

# TMD<sup>22</sup>

ATA'S TECHNOLOGY & MAINTENANCE COUNCIL

## ANNUAL MEETING

& Transportation Technology Exhibition

**ELECTRIFYING  
PERFORMANCE**  
IN MAINTENANCE MANAGEMENT

# **Future Truck IVHM**

**“The Future Truck Committee shall promote activities that fulfill its mission, which shall be: To improve transport equipment, its maintenance and maintenance management by efforts to influence future equipment design.”**

## Attention Please

- In Accordance with TMC Board Policy, all personal phones without a silent feature must be turned off during business sessions.
- This is an open meeting of the Technology & Maintenance Council, held in accordance with ATA Antitrust Guidelines.
- Audio or video recordings are not permitted at this session.
- The opinions expressed in this meeting are those of the individual and not necessarily the opinion of his/her company nor of TMC unless stated otherwise.

## Antitrust/Patent Disclosure

- To minimize the possibility of antitrust problems, the guidelines detailed in your registration packet should be followed at all TMC meetings, task force and study group sessions.
- All participants in any group involved in the development of standards or recommended practices shall disclose, as stated in the antitrust/patent disclosure guidelines in your registration packet, all patents or patent applications that are owned, controlled or licensed by the Participant or Participant's employer when the Participant reasonably believes such patent or patent application may become material to the standard or RP development process.

# **Constructive Comments Are Always Appreciated!**

TMC welcomes your comments, but please make certain that they are constructive and appropriate when rating this session!

*Thank You for Your Cooperation!*

**Future Truck Committee: FT IVHM Meeting**  
**Location: Orlando**  
**Date: Monday, March 7**  
**Time: Noon – 1:00PM**

**Chairman: Wally Stegall, Morey**  
**1<sup>st</sup> Vice Chair:**  
**Secretary: Andrew Brashear**

| <b><u>Item</u></b>                         | <b><u>Discussion Leader</u></b> |
|--|---------------------------------|
| <b>I. Opening Remarks/Antitrust Review</b> | <b>Wally Stegall</b>            |
| <b>II. Prior Meeting Minutes Approval</b>  |                                 |
| <b>III. FT Old Business</b>                |                                 |
| <b>IV. Leadership Update</b>               |                                 |
| <b>V. RP Development Update</b>            |                                 |
| <b>VI. Technical Presentation</b>          |                                 |
| <b>VII. New Business</b>                   |                                 |
| <b>VIII. Adjournment</b>                   |                                 |

# Leadership update

## Future Integrated Vehicle Health Management

- Chair: Wally Stegall
- Vice Chair: Need Vice Chair
- Secretary: Andrew Brashear. Need Secretary

# Technical Presentation

- IVHM Update S5 HRCS & VMRS Code
- JA6268 Template for EV Battery
- To Days Vehicle
- Data Ownership



# IVHM - Integrated Vehicle Health Maintenance

- WHAT IS IT?
- What's in it for Fleets?

**Integrated Vehicle Health Management (IVHM)** is heavily used in automotive and aerospace. The choice of Management vs. Maintenance was intended to convey a proactive, system-level approach. SAE defines IVHM as “the unified capability of a system of systems to assess current or future state of member system health and integrate that picture of system health within a framework of available resources and operational demand.” IVHM, or sometimes just VHM, incorporates basically all of CBM+ but with a greater emphasis on prognostics and it is deeply aligned with existing international standards such as ISO. The more advanced aspects of IVHM are built using novel analytics where the goal is move beyond just descriptive analytics to instead focus on predictive, or better still, prescriptive analytics which ties the results to recommended actions.



## JA6268 Design-Time Data Exchange

### HRCS Managed Libraries

Industry Standard Templates



Initialize

Operator Datasheets



OEM Datasheets (Vehicles and Systems)



Supplier Datasheets (Systems and Components)



### JA6268 Enabled Processing Ecosystem (Cloud + Edge)

- Telematic Message Decoding
- Indicator Computation
- Remote Diagnostics
- Work Scope Planning
- Parts Ordering
- Technician Support
- Repair Confirmation
- Warranty and Billing Support

## JA6268 Run-Time Data Exchange



Support for Operations and Maintenance Planning



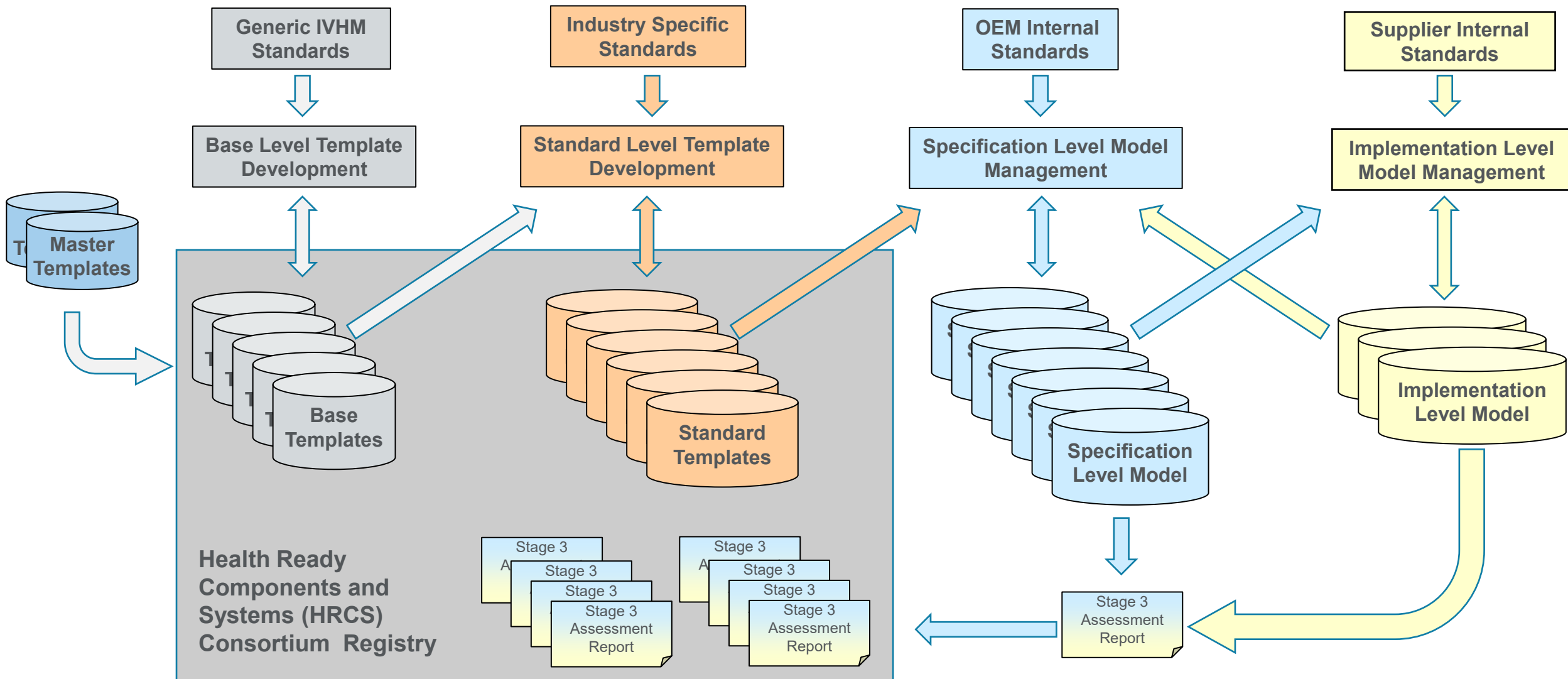
Support for Roadside Assistance



Support for Service Bay Technician

**JA6268 Format And Vocabulary Aligned With Industry Standards (i.e., J1939, J1979, J2012, VMRS)**

# Overall JA6268 Model Development Process



“Vehicles produce a significant quantity of maintenance and operating data relating to nearly all important vehicle systems. This data is widely recognized as valuable information which can be used to support maintenance, monitor operating conditions, and potentially predict coming problems and/or the remaining useful life of systems or subsystems.”

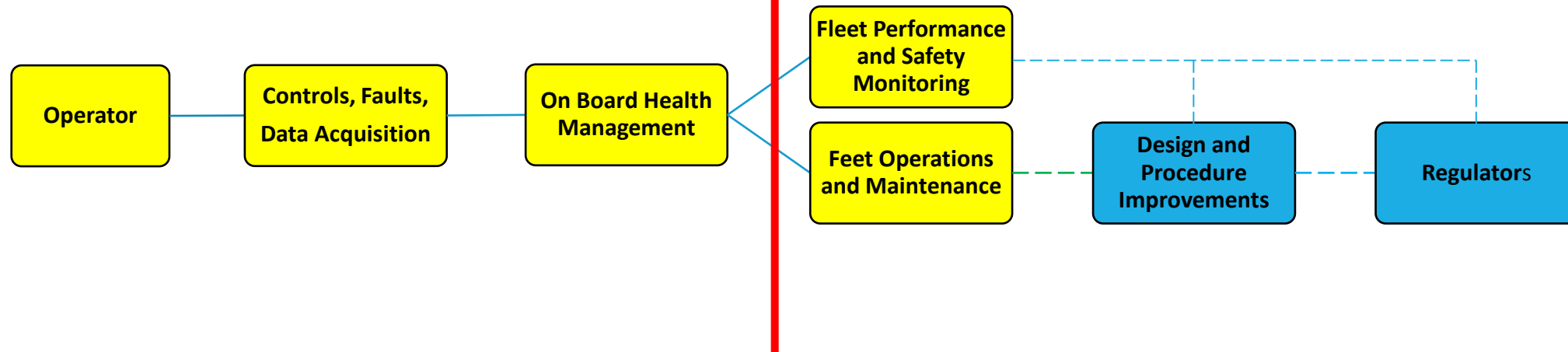
“For our purposes, we consider fleet operators or lessees to be equivalent to owners for data ownership, even though they may not be the legal owner of the asset.”

## Traditional Vehicle Human Sensing & Control

- Sensing & Recognizing
- Controlling and Managing
- Reaction
- Mitigation

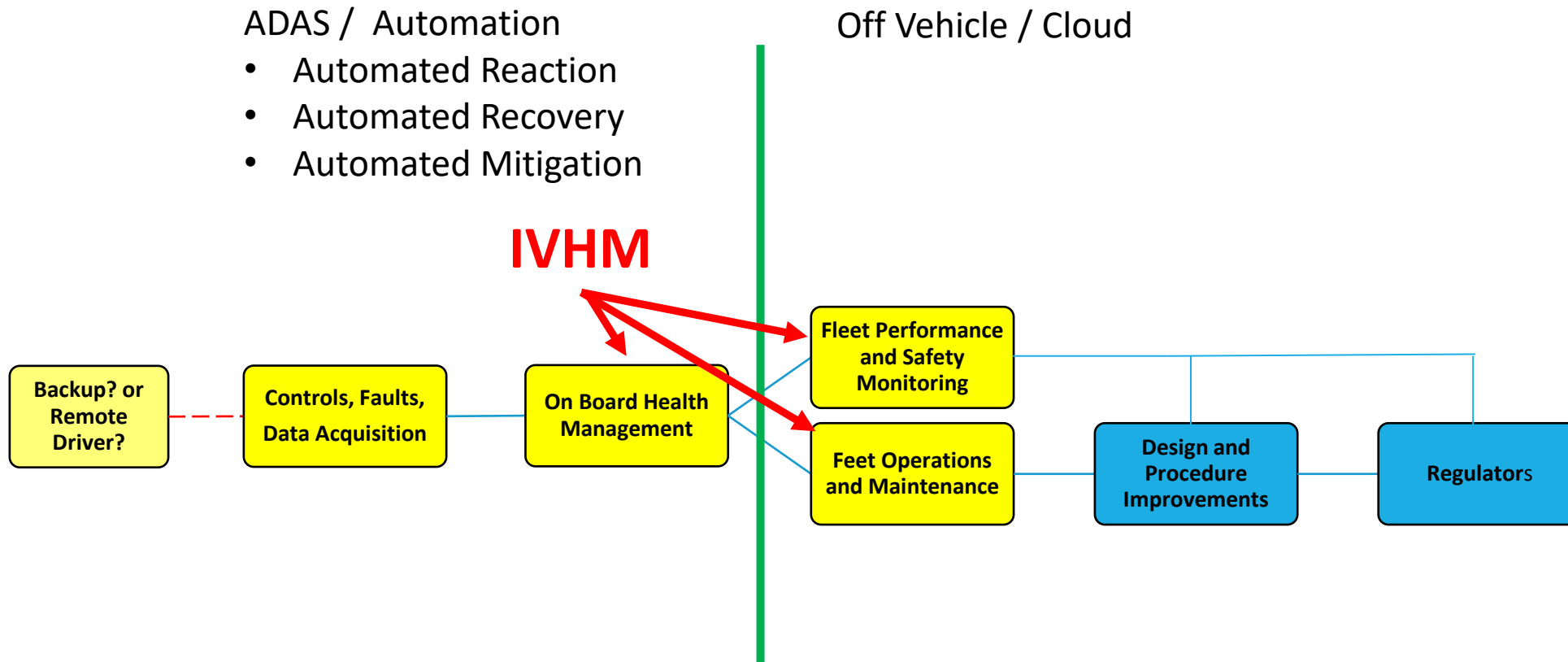
## Off Vehicle / Cloud

**IVHM?**

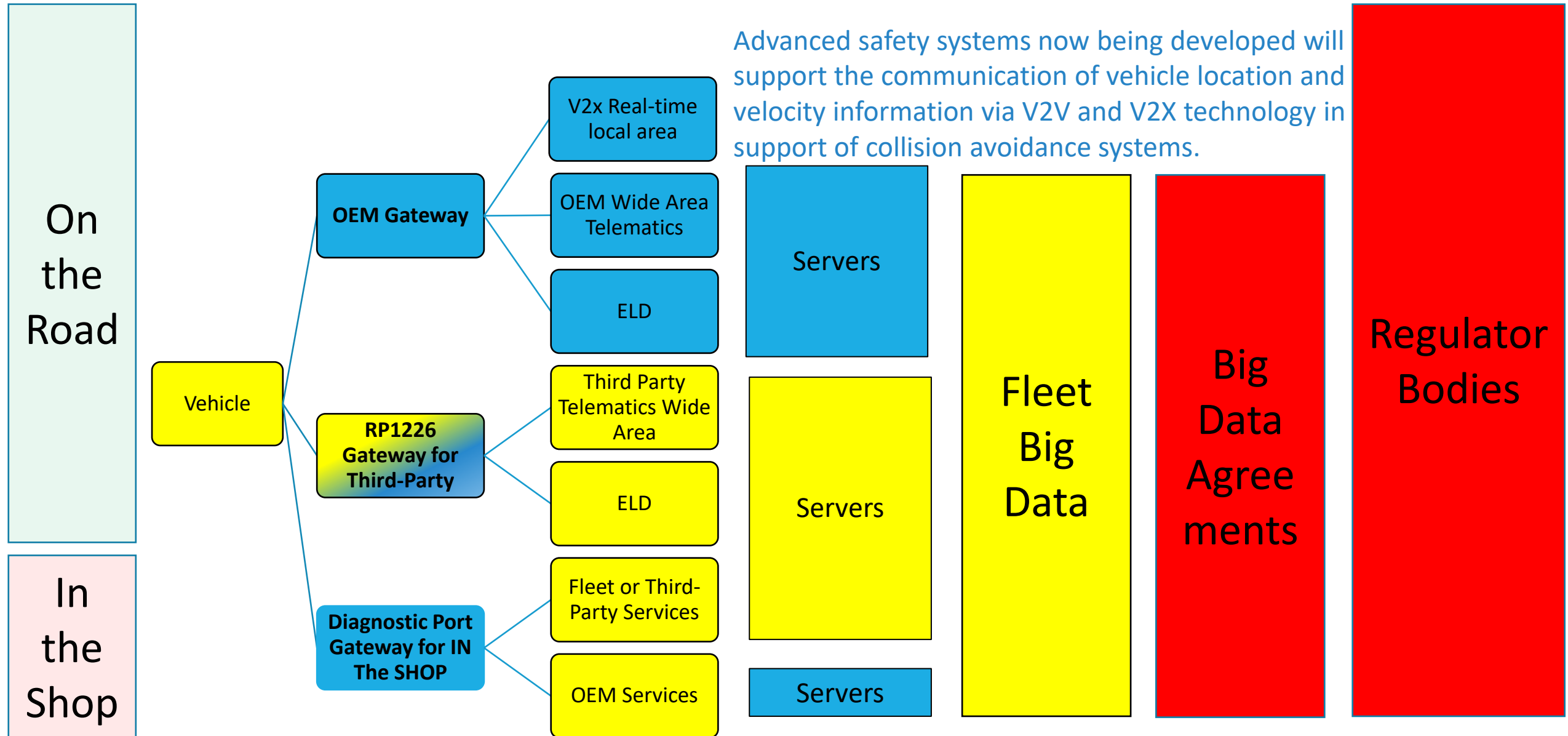


IVHM is non-critical and data analysis is discretionary

# Architecture of ADAS/Autonomous Vehicle **TMC 22**



IVHM is critical and data analysis is mandated





1. “Data being communicated from the vehicle to off-board entities is still owned by the vehicle Owner. The data could be transmitted for the Owner’s benefit, the manufacturer’s benefit, or some other purpose.”

2. “The vehicle Owner might be an individual or a company. The Owner could own a single vehicle or a fleet of vehicles.”

3. “The driver of a given vehicle could be the Owner or someone the Owner has authorized to use the vehicle (commercial or private). **In the case where the driver is not the Owner of the vehicle, data ownership remains with the vehicle Owner.** Any usage of vehicle information should be understood by the driver in advance so as not to expose personal information (location, speed, etc.) for the driver which they might not be aware of. It could be part of the driver’s employment agreement or agreed between the parties in another way.”

4. “Some vehicle information is used primarily on-board to drive displays for the benefit of the driver. The design and operation of these functions is IP owned by the vehicle or component manufacturer which they may or may not wish to share with others.”

5. “Some vehicle information is used primarily on-board to affect the operation, control, and safety of the vehicle. The design and operation of these functions is also IP owned by the vehicle or component manufacturer. The manufacturer may choose to make some of this knowledge available to third parties to enhance the value of their product at their option. This is critical to ensure the integrity, reliability, and safety of the vehicle.”

6. “Some vehicle information is used on-board and off-board to support the maintenance and servicing of the vehicle. This area is generally known as Vehicle Health Management (VHM). This operating data is still owned by the Owner of the vehicle but is typically made available to service providers. **It is not appropriate for the manufacturer to charge Owners for their own operating data.** Owners may enter into agreements with the manufacturer or third-party providers whereby additional value-added interpretation, or recommended actions are provided under contract. The design and operation of these functions, along with any proprietary data, is IP owned by the vehicle or component manufacturer.”

7. “The manufacturer may choose to make some of this design IP available to third parties to enhance the value of their product at their option. “Right to Repair” proponents in the US and Europe have been advocating greater access to vehicle design IP information. This type of information sharing should be governed by the vehicle or component manufacturer’s discretion and/or applicable regulation.”

8. “Software updates and information content updates refer to information being sent to the vehicle to correct deficiencies or improve operation to the benefit of the vehicle and its Owner. **The ability to perform these updates nevertheless requires the advanced permission of the vehicle Owner.**”



9. “Advanced safety systems now being developed will likely support the communication of vehicle location and velocity information via V2V and V2X technology in support of collision avoidance systems. These may be subject to government regulation which the Owner may or may not have the right to opt out of.”

10. “Information legally demanded by subpoena or court order must be honored by the data owner or anyone in possession of that data.”

# IVHM New Business

- Open Discussion

**Adjournment**

**Have a Great TMC!!!**