



Flash Memory Summit

CAV- Do we really KNOW if we are ready?

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Caltrans CAV

Efforts & Challenges

Palo Alto Test Bed (El Camino Real)



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- State Route 82-El Camino Real
 - Parallel to US-101 and I-280
 - Between I-380 and I-880
 - 35 miles long with 157 intersections
- DSRC & C-V2X Equipped Intersections
 - 16 DSRC and 15 C-V2X Intersections
 - 7 miles long with 31 intersections
 - Medical Foundation Drive Intersection in the North to the Grant Road Intersection in the South
 - The 16 existing DSRC RSUs will be replaced later this year with C-V2X RSUs
 - Open for business

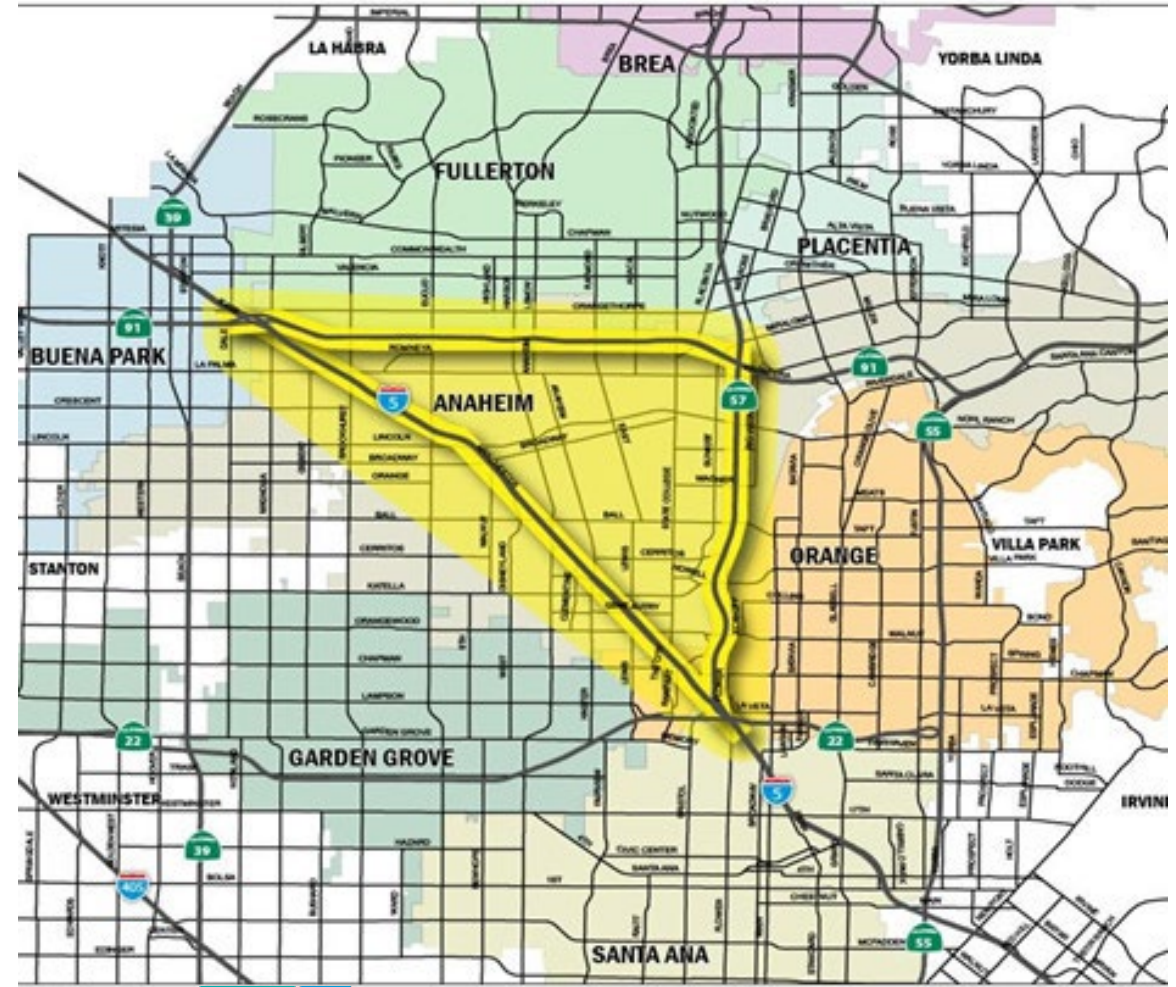


Southern California ICM/TSMO Project



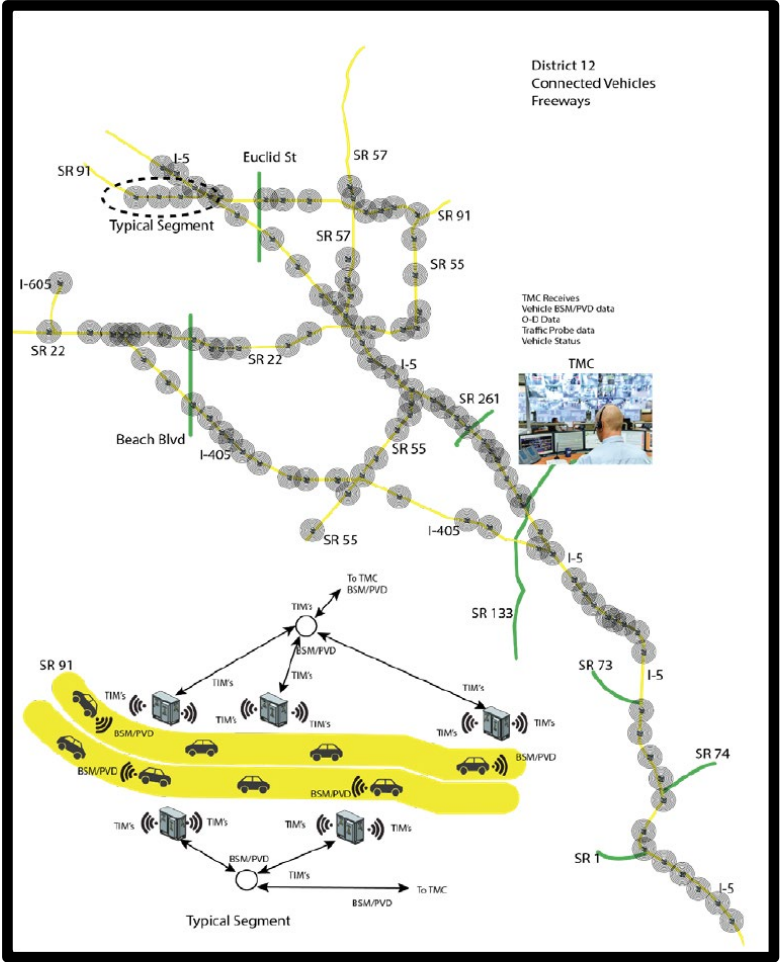
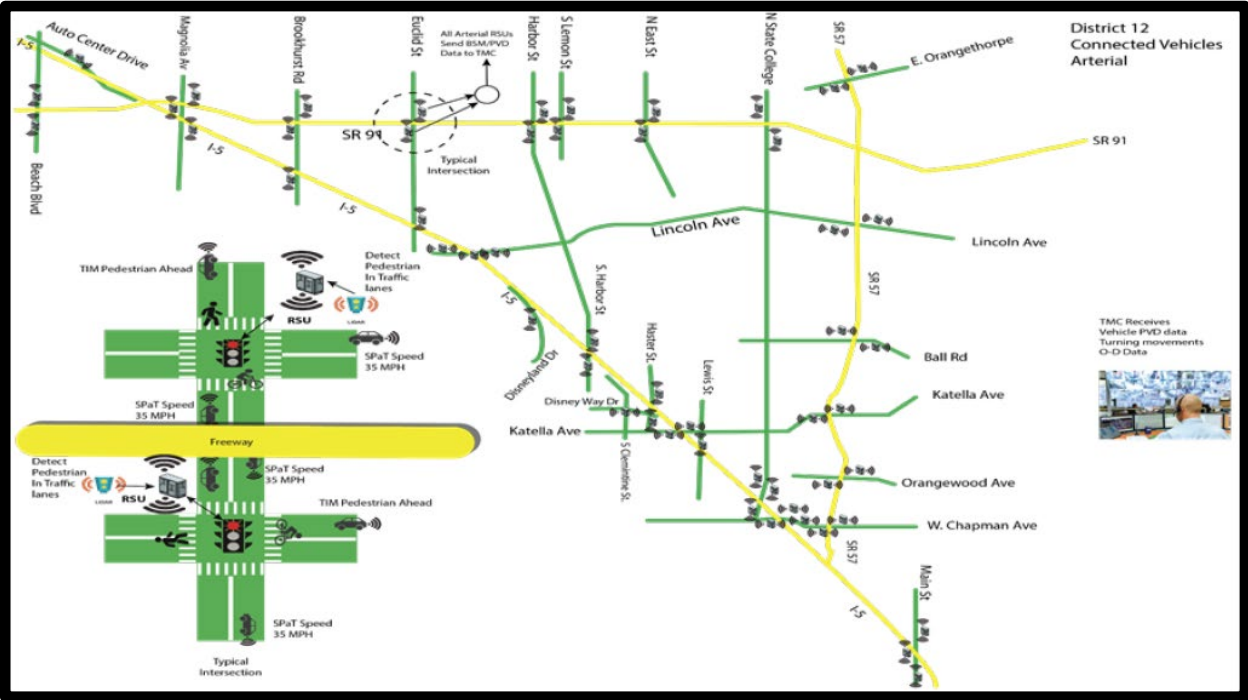
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- Deploy ITS Field Devices to Improve Roadway Surveillance and Traveler Information
 - Including 184 RSEs
- Upgrade Existing TMC Systems:
 - TSMSS
 - ActiveITS
- Deploy District-wide Systems:
 - 3rdParty Live Data (HERE & WAZE)
 - TSMO Data Hub
 - Information Exchange Network (IEN)
 - ICM
 - Modeling & Prediction (Aimsun)
 - Connected Vehicles



Southern California ICM/TSMO Project

- Deploy the foundation of CV technology along the D12 freeways and ramp intersections.
 - 132 RSEs along freeways
 - 52 RSEs at ramp intersections
- Pilot few CV V2I applications
- Become potential statewide testbed for future CV pilot opportunities



Test Bed Challenges

➤ POTENTIAL CV Applications And Management Solutions

- Local V2I Applications –Vendors
- ActiveITS –SwRI
- TransSuite–TransCore
- ActiveDX(V2X DX) –SwRI
- Raven –Trihydro

➤ Are these different solutions interoperable?

➤ Is the return on investment worth the cost?

➤ Can we roll these systems out statewide? (I.E. statewide specification, etc.)

➤ How will they cooperate with local County/City jurisdictions?

➤ Do we really KNOW if we are ready?

Truck Platooning



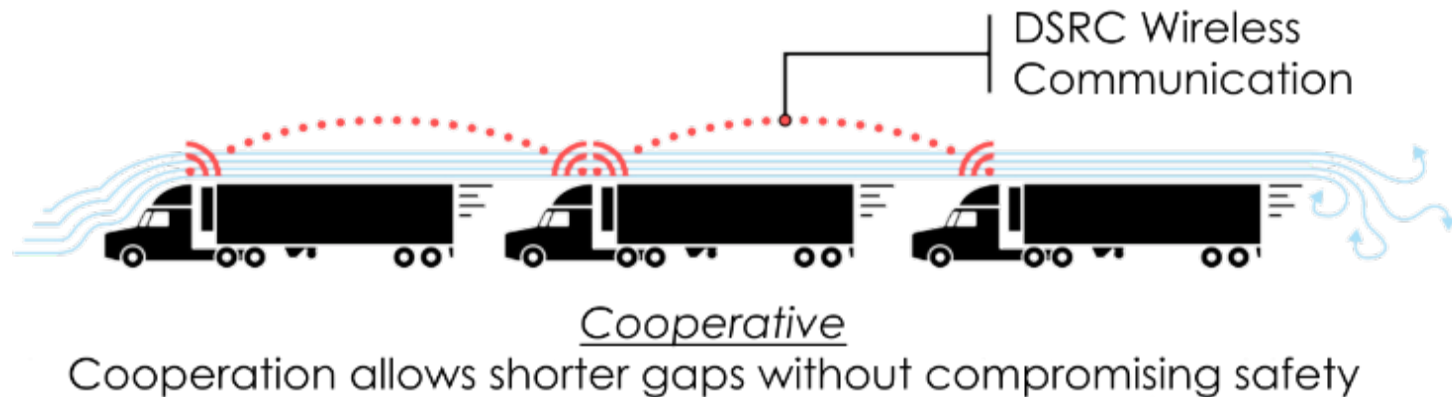
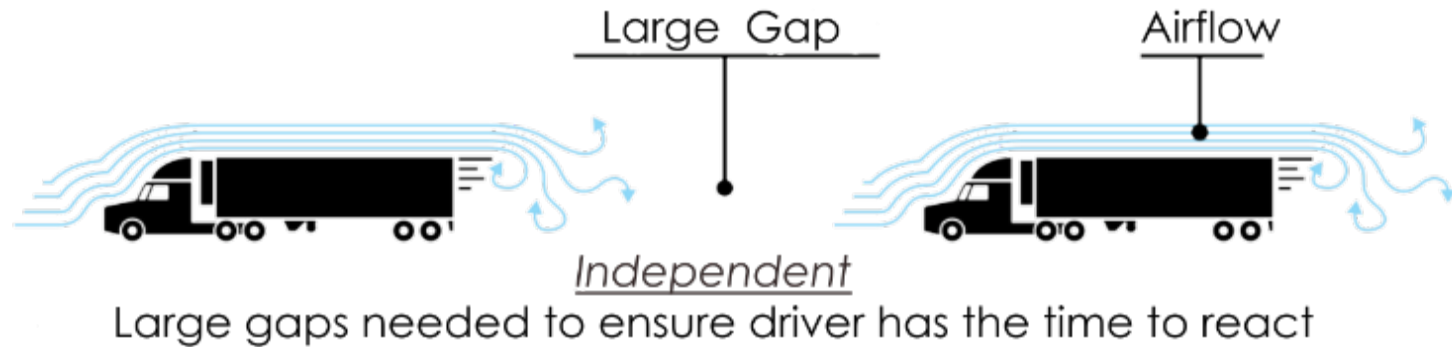
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➤ Cooperative Adaptive Cruise Control for Truck Platooning

- Level 1 Automation
- V2V => Cooperation => Coordination is Key

➤ Potential Benefits

- Reduction in Fuel Use/Emissions
- Improved Throughput and Highway/Freight Efficiency
- Improved Safety

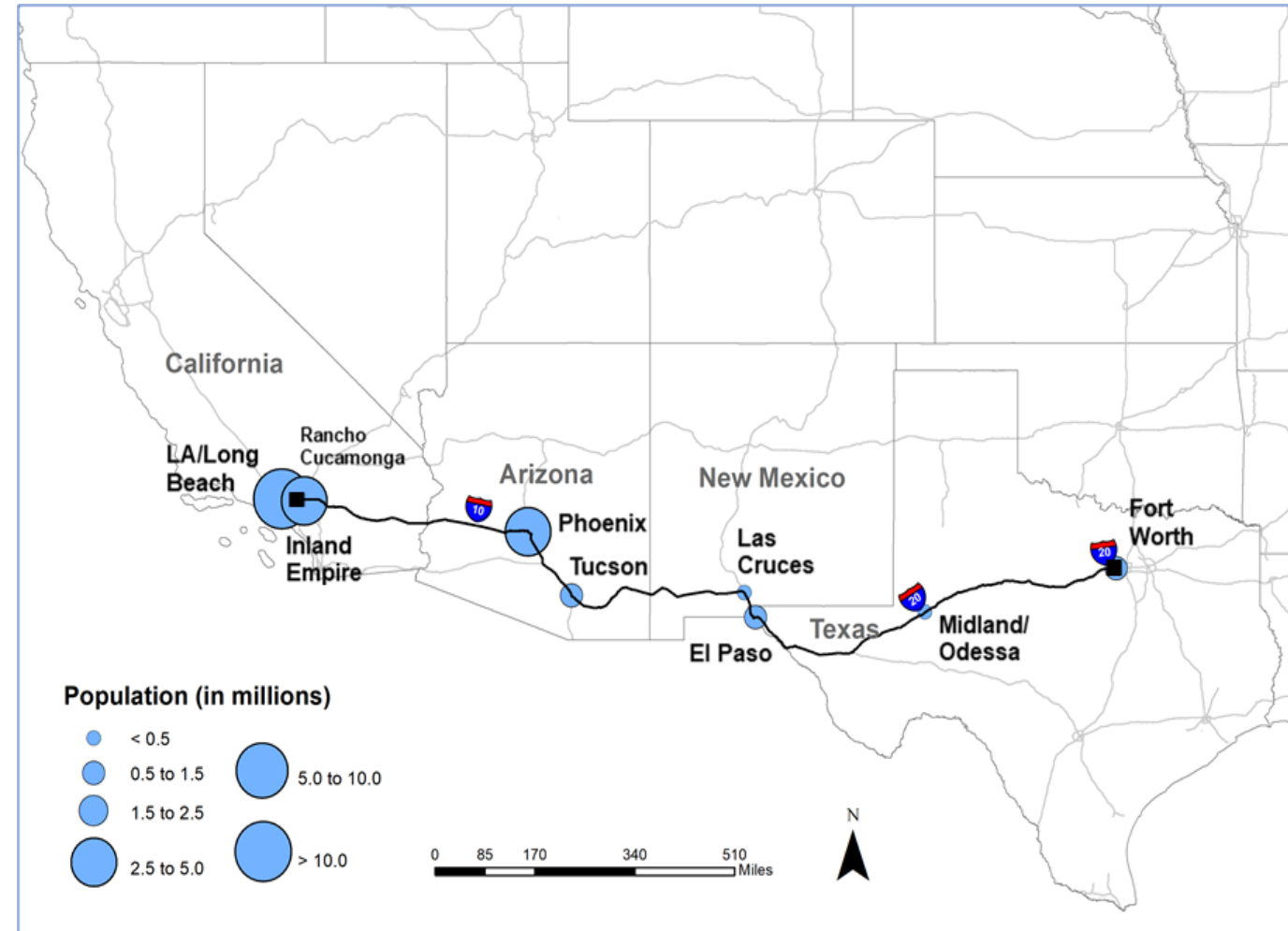


Proposed Route and Experimental Design



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- The field operational test (FOT) will take place on a 1,400-mi route of I-10 from California to Texas.
- The proposed route goes through California, Arizona, New Mexico, and Texas.
- The FOT will utilize 4 trucks and 20 drivers.
- The plan is to complete one round trip per week for 50 weeks, resulting in data collected for 145,000 mi driven.





Truck Platooning Challenges

- What are the human factors impacts on truck drivers in long-haul operation of a truck platoon?
- How are the other road users' behavior impacted in the presence of truck platoon operations (e.g., highway entry/exit points, visibility, signage, etc.)?
- How does the gap between the trucks impact the costs / benefits of platooning (fuel saving, safety, operating costs, vehicle maintenance, mobility/travel time) as well as the risks (number of cut-ins, truck driver's behavior/acceptance/fatigue)?
- What are the benefits of truck platooning to fleet owners?
- What are the policy, operational and safety impacts of truck platooning?
- **Do we really KNOW if we are ready?**



HOW YOU
D.O.I.N.?