

# Building OSS Bridges Across Foundations: An OSPO Approach and Next-Gen Diagnostics

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# About Me



## Masanori Ito

### □ Affiliation

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### □ Works

- ✓ R&D for Connected Vehicle Systems
  - E2E Observability, Standardization, Diagnostics, ...
- ✓ OSPO Operations

### □ Keywords

- ✓ Operating System, Cloud Infrastructure, etc.

### □ URLs

- ✓ <https://github.com/thatsdone>
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# Agenda

- ❑ How should companies face to Open Source Software?
- ❑ Case Study: Toyota
  - ✓ Open Collaboration, Flat collaboration across organizations
- ❑ Relationship between Eclipse SDV and AGL
- ❑ Issues of SDV Era and A Collaboration at AECC on SOVD POC
  - ✓ Open Issues in SDV Era
  - ✓ Resolution via the next generation diagnostics, SOVD
  - ✓ A Collaborative work at AECC
- ❑ Summary

# How should companies face to Open Source Software

## □ Why OSS?

- ✓ No longer “Because OSS is cheap”
- ✓ OSS is the superior business development method

So...

- ✓ “Organizational and Strategic management of OSS” is necessary

## □ Best Practice

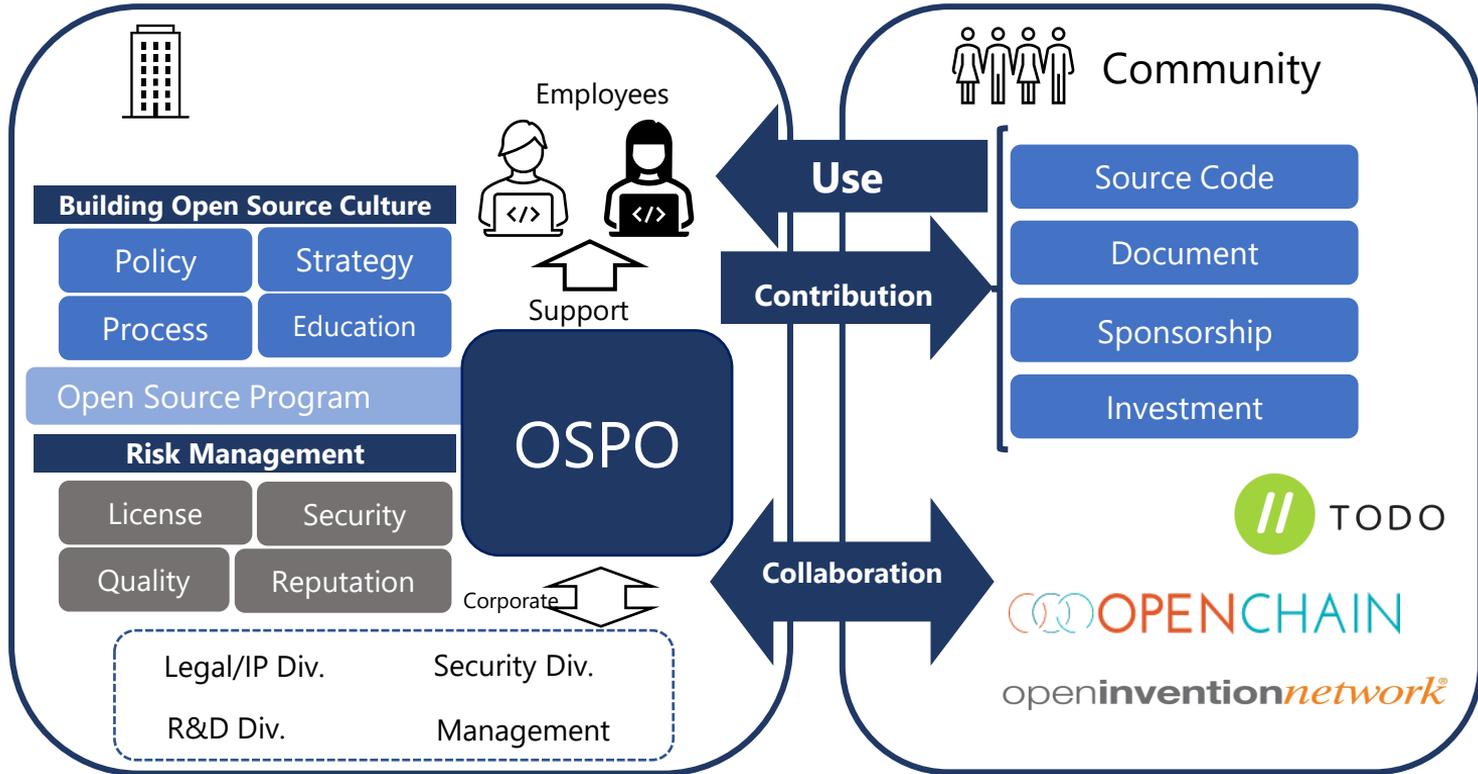
- ✓ Launch OSPO (Open Source Program Office) as the one-stop point of control

## □ References

1. [en] Creating an Open Source Program, Linux Foundation
  - ✓ <https://www.linuxfoundation.org/resources/open-source-guides/creating-an-open-source-program>
2. [ja] 企業のためのオープンソースガイド (LF Japan Mr. Fukuyasu)
  - ✓ <https://speakerdeck.com/ossaj/linux-foundation-qi-ye-falsetamefalseopunsosugaido>

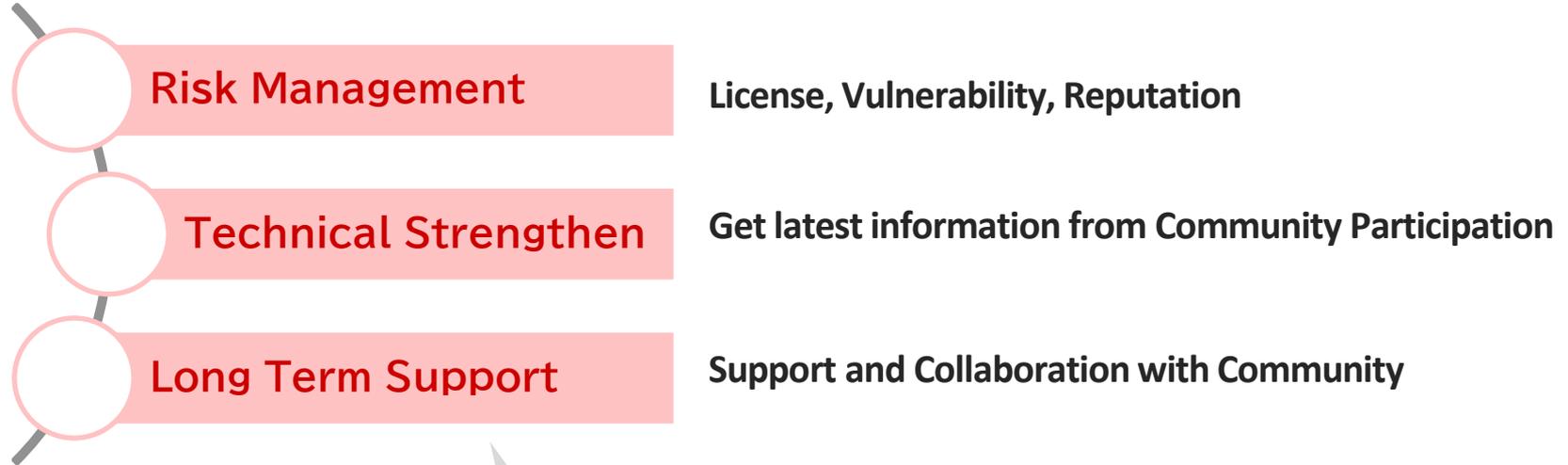
# What is OSPO?

## □ Example of OSPO Structure



# What is OSPO?

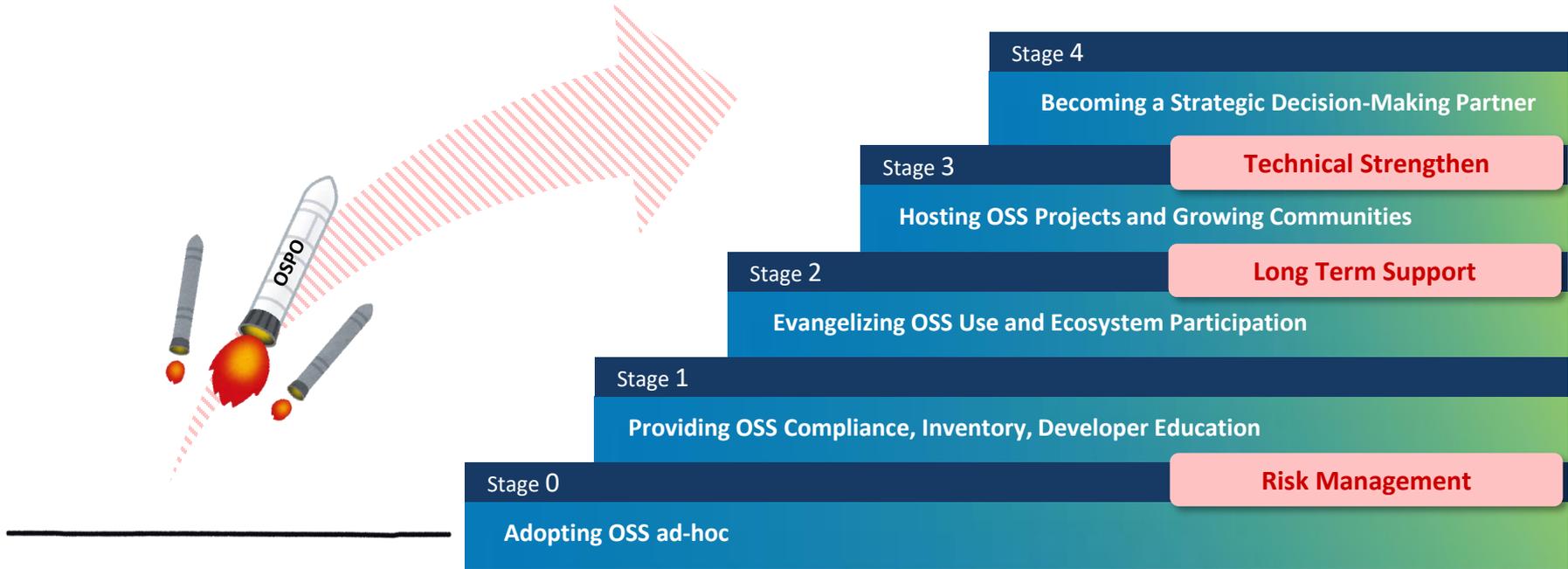
## □ Example of reasons to launch OSPO w.r.t. Roles



**Example : As an example of Security Risk, there were only 3 maintainers in case of Log4j.**

# What is OSPO?

## □ Mapping of “Role”s of OSPO and “OSPO Maturity” in the reasons of OSPO



TODO Group OSPO Maturity Model

# The History of Toyota's Open Source Activities

## Contribution

2011 Joined  
Linux Foundation

2012 Established  
Automotive Grade Linux(AGL)

2016 Invested OIN

2017 Joined  
OpenChain Project  
(SPDX Lite)

2018  
Set Up  
Digital Risk Group  
(~2020)

2021 Open Sourced  
HSR Simulator Code

2020  
ISO/IEC5230

2024  
OSPO Launch!

## Use

“Toyota's Road to OSPO and It's Destination - Masato Endo, Toyota Motor Corporation”  
OSSNA 2023, <https://sched.co/1aews>

# Our Activity

## □ Driving Principle

- Open Innovation

## □ Important Points

- ✓ Do **NOT** stick on a particular solution or a collaboration organization
  - OSS #A, XXXX Foundation, ...
- ✓ Starting from Issues (**Issue-Driven**)

## □ How we collaborate with the overall ecosystem

- ✓ **LF/AGL** is the historical starting point
- ✓ **Flat collaboration** across other organizations e.g. **Eclipse SDV**, SOAFEE, ...
- ✓ Issue-Driven discussions/activities at **AECC**

# Relationship between Eclipse SDV and AGL

## □ Eclipse SDV and AGL

- ✓ Collaborative partnership (not competing)
  - ✓ AGL already uses Eclipse Kikusa, for example

## □ S-Core and AGL UCB

- ✓ Shooting for different target ECUs
  - S-Core : ASIL-D required ECUs from the first place
  - AGL UCB : Started from IVI and then extending (e.g., SoDeV)
- ✓ Share lots of common technical elements
- ✓ NOT competing, but complementing each other

## □ Other Collaboration Space

- ✓ OpenSOVD, the next generation vehicle diagnostics

# Issues of SDV-Era and A Collaboration at AECC on SOVD POC

- ❑ Still Open Issues in the SDV-Era
- ❑ Resolution via the next generation diagnostics, SOVD
- ❑ AECC, the Issue Driven, Collaborative work space
- ❑ An SOVD POC at AECC

# Still Open Issues in the SDV-Era

- ❑ Lots of solutions already there, but...
- ❑ Still open issues at the front line
- ❑ E.g.
  - ✓ Diagnostics
  - ✓ Architectural governance
  - ✓ ...

## Technically Addressable Challenges (Overview)

- 🧠 Virtual ECUs
  - ✓ Enable early integration and testing, but virtualization cannot fully replace physical validation.
- 📄 CI/CD at scale
  - ✓ Enable early integration and testing, but virtualization cannot fully replace physical validation.
- 🔗 Software supply chain
  - ✓ Managing dependencies and security is critical; industry-wide standards are still emerging.
- ⚡ Diagnostics
  - ✓ Traditional hardware-focused diagnostics fall short as functionality shifts to software.
- ⚖️ Compliance & Functional Safety
  - ✓ Dynamic software updates challenge existing certification and functional safety processes.
- 🌱 Architectural governance
  - ✓ Maintaining consistency across evolving platforms demands robust governance frameworks.

SOAFEE

SOAFEE Special Interest Group 7

Excerpted from the SOAFEE Shanghai Seminar (Nov. 12, 2025)

# Still Open Issues in the SDV-Era – Diagnostics of SDVs

## ❑ Problem

- ✓ In SDV Era, Need to diagnose software implemented features. Current UDS based mechanism does not fit.

## ❑ Current approaches

- ✓ OEM specific/proprietary solutions to get diagnostics information of software (not firmware), even if exist.

## ❑ Limitations

- ✓ UDS does not have enough flexibility for software implemented features
- ✓ Difficult to comply with emerging regulations such as ePTI

## ❑ Implications for SDV development

- ✓ Adopt the emerging next generation diagnostics mechanism, SOVD (Service Oriented Vehicle Diagnostics)

Excerpted from the SOAFEE Shanghai Seminar (Nov. 12, 2025)

# Resolution via the next generation diagnostics, SOVD

## □ ASAM/ISO SOVD – Service Oriented Vehicle Diagnostics

✓ A new protocol (REST API) for vehicle diagnostics

- <https://www.asam.net/standards/detail/sovd/>
- Now under standardization process at ISO. (ISO 17978)

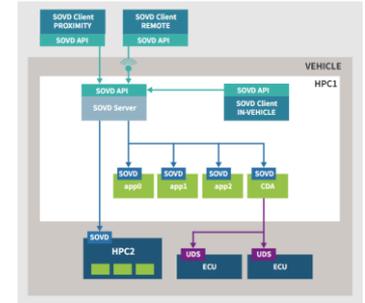


Diagram excerpted from the above ASAM SOVD page.

## ✓ Use Cases of SOVD

Dynamic discovery including Software

OTA : Over-The-Air (software update)

Runtime is OEM specific, but SOVD can use script based in-vehicle generic processing

1. Discover SOVD Server(s)
2. Discover Entities
3. Authenticate and Authorise SOVD Clients
4. Read Fault(s) and/or its Details from an Entity
5. Delete Fault(s) of an Entity
6. Read Data Resources
7. Write Data Items
8. Control Operations
9. Read and Write Configurations
10. Control Software Updates
11. Handle Bulk Data
12. Control Logging and Retrieve Logs
13. Control Communication Logging
14. Manage and Execute Scripts
15. Manage Triggers and subscriptions
16. Query an Online Capability Description
17. Provide an Offline Capability Description

Standardized and Flexible!

# Resolution via the next generation diagnostics, SOVD

## ❑ Eclipse OpenSOVD

✓ Mercedes lead initiative to implement an open source SOVD ecosystem

- <https://projects.eclipse.org/projects/automotive.opensovd>
- <https://github.com/eclipse-opensovd>

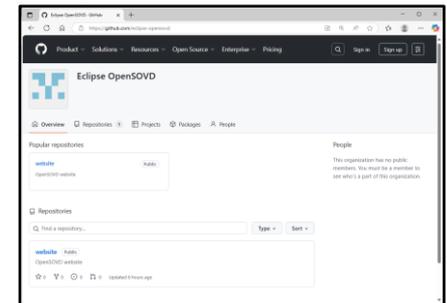
## ❑ Kicked-off on July 2, 2025

✓ More than 90 participants!

- <https://www.youtube.com/watch?v=VnMauUXT2cl>
- <https://drive.google.com/file/d/1vGNs7pPWIO RLHT3dWBQt24PV7vZa7yTQ/view>



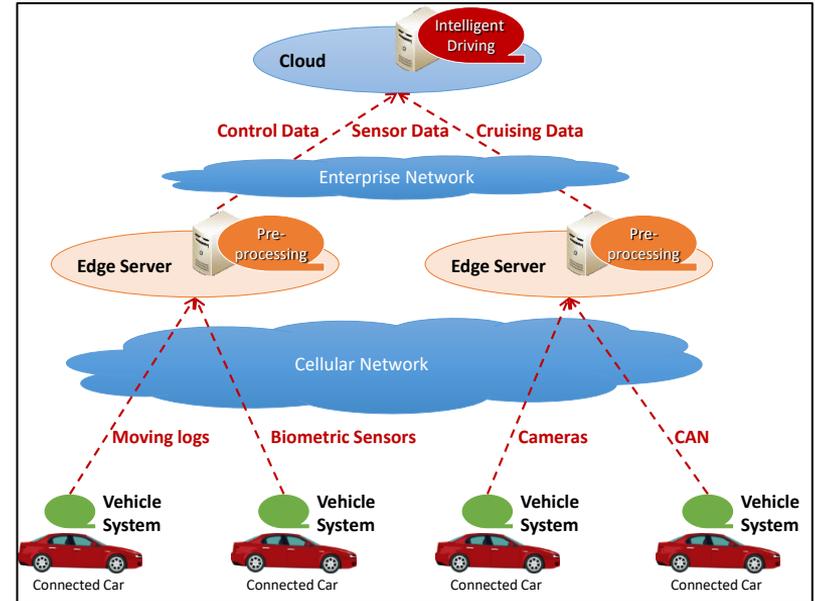
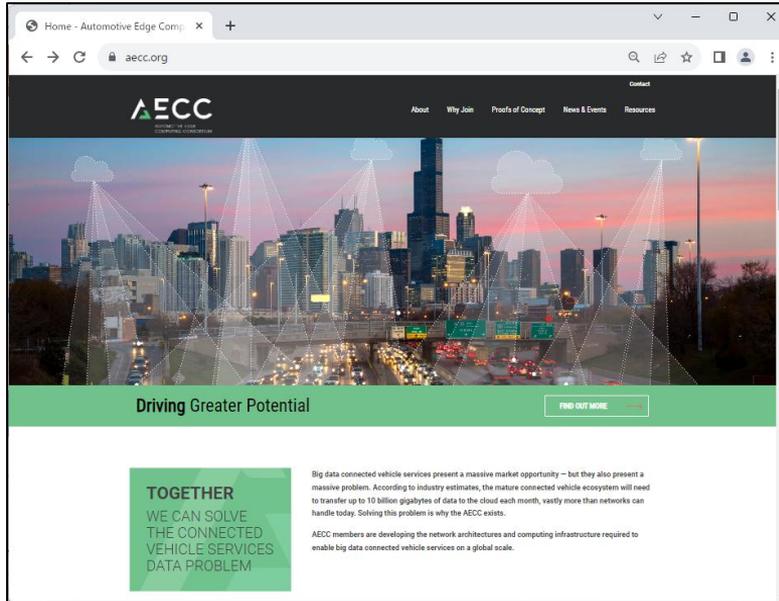
Eclipse OpenSOVD: Kickoff Meeting for the Open Source Vehicle Diagnostics Project



# A Collaborative work at AECC

□ AECC : Automotive Edge Computing Consortium (<https://aecc.org>)

- ✓ An Open Collaborative Activity for promoting Edge Computing focusing on Automotive Use Cases, with POCs



# Collaborative work at AECC

## □ White Papers

- <https://aecc.org/resources/publications/>

## □ POCs

- <https://aecc.org/proof-of-concepts/>

## □ SIGs based on particular solution areas (now under forming process)

### ● (1) Data-first SIG

- ✓ Starting from V2V enabling more flexible/reliable vehicle data utilization

### ● (2) Telco API SIG

- ✓ CAMARA API + Remote SIM Provisioning (via GSMA SGP.32)

### ● (3) Green Computing SIG

- ✓ How to utilize green energy distributing workload by optimizing edge/route selection

# SOVD POC at AECC – the First Step (Collaboration)

## ❑ Collaboration with AutoCore (<https://autocore.ai/en/>)

✓ AC.OS: Highly modular and high performance Vehicle OS

- ASIL-D Certified
- Contains SOVD Software Stack

➤ Modular and extensible architecture

✓ AutoForge: Vehicle Software Development Support System

✓ <https://autoforge.autocore.net.cn/>



## ❑ Presentations

1. Preliminary Results

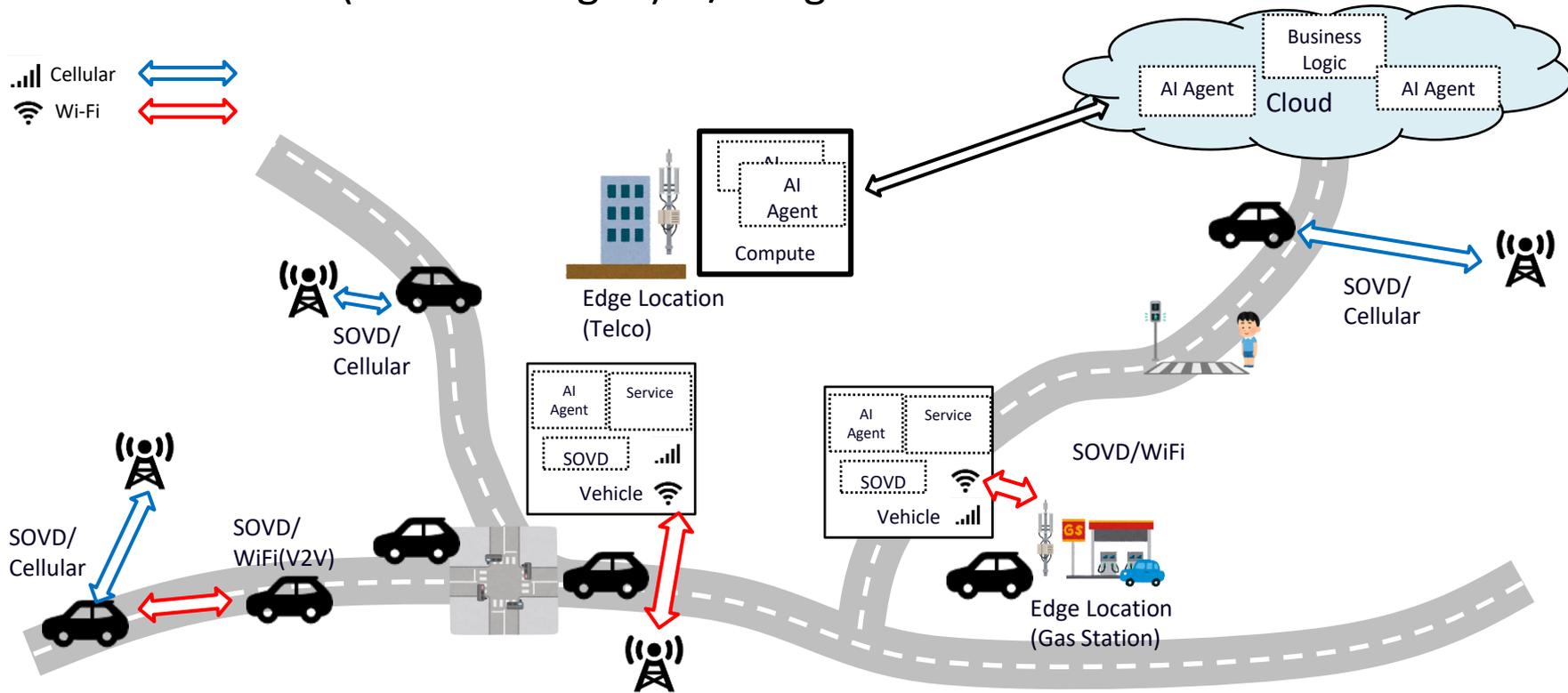
✓ “SDV-Oriented Use Cases Leveraging Next-Generation Vehicle Diagnostics(SOVD) and Virtual Fleets”, Dec. 9, 2025, OSSJ/ALS 2025 (<https://sched.co/29FnM>)

2. 1<sup>st</sup> Step Results

✓ To appear at the next AECC AMM Spring scheduled in April 2026, Gothenburg, Sweden

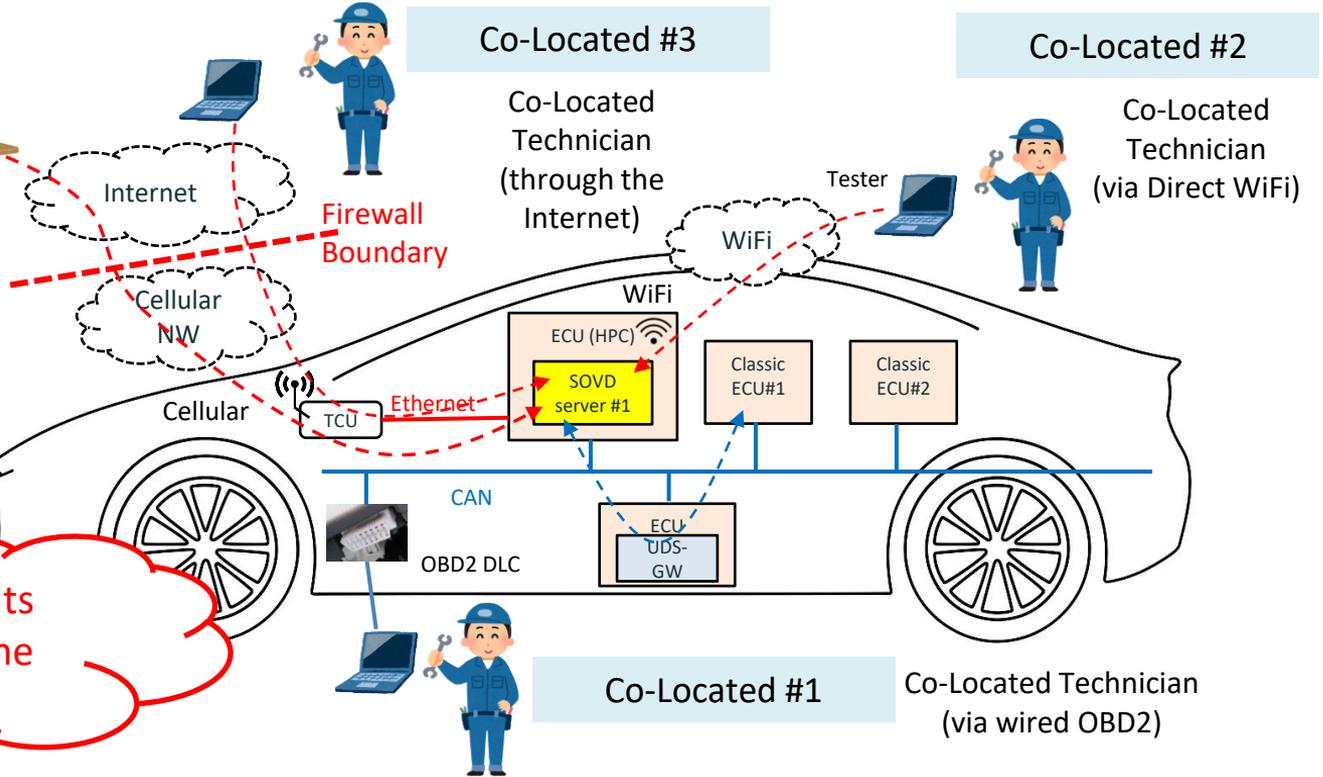
# SOVD POC at AECC – A Big Picture

## Customer Services (Business Logics) w/AI Agent and SOVD



# SOVD POC at AECC – the First Step (Remote Diagnostics Scenario)

**Remote Diagnostics**  
/ Data Collection  
(through the Internet)



**Enabling  
Online/Realtime  
Remote Diagnostics**

Detailed POC results  
will be shared at the  
AECC AMM '26.

# Summary

- Issue-Driven Collaborative Activities
- Still lots of open issues in the SDV-Era
- Tackling them via Flat Collaboration across multiple organizations/foundations

**AUTOSAR**

**SDV**  
Eclipse Software Defined Vehicle

AUTOMOTIVE  
GRADE **LINUX**

**SOAFEE**

**ECLIPSE**  
FOUNDATION

THE  
**LINUX**  
FOUNDATION

**JasPar**

**AEEC**  
AUTOMOTIVE EDGE  
COMPUTING CONSORTIUM

**ETSI**  
The Standards People

**3GPP**  
A GLOBAL INITIATIVE

**5GAA**  
Automotive Association

**ASAM**

**ISO**

**SDV**  
Eclipse Software Defined Vehicle

AUTOMOTIVE  
GRADE **LINUX**

# Thank you very much!