Go
• Free Service

Costs
• $2300 both lead and following vehicle.
• $350/year VTV communications
• $2900 lead driver training