

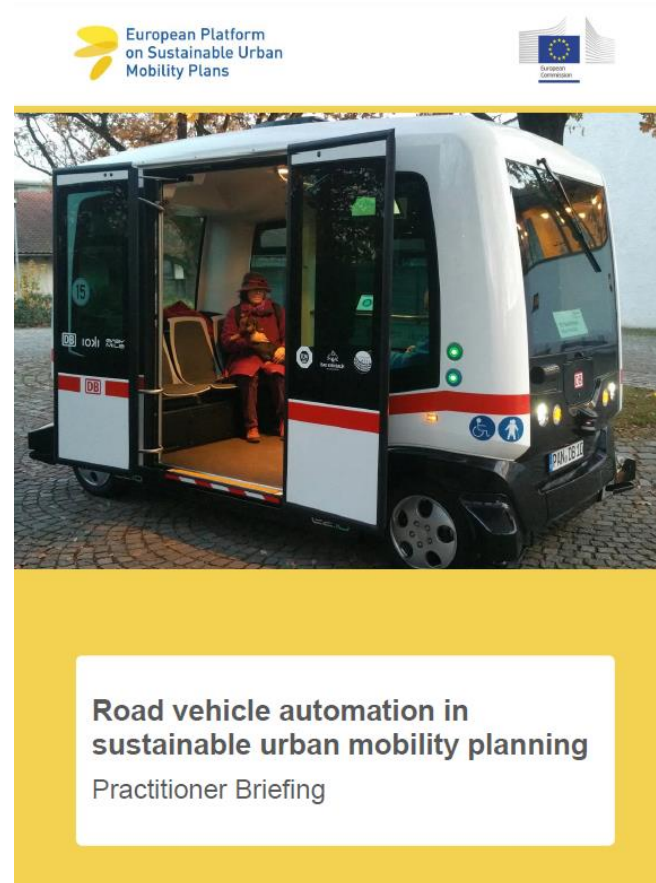
CCAM readiness self-assessment tool for cities and CCAM Knowledge Base

252 – Automation readiness of cities

Dr. Stephane Dreher
Senior Manager – CCAM & Blockchain
ERTICO – ITS Europe



Materials for planning for Cooperative, Connected and Automated Mobility (CCAM)



- What are our **goals**, our **vision** for (CCA)Mobility?
- How to **communicate** effectively with citizens & stakeholders about CCAM?
- How can we deal with **uncertainties** in impacts of CCAM?

www.h2020-coexist.eu/resources/

https://www.eltis.org/sites/default/files/road_vehicle_automation_in_sustainable_urban_mobility_planning_0.pdf

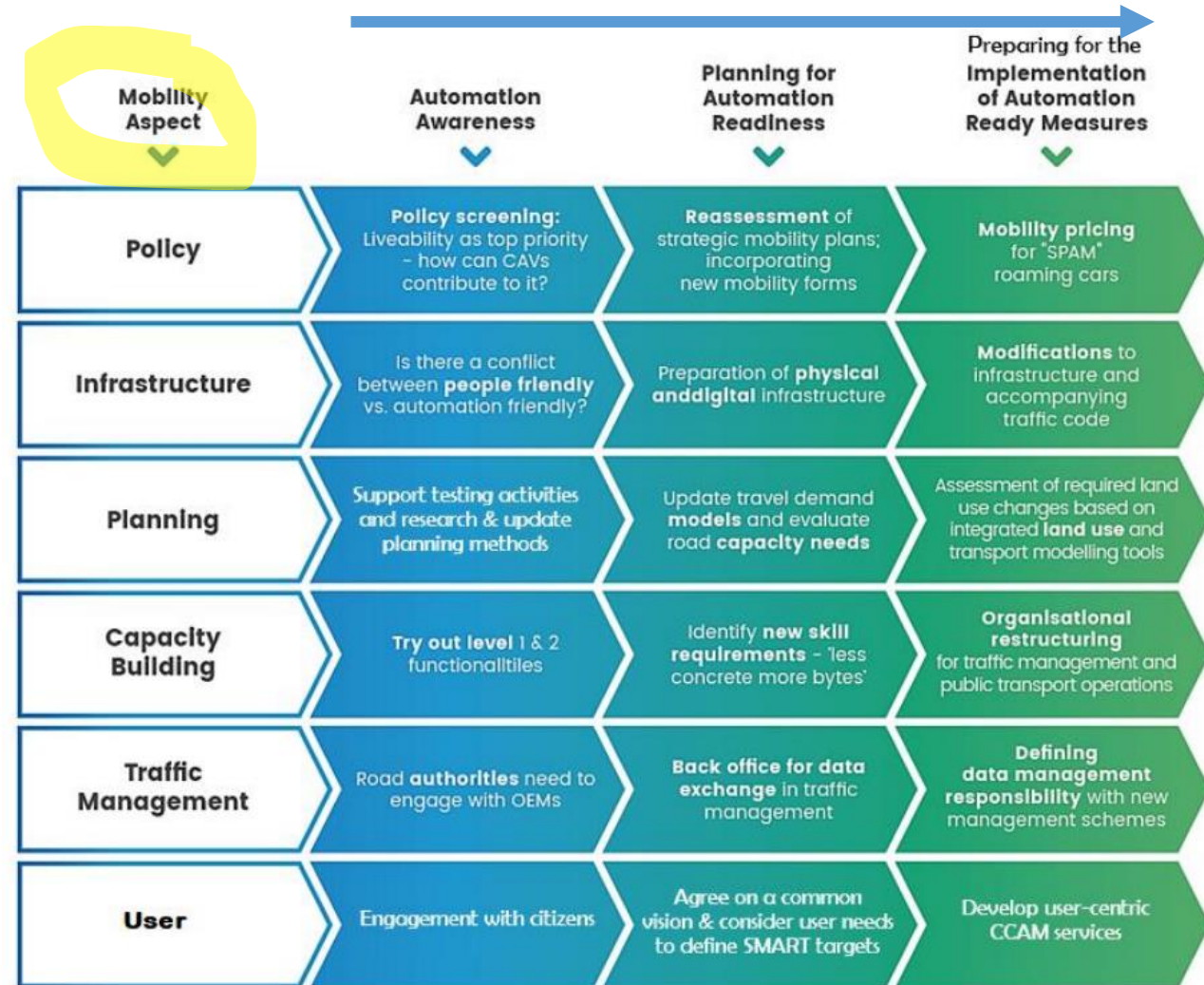
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CCAM Self-Assessment Tool

- **CCAM-readiness**, as ‘the **capability of making structured and informed decisions** about the comprehensive deployment of CCAM’,
- **Guide the assessment of a city’s/region’s current status** in relation to CCAM deployment and **what the next steps could be to get ‘CCAM-ready’**.
- The CCAM-readiness Self-Assessment tool is structured along the conceptual approach of the ‘**automation-ready framework**’.
- **35 questions in total** to assess local challenges, opportunities, risks and requirements for the deployment of CCAM services

Response options & weighting of responses along phases



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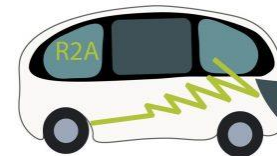


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18 cities/regions from 10 countries



Interreg
North Sea Region
PAV
European Regional Development Fund



 This project has received funding from the European Union's Directorate-General for Communications Networks, Content and Technology, 2020 Work Programme under grant agreement No. LC-01632937



Interreg
CENTRAL EUROPE

Dynaxibility4CE

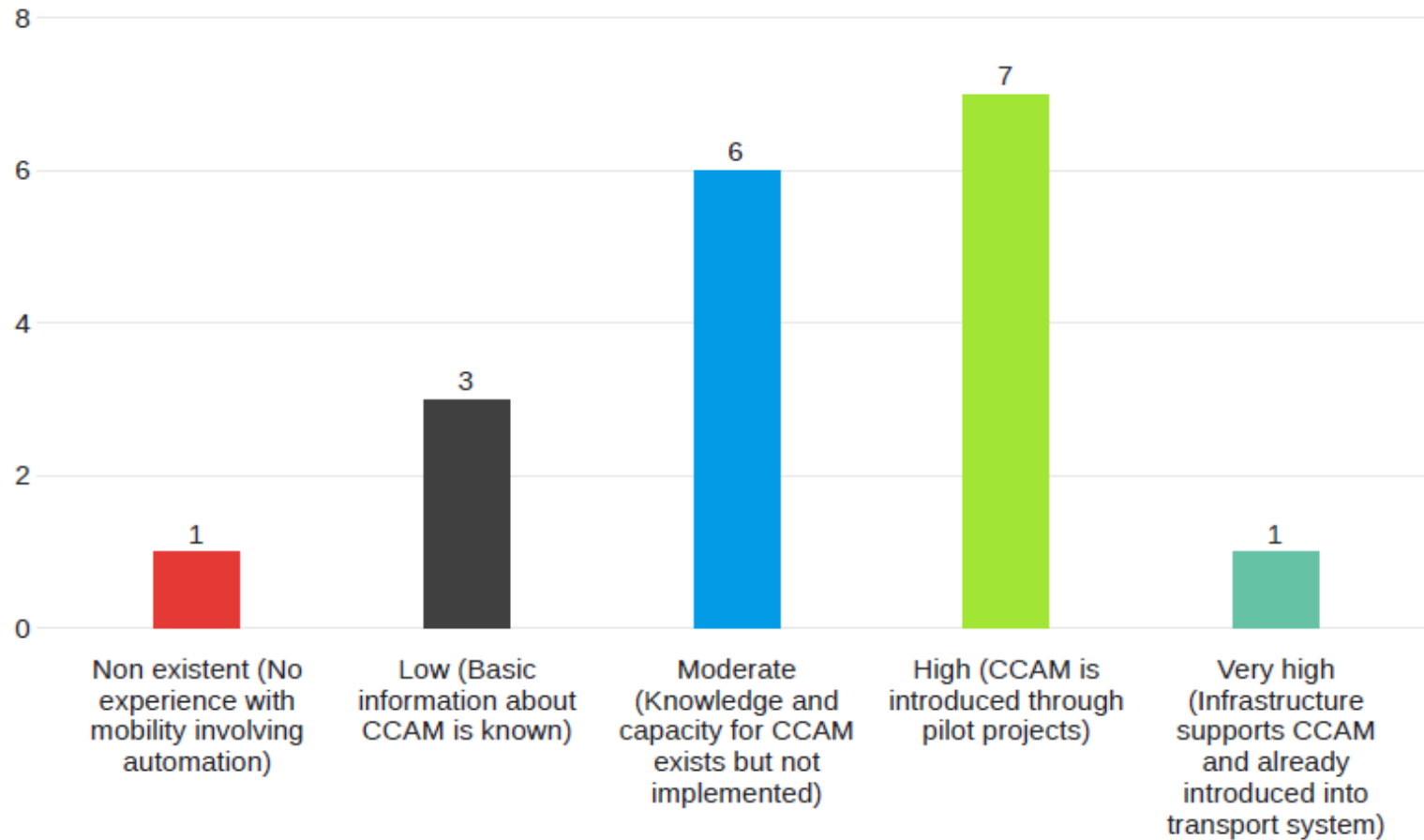
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How would you evaluate your area level of automation-readiness (i.e., capacity to make structure and informed decisions about CCAM – 18 test cities)?



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R&I Projects

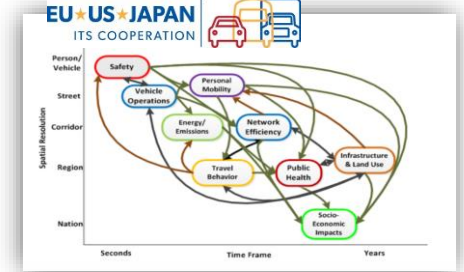


CCAM Knowledge Base

One-stop shop” for CCAM related activities in Europe and beyond



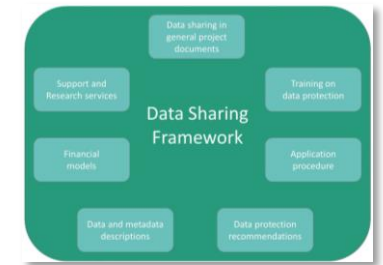
Evaluation Methodologies



Policies & Regulations



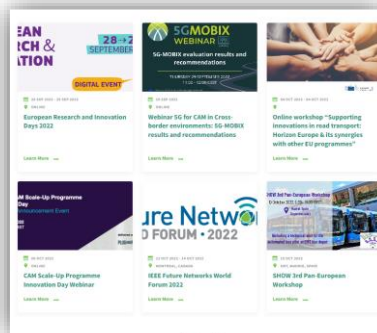
Data Sharing Framework



Strategies & Action Plans



News & Events



EUCAD



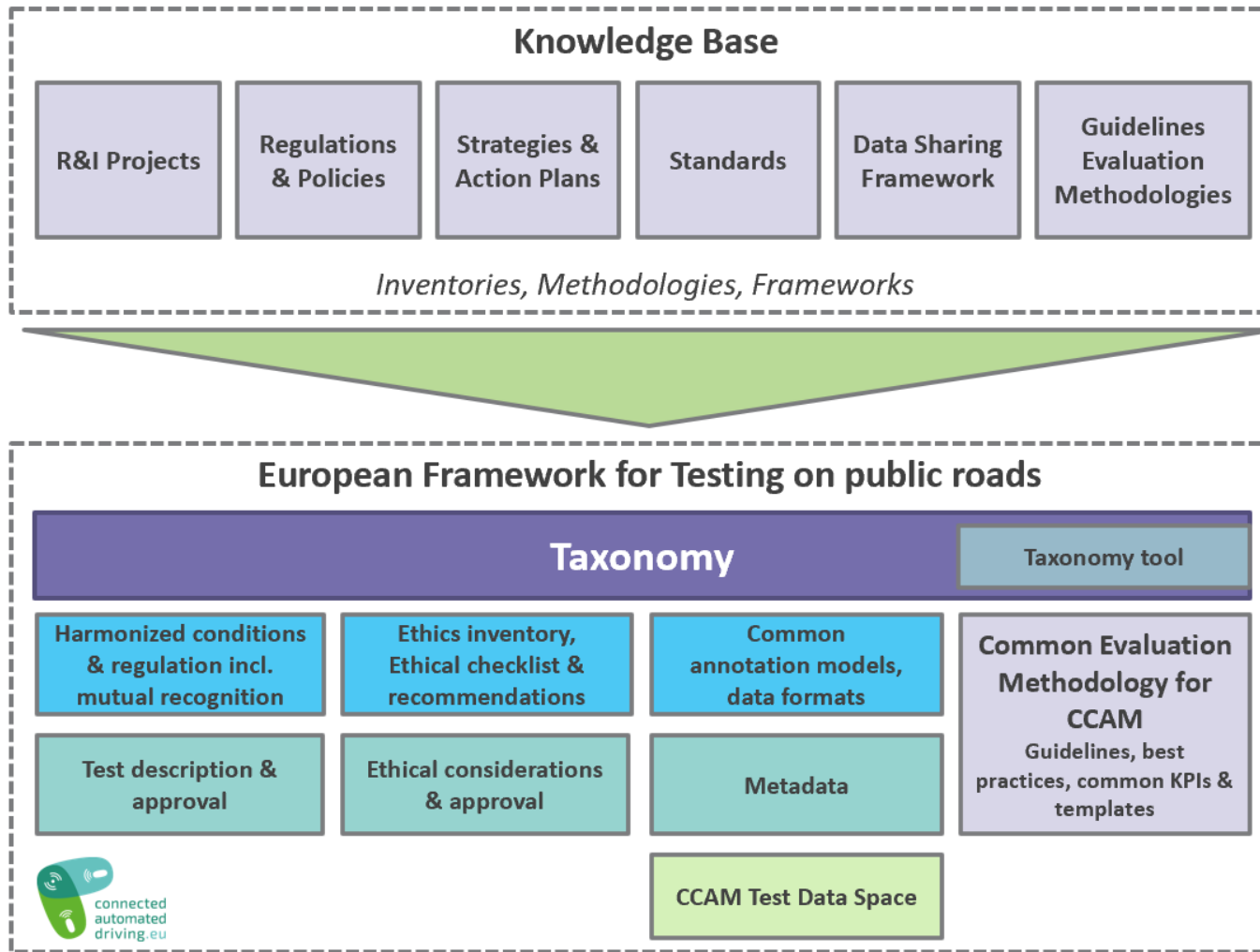
Standards

Standards Collection

The EUCAD Standards Collection is a comprehensive list of standards relevant to Connected and Automated Driving (CAD). The list is organized by standard number, title, and status. The table below provides a summary of the standards included in the collection.

Standard Number	Standard Title	Status	Notes
EN 15253-1	Functional safety for road vehicles - Part 1: General concepts and definitions	Published	ISO 26262-1
EN 15253-2	Functional safety for road vehicles - Part 2: Application to safety-related systems	Published	ISO 26262-2
EN 15253-3	Functional safety for road vehicles - Part 3: Application to safety-related systems	Published	ISO 26262-3
EN 15253-4	Functional safety for road vehicles - Part 4: Application to safety-related systems	Published	ISO 26262-4
EN 15253-5	Functional safety for road vehicles - Part 5: Application to safety-related systems	Published	ISO 26262-5
EN 15253-6	Functional safety for road vehicles - Part 6: Application to safety-related systems	Published	ISO 26262-6
EN 15253-7	Functional safety for road vehicles - Part 7: Application to safety-related systems	Published	ISO 26262-7
EN 15253-8	Functional safety for road vehicles - Part 8: Application to safety-related systems	Published	ISO 26262-8
EN 15253-9	Functional safety for road vehicles - Part 9: Application to safety-related systems	Published	ISO 26262-9
EN 15253-10	Functional safety for road vehicles - Part 10: Application to safety-related systems	Published	ISO 26262-10
EN 15253-11	Functional safety for road vehicles - Part 11: Application to safety-related systems	Published	ISO 26262-11
EN 15253-12	Functional safety for road vehicles - Part 12: Application to safety-related systems	Published	ISO 26262-12
EN 15253-13	Functional safety for road vehicles - Part 13: Application to safety-related systems	Published	ISO 26262-13
EN 15253-14	Functional safety for road vehicles - Part 14: Application to safety-related systems	Published	ISO 26262-14
EN 15253-15	Functional safety for road vehicles - Part 15: Application to safety-related systems	Published	ISO 26262-15
EN 15253-16	Functional safety for road vehicles - Part 16: Application to safety-related systems	Published	ISO 26262-16
EN 15253-17	Functional safety for road vehicles - Part 17: Application to safety-related systems	Published	ISO 26262-17
EN 15253-18	Functional safety for road vehicles - Part 18: Application to safety-related systems	Published	ISO 26262-18
EN 15253-19	Functional safety for road vehicles - Part 19: Application to safety-related systems	Published	ISO 26262-19
EN 15253-20	Functional safety for road vehicles - Part 20: Application to safety-related systems	Published	ISO 26262-20

Building the EU Framework for CCAM Testing



Wider and more targeted Support

- R&I Agenda
- Organisation & setup of pilots and demonstrations
- Moving into operations
- Member States alignment

Target groups

- CCAM Stakeholders
- Authorities, Cities
- Decision makers
- Citizens,...

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Outlook – tool development

- **CCAM Self-Assessment Tool is well received** by cities/regions – to analyse in a systemic way weaknesses of their CCAM-readiness and needs for **capacity building in a structured way**.
- Further development of tool welcomed by cities/regions to **link knowledge resources of CCAM** best practice to the assessment results and benchmark within clusters of cities for **steering knowledge exchange among cities/regions**.
- **Integration into existing platforms**, e.g. **Knowledge Base on Connected and Automated Driving (CAD)** (entry point for city/regional authorities;) to link existing knowledge resources to weaknesses identified in self-assessment.
- **Soon available online ...**



Traffic Management for CCAM

Tom Alkim

Strategic Advisor Connected & Automated Mobility

MAP tm

ARTS2023 | BO 252 | AV-readiness of cities



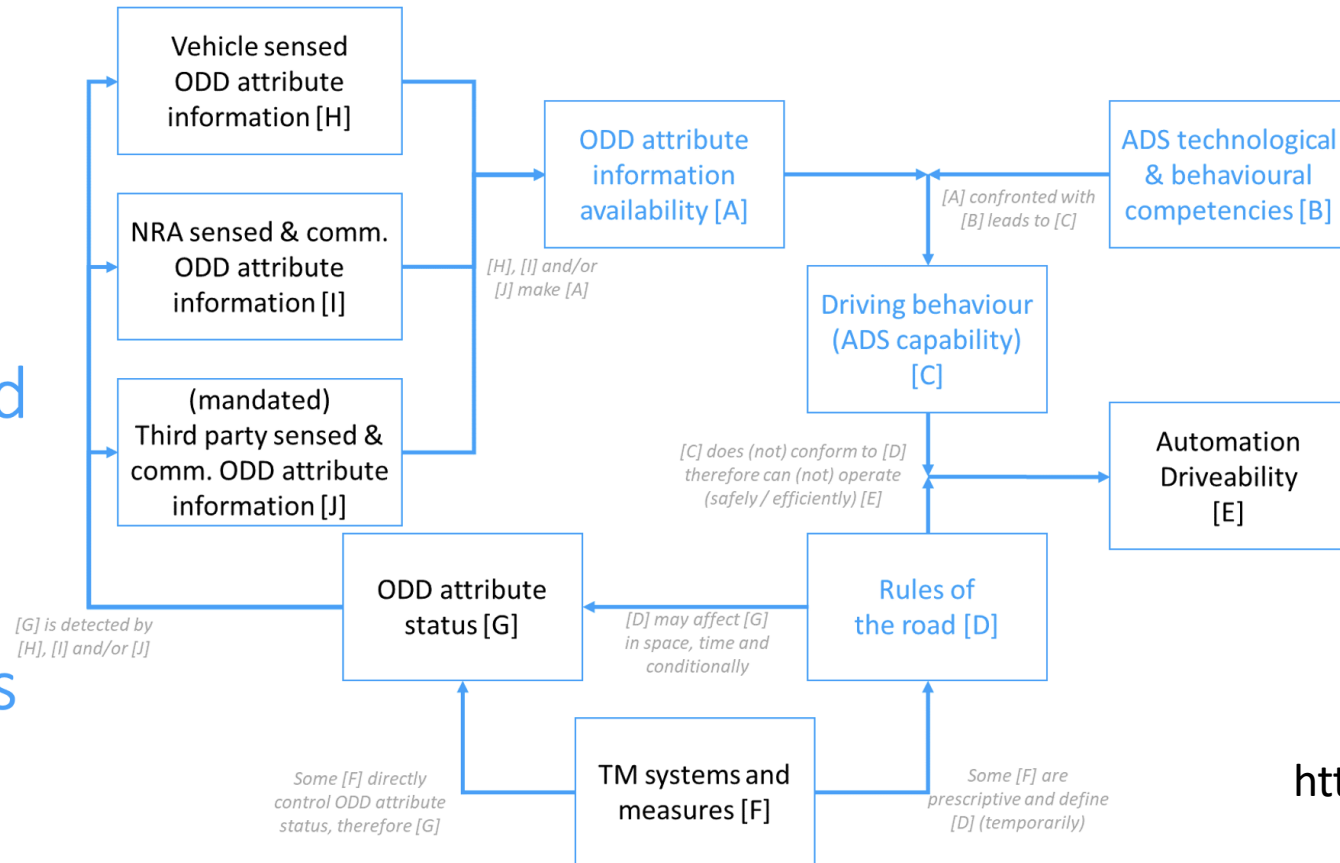
Traffic management for automated vehicles

- To what extent is Traffic Management different for CAVs?
- Sending information to humans driving vehicles or vehicles being driven by software requires a different approach
- How is information being interpreted? What level of context awareness?
- Mixed traffic conditions add complexity
- Define appropriate driving behaviour and response of CAVs
- Related to specific Operational Design Domains (ODD)
- There's a difference between automating vehicles and automating traffic

Traffic management for automated vehicles

DOVA

Distributed
ODD
Attribute
Value
Awareness



<https://tm4cad.project.cedr.eu/>

Thank you for your attention!

Tom Alkim

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 @cooperativeguy

 <https://www.linkedin.com/in/tom-alkim-16963b3/>



<https://www.maptm.nl/>

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AV Cities Readiness Users Perspectives: It's our government

Ellen Partridge
Senior Advisor, Mobility Innovation
Equiticity
July 11, 2023

Multiple Expertises Needed

Examples

- Lived experience
- Technical knowledge
- Community knowledge
- History

How to Access

Be in community

Bring expertise to community

Reach out broadly

Ask. And Listen.

Equity Challenges

- Who owns the planning processes impacting marginalized neighborhoods?
- How are budgets and other resources distributed to address the most urgent needs?
- What is the decision-making process and how do marginalized people control this process?
- How do we build the capacity of CBOs to more effectively advocate for the needs of their community and influence the planning process?
- How do we work with CBOs to identify the problems and potential solutions?

Participation Challenges

- Agency
- Time
- Representation
- Public agency decision already made
- Patronization

Inclusive Outreach to Traditionally Underserved Groups

- Convey issues in ways that are meaningful to various cultural groups
- Bridge racial, cultural, and economic barriers that affect participation
- Use communication techniques that enable people to interact with other participants
- Ensure meaningful access for persons with limited English proficiency (LEP)
- Provide reasonable modifications and accommodations needed for persons with disabilities
- Develop partnerships on a one-on-one or small group basis to build deeper trust and relationships
- Gain an understanding of the experiences and results of transportation decision-making processes that were not equitable

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Perceptions can be misleading

Anonymous 03/07/22(Mon)09:59:57 No.1770307 ∨ >>1770312

>>1769478

>don't own a car

>walk to store

>buy weekly groceries for \$50

VS

>buy car for \$40,000

>buy insurance for \$1500

>pay \$200 a month for gas

>buy \$120 costco membership

>go to costco and spend \$45

>"woah I'm so good with money, I just saved myself \$5"

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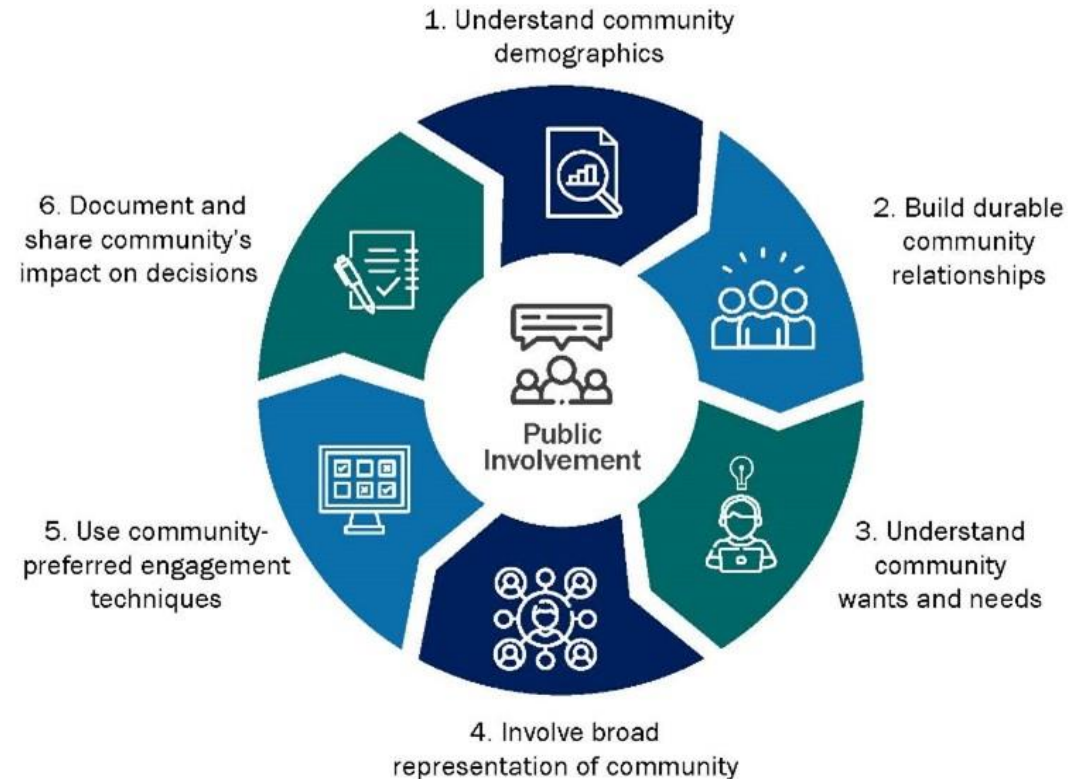
Perceptions influenced by

- Money helps create the hype – advertising by drug companies, by car companies, by tobacco companies
- Sunk costs at the individual level
- Infrastructure design
- Habits

Guides: U.S. Dep't of Transportation and more

USDOT Guide

- “We’ve always done it this way” thinking can result in the treatment of public involvement as a one-time event or a box to check in the project lifecycle, as opposed to an intentional, dynamic process that continues throughout all stages of project development.
- Funding recipients may fail to involve community members and partners in early discussions of project and program planning or problem solving.
- If organizations use limited communication and outreach methods, like only advertising a single meeting in an area’s largest newspaper, they often do not reach the broader audience who may not read the newspaper or get news in other ways.



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Guides: Race Forward

Race Forward Guide

- Offer community partners the best resources and information the government has to offer.
- Acknowledge historical harm done by government agencies.
- Direct funding into organizations building community capacity for racial justice.
- Cultivate and deepen relationships with organizations working for racial justice.
- Prepare for equitable relationships by mapping power dynamics”

Inside/Outside Strategy

- Bring the full force of the federal government to the work of racial equity and justice.
- To realize its potential, racial equity practitioners will need to organize from within government to bring people together towards a common vision of racial equity.
- To sustain momentum, couple with investments in growing organizational capacity and networked infrastructure across the whole of government.

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Final Thoughts: Opportunity for Change

“Autonomous vehicles offer an entry point into society-wide conversations about transportation, the functions of cities, the use of streets, and how all this impacts equity, environment, social cohesion, happiness, economic health, resiliency, and more.”

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**Credibility –
the hardest thing to gain
and the easiest to lose**

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AV Readiness for Cities Policy

William Riggs, PhD, AICP, LEED AP

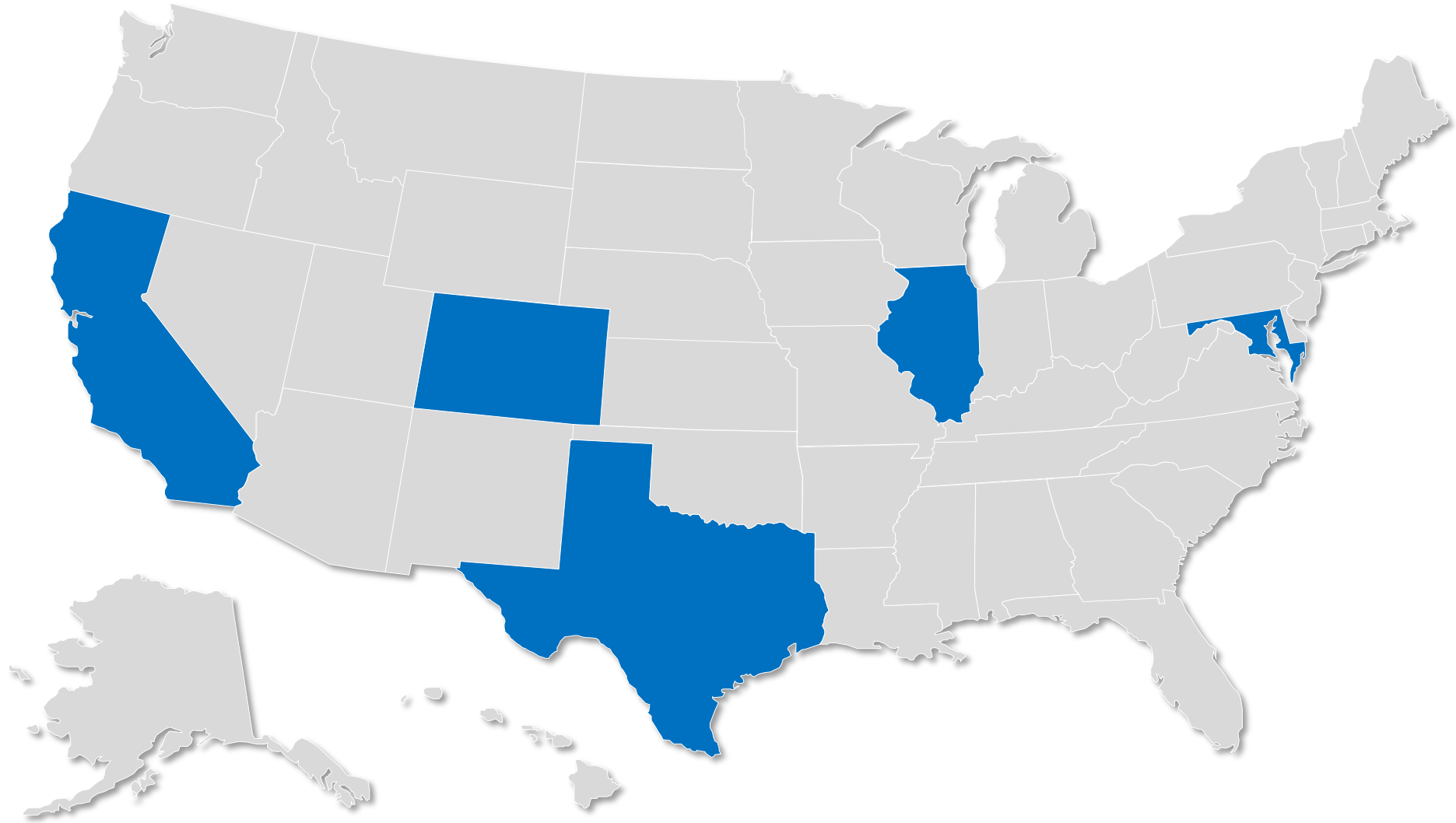
wriggs@usfca.edu | @billyriggs

<https://bristoluniversitypress.co.uk/end-of-the-road>

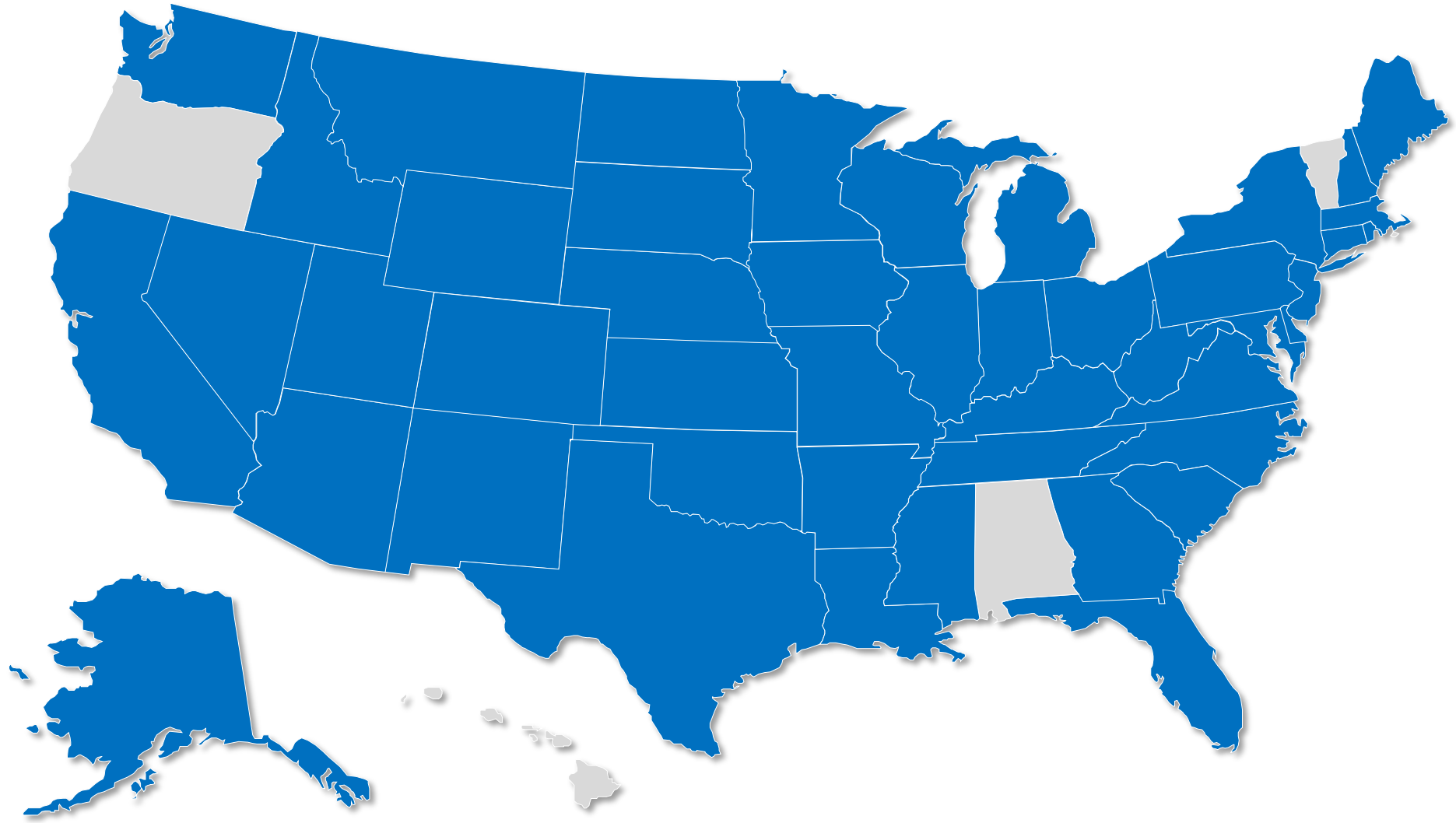


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Precedent of TNCS from 2014 - 2017 Tell us That State Policy Will Guide Regulatory Environment Adopted Throughout the U.S.



Precedent of TNCS from 2014 - 2017 Tell us That State Policy Will Guide Regulatory Environment Adopted Throughout the U.S.



Passenger Service in CA Regulated by Public Utilities Commission (PUC)

Generalized Policy Framework for AVs in the US

- Policy Patchwork; Federal Guidance on Operational Design Domain (ODD)
- Operational Permit from CA Department of Motor Vehicles (DMV):
Autonomous Vehicle Tester Program Manufacturer's Testing Permit
- In CA Passenger Service Regulated by Public Utilities Commission (CPUC)
 - Drivered AV Passenger Service pilot program - passenger service in test AVs with a driver in the vehicle
 - Driverless AV Passenger Service pilot program - passenger service in test AVs without a driver in the vehicle.

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Policy Opportunities for PTOs, OEMs, & Cities

- **Creative ODD Development– More Than SAE Levels**
 - Development, evolution & experimentation
 - Define exiting ODD or incident response (human transition)
 - Policy on sharing construction & emergency data
- **Policy & Testing Agility**
 - Scaffolded policy, testing & safety approval process to allow for quicker / more agile deployments with tiered approvals
 - *How can policy incentivize venture investment and startup experimentation?*

ODD Parameters	
Geography	The ODD included the geofenced area at left within the City and County of SF.
Roadway Type	The ODD included local and arterial roads and excluded steep hills, bridges, tunnels, overpasses, underpasses, and roundabouts.
Speed Range	Cruise vehicles operated at a maximum speed of 30 MPH.
Weather Conditions	The ODD excluded heavy fog, heavy rain, heavy smoke, hail, sleet, and snow.
Time of Day	The ODD was 10:30 PM - 5 AM, and later expanded slightly.

Policy Opportunities for PTOs, OEMs, & Cities

- **Land Use / Infrastructure Policy Opportunities**
 - VMT / Network priorities; Lane / road / signal prioritization (create network / operational efficiency)
 - Pick and drop off / curb availability / potential use of transit stops
 - *Should cities have policies to leveraged digital / 3D mapping which is a financial hurdle / challenge for some deployments?*
- **Fleet / Business Model Partnerships & Roadway Pricing**
 - Fleet partnerships and pricing structures likely needed for sustainable business model alongside an emphasis on last mile / shared mobility services
 - *Do we need to price shared fleets the same way as private autos?*
- **Opportunity to Innovate Travel Behavior Programs / TDM Policy**



AV Readiness for Cities Policy

William Riggs, PhD, AICP, LEED AP

wriggs@usfca.edu | @billyriggs

<https://bristoluniversitypress.co.uk/end-of-the-road>



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Infrastructure



Manabu Umeda

The University of Tokyo

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RoAD to the L4, Cool4 Project

One of the four major projects under RoAD to the L4

RoAD to the L4

- Project on **R**esearch, Development, Demonstration and Deployment (RDD&D) of **A**utomated **D**riving **t**oward **the Level 4 and its Enhanced Mobility Services** by METI and MLIT



Cool4

- Project to develop **C**ooperative **L**evel **4** Automated Mobility Service in mixed traffic environment

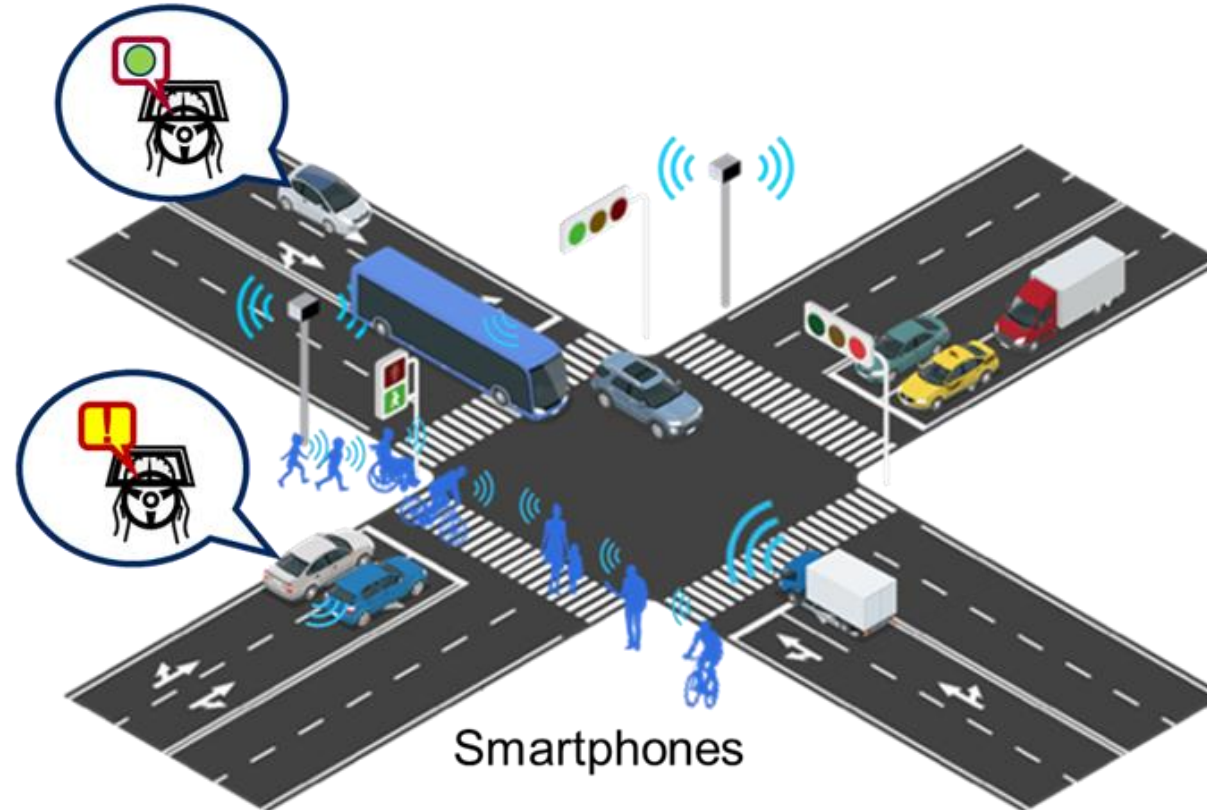


■ Mission

- Create a template for commercially sustainable Cooperative Level 4 Automated Mobility Service in the Real-World Traffic

Signal phase Information

Roadside sensors



Smartphones

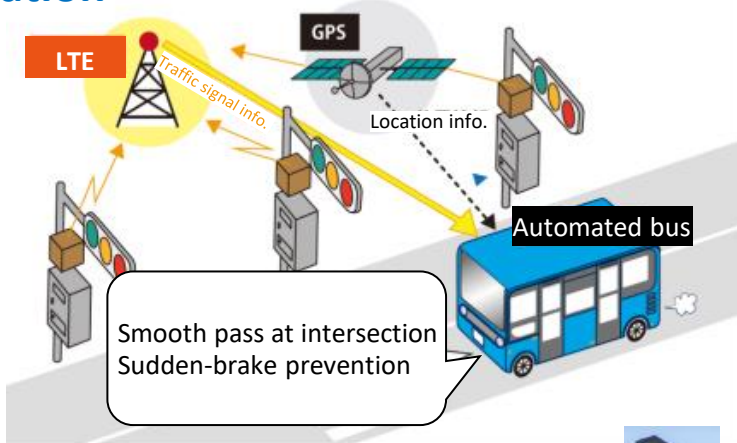
Connect all road users

Integrate urban service data

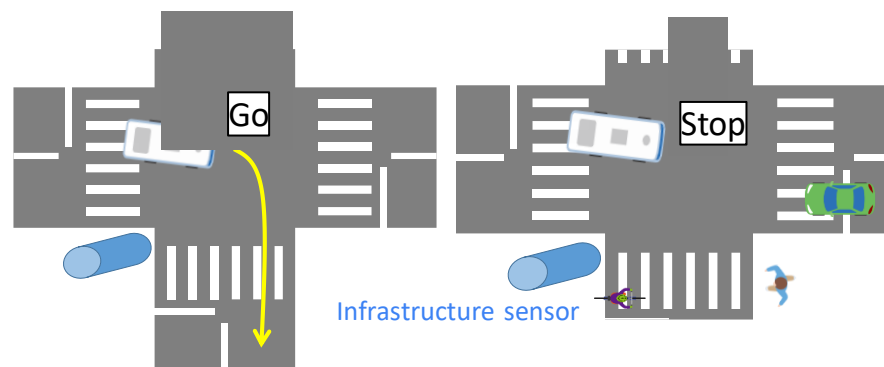
Roles of infrastructures in Cooperative system

Roadside Sensors to supplement onboard sensors to monitor traffic environment

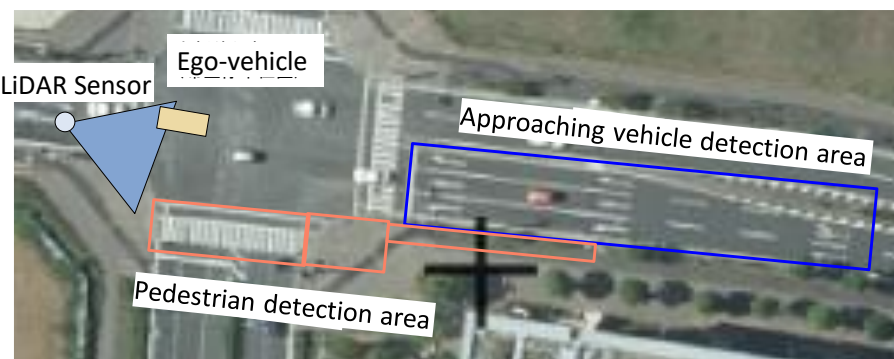
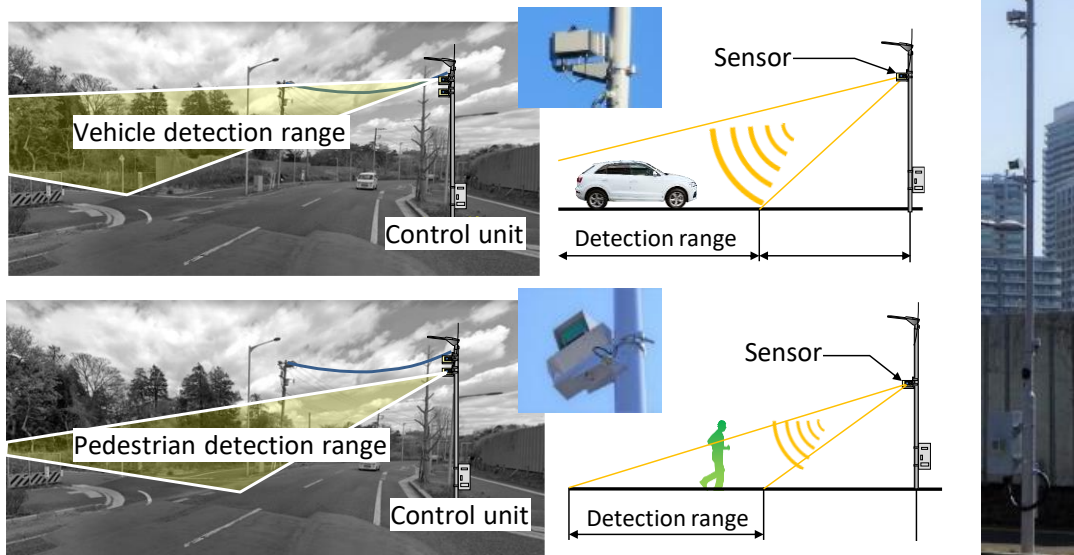
Traffic signal cooperation



Right/left-turn assist, crossing pedestrian detection assist



Side coming traffic detection assist



Information : IHI Corporation

Challenging Issues for deployment

■ Cost

- Initial installation
- Maintenance

■ Reliability

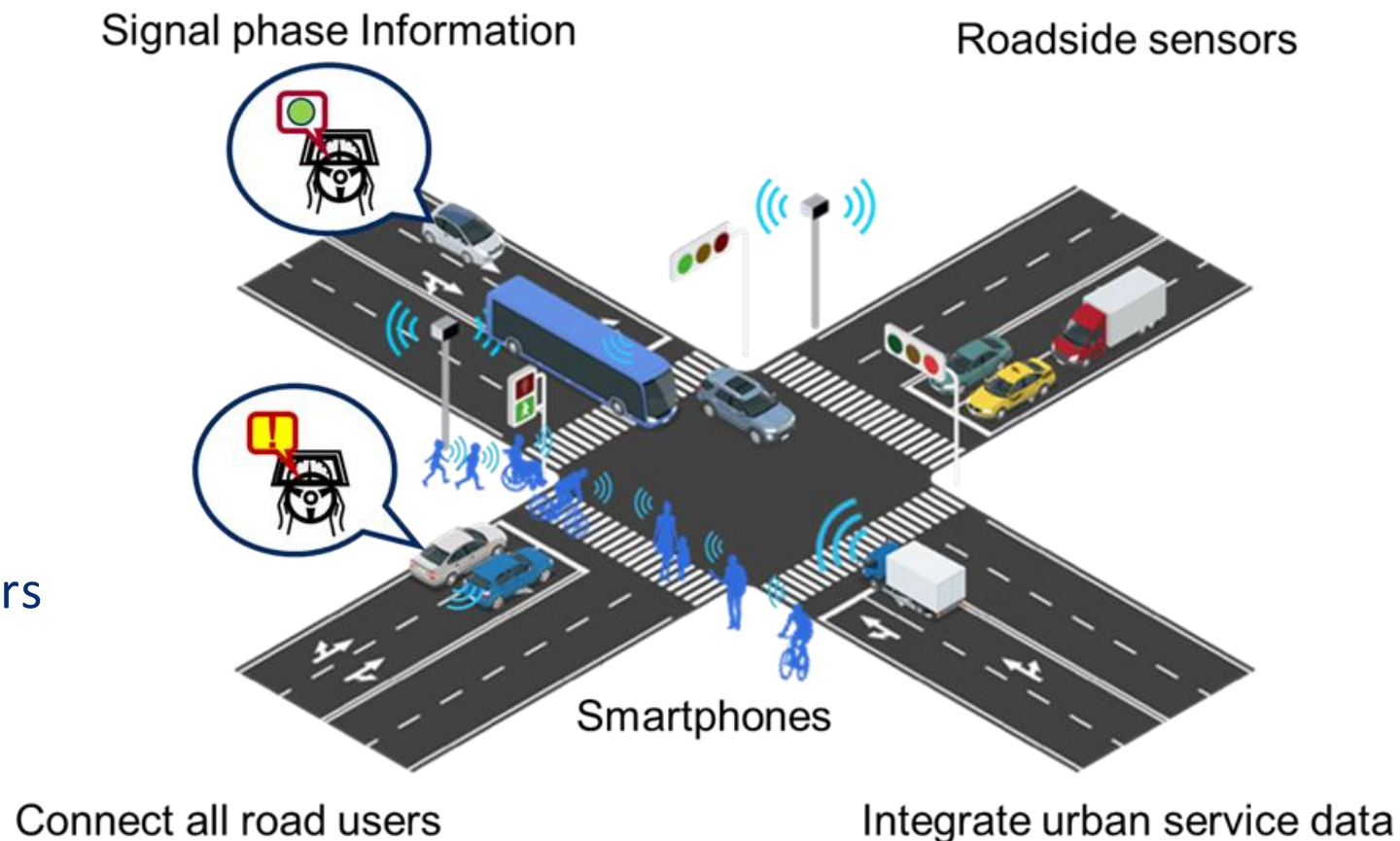
- Functionality
- Durability

■ Responsibility

- System responsibility
- Among relevant Stakeholders

■ Acceptance

- Societal
- Other road users



*Breakout session in Mobility Innovation Workshop
@ Kashiwa, 15th Nov. 2023*

Thank you !

Manabu Umeda
umeda@iis.u-tokyo.ac.jp



More information

<https://mobilityinnovationalliance.org/mobiweekjapan2023/en/>



Capacity building & workforces

Dr Henriette Cornet

Thematic area leader
automated mobility | UITP

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➤ FROM AWARENESS TO PLANNING & PREPARING



Start with low hanging fruit:

Best areas in the city to operate in terms of not covered travel demands & technically feasible deployments

Upgrade traffic management & booking apps
Ensure **transparency** in processes with workforce



Less strenuous, monotonous, or dangerous work



Possible increase in work intensity and task overload

➤ EC PARTICIPATORY CONFERENCE ON IMPACTS MITIGATION TO AUTOMATION ON WORKFORCES

Workers need to be at the center of the dialogue

*Since automation brings **economic benefits**,
workers need to be able to benefit, resulting
in **more time** for training, additional time off,
and **financial rewards** for higher efficiency*

*Transport workers would like **more
transparency**, such as knowing **who**
pushes for the changes, **how** they
are going to be applied, **what**
benefits can be derived from them,
and **who is profiting***



Source: European Commission
Directorate-General for Mobility and Transport
Picture: EMT Madrid





THANK YOU

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