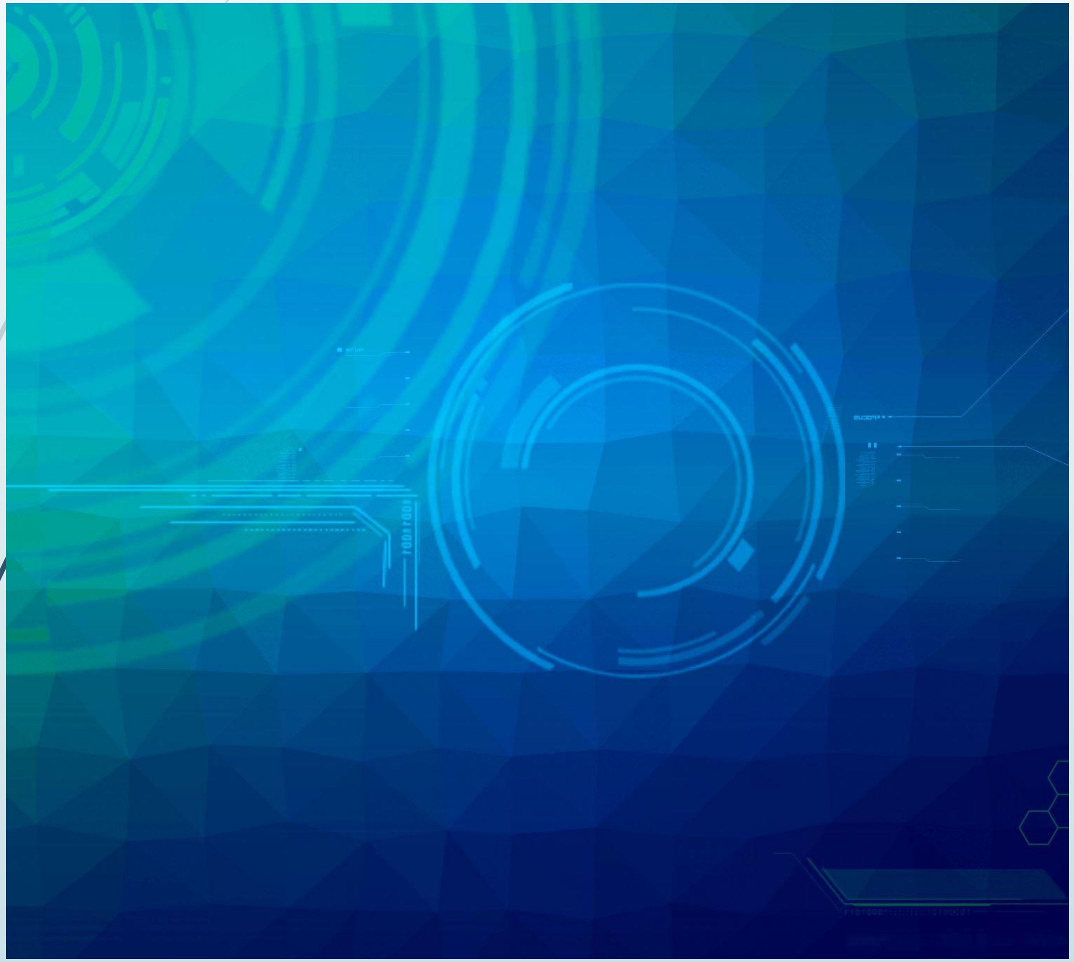
Connected Autonomous Vehicle (MPAI-CAV)

08 and 15 UTC, 06 September 2023

Contents of presentation



- About MPAI
- Why a CAV standard
- MPAI-CAV Overview
- Human – Connected Autonomous Vehicle Interface (HCI)
- Environment Sensing Subsystem (ESS)
- Autonomous Motion Subsystem (AMS)
- Motion Actuation Subsystem (MAS)
- MPAI-CAV and the Metaverse (MPAI-MMM)
- What’s next?

MPAI.
community

About MPAI

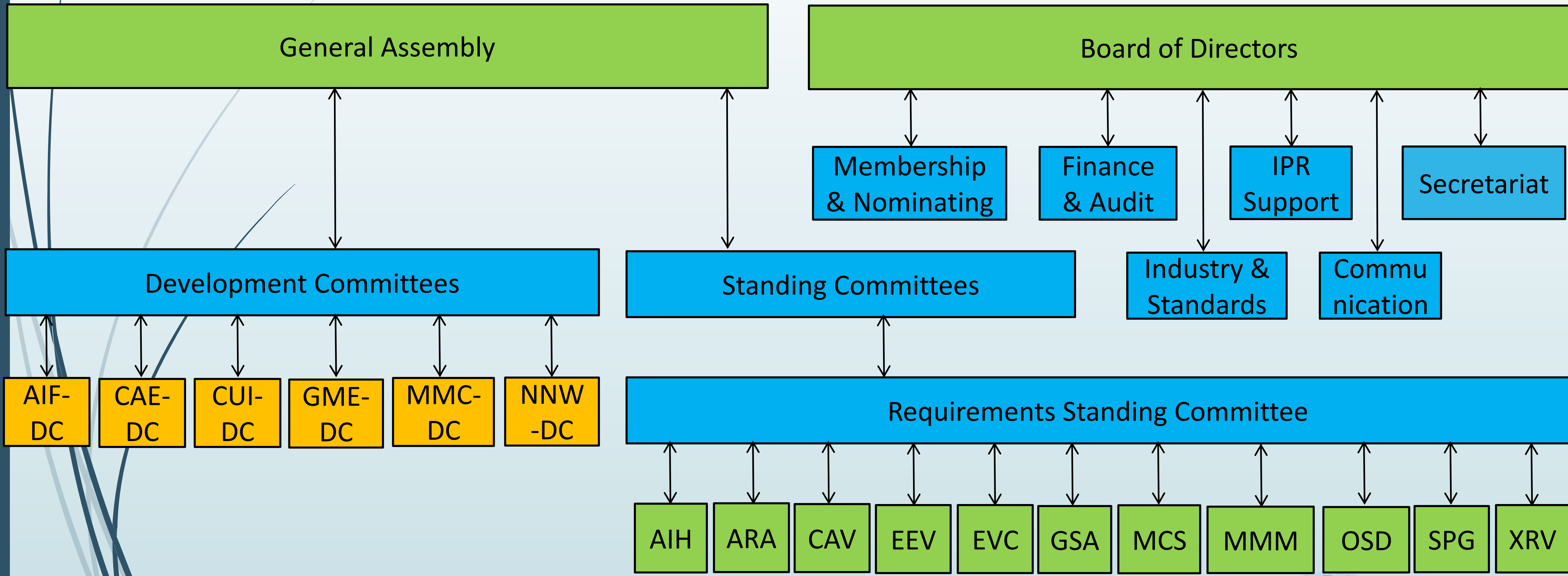
MPAI stands for Moving Picture, Audio, and Data Coding by Artificial Intelligence.

International, unaffiliated, non-profit SDO.

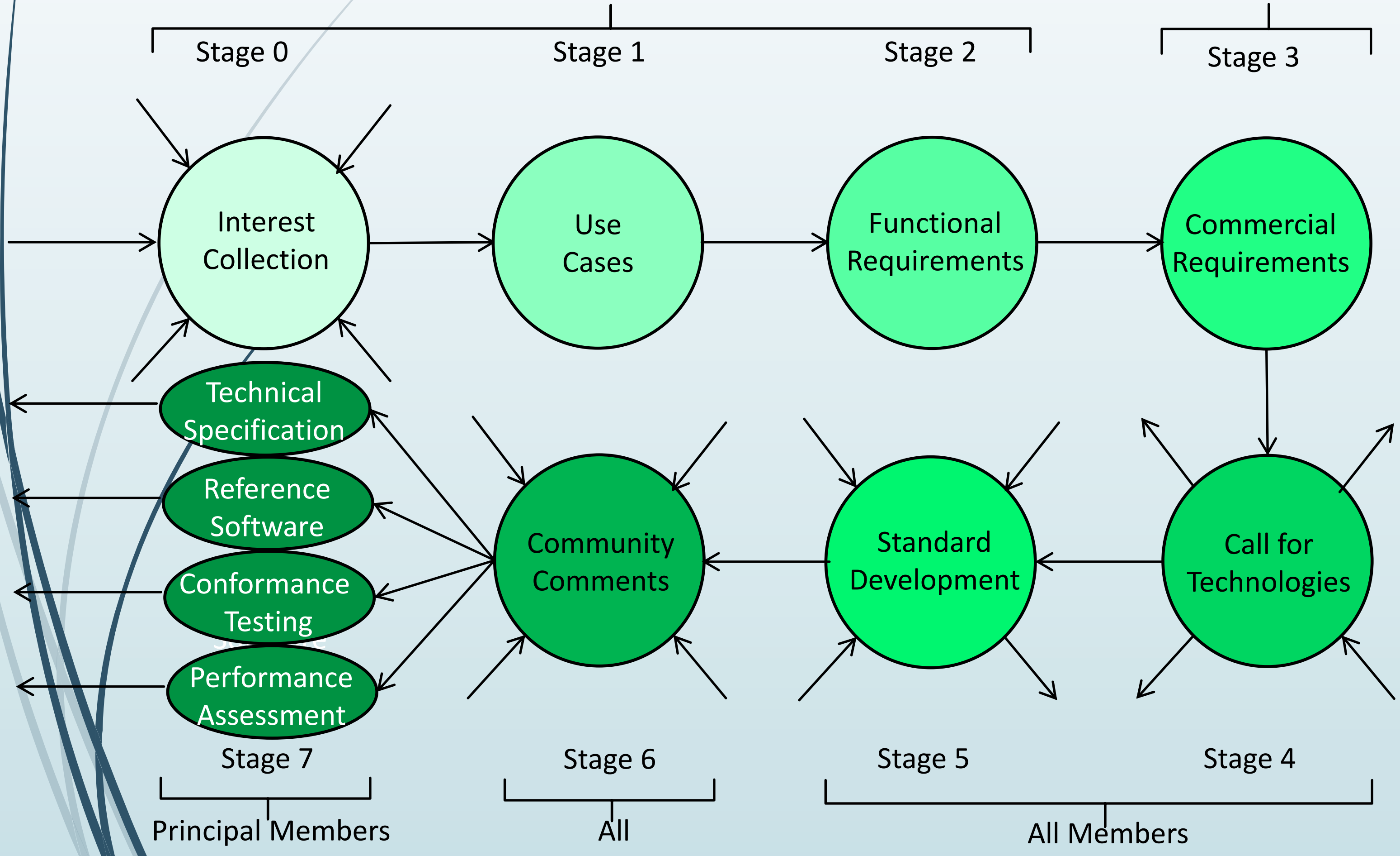
Developing AI-based data coding standards.

With clear Intellectual Property Rights licensing frameworks.

The MPAI organisation



The MPAI standard development process



- Develop Use Cases and Functional Requirements.
- Develop Commercial Requirements (Framework Licence).
- Issue Call for Technologies with attached:
  - Functional Requirements.
  - Commercial Requirements.
- Develop standard (MPAI members only).
- SEP holders select patent pool administrator.

MPAI standards for a better AI

- MPAI's data coding standards make explicit the computing workflow of AI applications.
- An MPAI standard **breaks up monolithic AI applications** into a set of interacting components of known data semantics (as far as possible).
- **Developers compete** offering "improved" performance "standard" components.
- Humans can **select applications whose internal operation they can somehow understand**.

MPAI's AI standardisation is "component-based".

An AI application is:

- Subdivided in smaller components: AI modules (AIM).

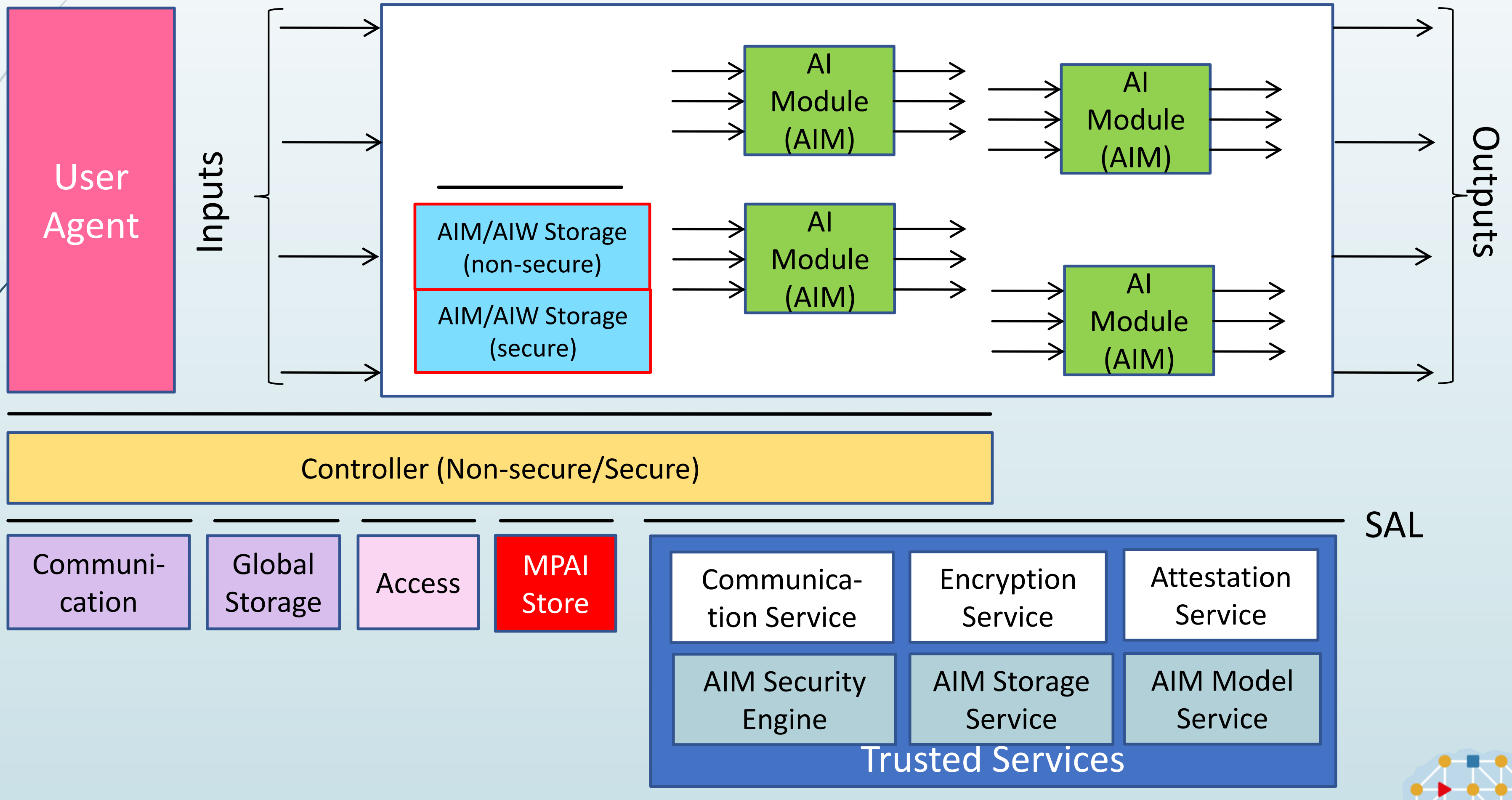
- Aggregated in one or more AI workflows (AIW).

- Executed in a standard environment (AIF).

1 foundational Technical Specification

AI Framework (MPAI-AIF)

The MPAI AI Framework

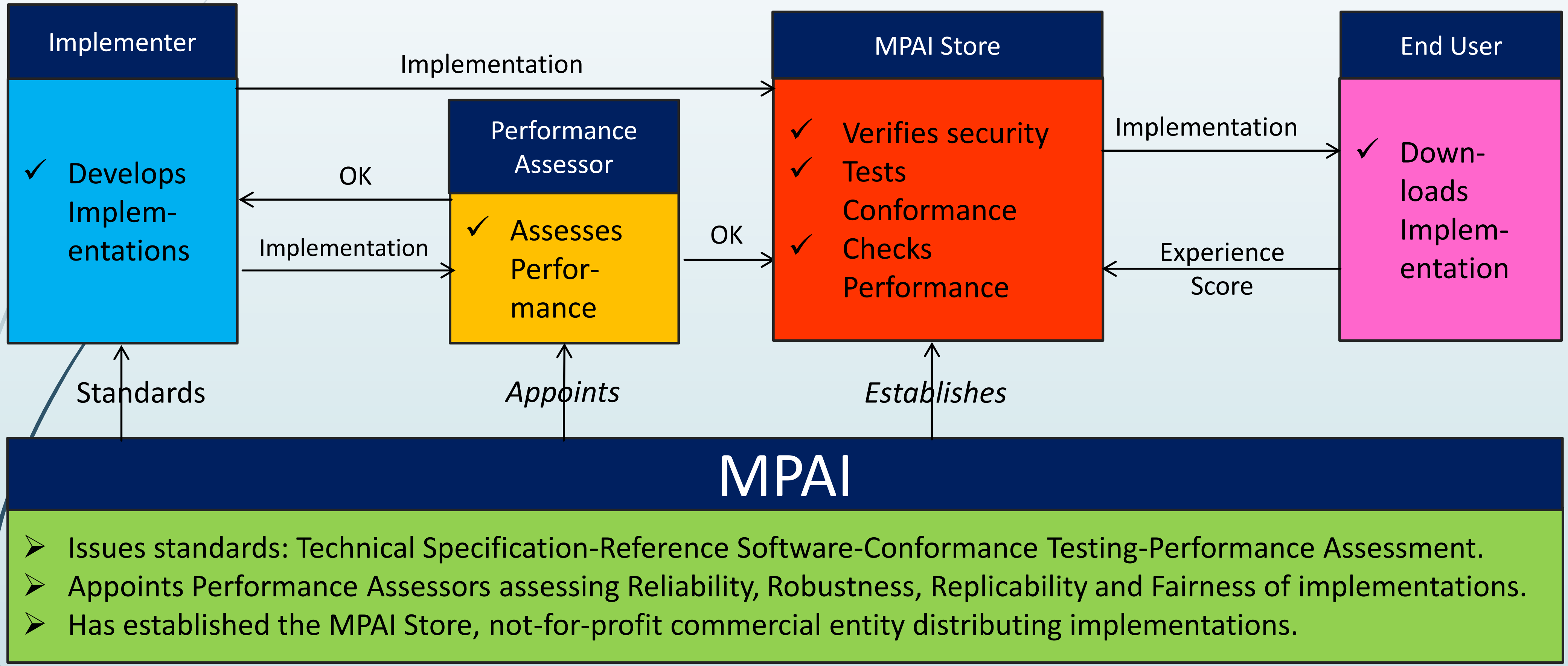


A sustainable MPAI Ecosystem

- **MPAI standards** create an ecosystem composed of:
  - **Developers**: develop components
    → require interoperability to bring their components to the market.
  - **Integrators**: assemble components
    → require ability to assemble third party components.
  - **Consumers**: use assembled components
    → require that the assembled components be trusted.
- The MPAI Store guarantees that AIMs/AIWs are:
  - Interoperable.
  - Trusted.
  - Available.

***1 system Technical Specification*:**
Governance of the MPAI Ecosystem (MPAI-GME).

The MPAI ecosystem



MPAI. community

More published MPAI standards

4 Technical Specifications

1 - Context-based Audio Enhancement (MPAI-CAE)

2 - Compression and Understanding of Financial Data (MPAI-CUI)

3 - Multimodal Conversation (MPAI-MMC)

4 - Neural Network Watermarking (MPAI-NNW)

2 Technical Reports

1 - MPAI Metaverse Model (MPAI-MMM) – Functionalities

2 - MPAI Metaverse Model (MPAI-MMM) – Functionality Profiles

Five standards published for Community Comments to become standards on 29 September

Existing MPAI standards extended

1 - AI Framework V2 (MPAI-AIF)

2 - Multimodal Conversation V2 (MPAI-MMC)

New MPAI standards being approved

3 - Avatar Representation and Animation V1 (MPAI-ARA)

4 - Connected Autonomous Vehicles V1 (MPAI-CAV) – Architecture

5 - MPAI Metaverse Model V1 (MPAI-MMM) – Architecture

Brewing in the pot

Calls for Technologies issued

1 – Artificial Intelligence for Health (MPAI-AIH)

2 – Object and Scene Description (MPAI-OSD)

3 – Extended Reality Venues (MPAI-XRV) - Live Theatrical Stage Performance

New opportunities being explored

1 - AI-based End-to-End Video Coding (MPAI-EEV)

2 - AI-Enhanced Video Coding (MPAI-EVC)

3 - Server-based Predictive Multiplayer Gaming (MPAI-SPG)

MPAI and IEEE

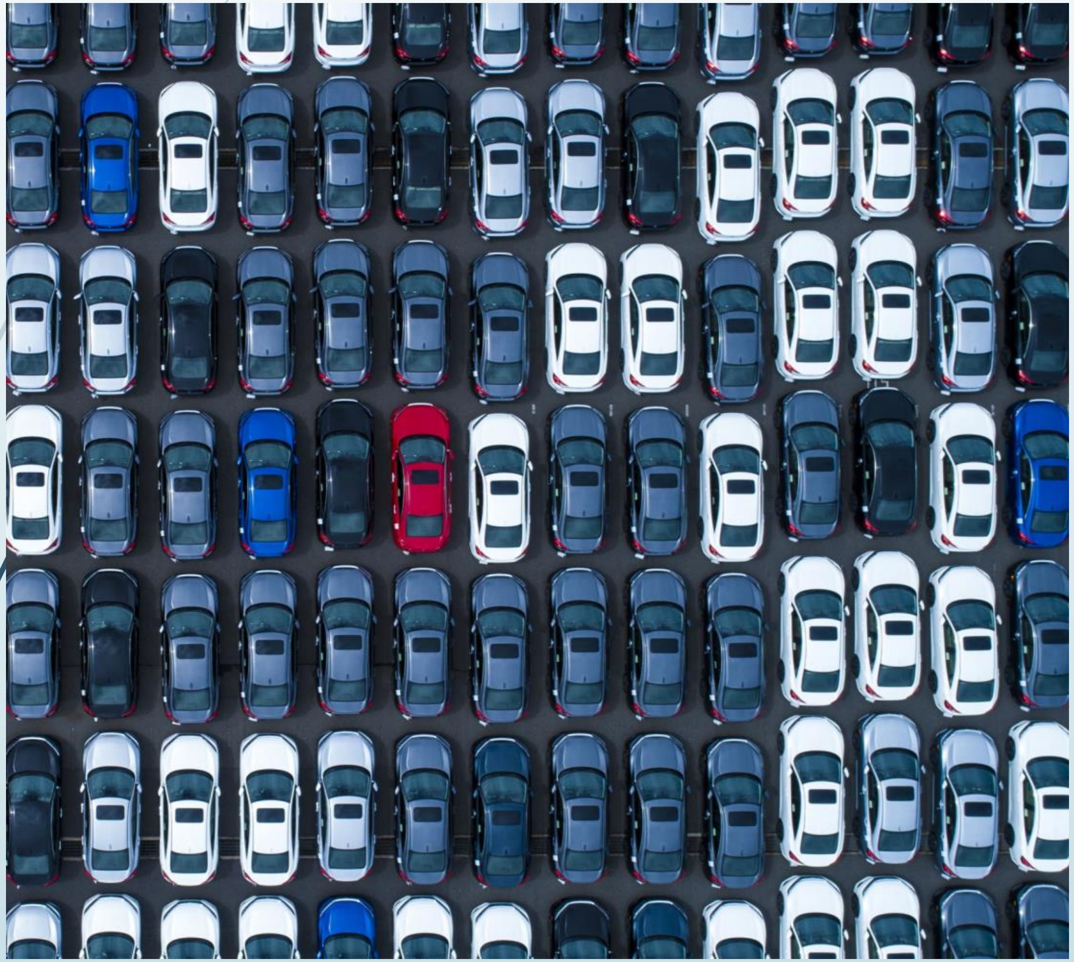
MPAI Technical Specifications adopted as IEEE standards

1. ***MPAI-AIF – 3301-2022***
2. ***MPAI-CAE – 3302-2022***
3. ***MPAI-MMC – 3300-2022***
4. ***MPAI-CUI – 3303-2023***
5. ***MPAI-NNW (on its way)***

All this achieved in less than 3 years!

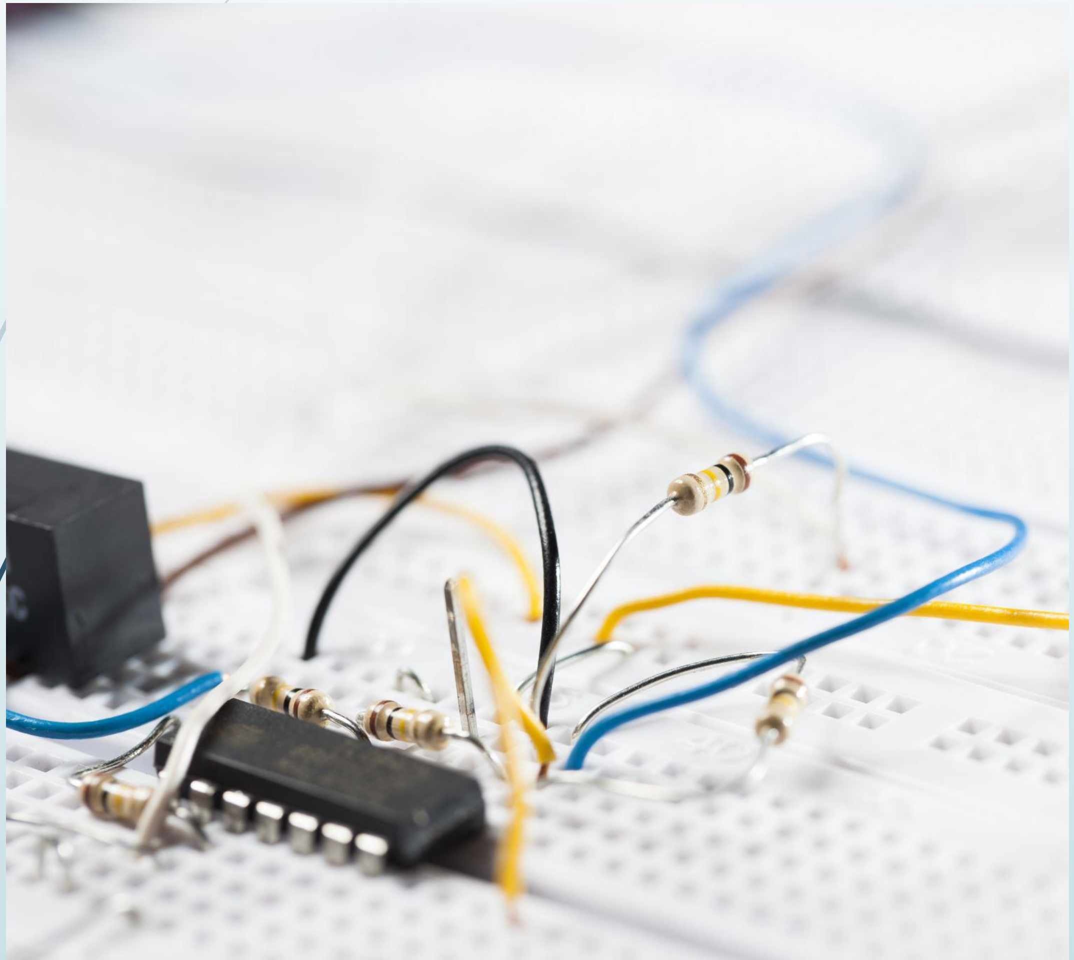
Why a CAV standard

Connected Autonomous Vehicles (CAV)



- Many benefits from CAVs:
  - Replace human error with a **lower machine errors rate**.
  - **Give more time** to human brains for rewarding activities.
  - Optimise use of **vehicles, infrastructure, traffic management**.
  - Reduce **congestion and pollution**.
  - Help elderly and disabled people have a **better life**.
- Should we just *wait* for:
  - Research to **advance CAV implementation**
  - Industry to produce cars with **higher SAE Levels.**

MPAI thinks we can do more than just wait



- Specify:
  - A **CAV Reference Model** broken down into **Subsystems**.
  - The **Functions** of each Subsystem.
  - The **data exchanged:** Subsystem ↔ Subsystem and Subsystem ↔ human.
- Break down each **Subsystem** in **Components**.
- For each Component, specify:
  - The **Functions** of the Component.
  - The **Data exchanged** between Components.
  - The **Topology of Components** and Connections.
  - The **Functional Requirements** of the Data exchanged.

MPAI. community

Industry players can now iterate using the CAV Reference Model

- **Research** can:
  - Concentrate on single Components.
  - Optimise their operation keeping the interfaces' Functional Requirements.
- **Industry** can promote the definition of Data Formats when:
  - Research results are mature.
  - A Component is needed.
- **Users** can explain how the machine works.

MPAI. community

Players in the CAV domain

Industry

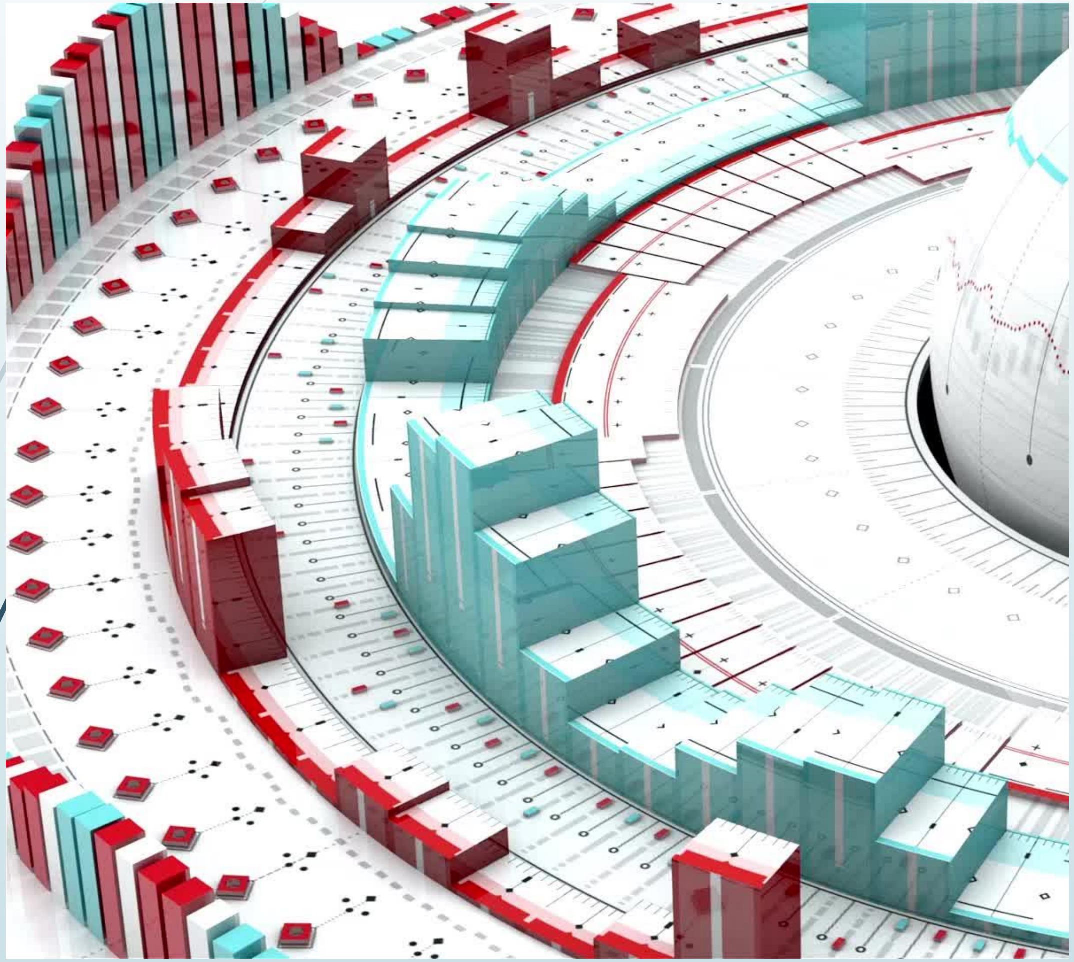
Research

Standards

Users

Regulation

Benefits of standards



Accelerate the creation of a high-tech **market** (see the MPEG story) because standards can:

- **Foster** higher quality vehicles.
- **Lower** the prices of vehicles.
- **Enable** system operation Explainability.
- **Assuage** consumer concerns.
- **Provide** tools for regulation, as standards
  - Include Conformance Testing.
  - May include Performance Assessment.

Benefits of Reference Model to market

- **Component manufacturers can:**
  - Develop optimised solutions based on publicly available specifications.
  - Put their standard AIM components to the open marketplace.
- **Car manufacturers can:**
  - Access an open global market of components:
    - Based on standard functions and interfaces.
    - Tested for conformance using standard procedures.
- **Regulators can** communicate with market development and provide guidance.

MPAI. community

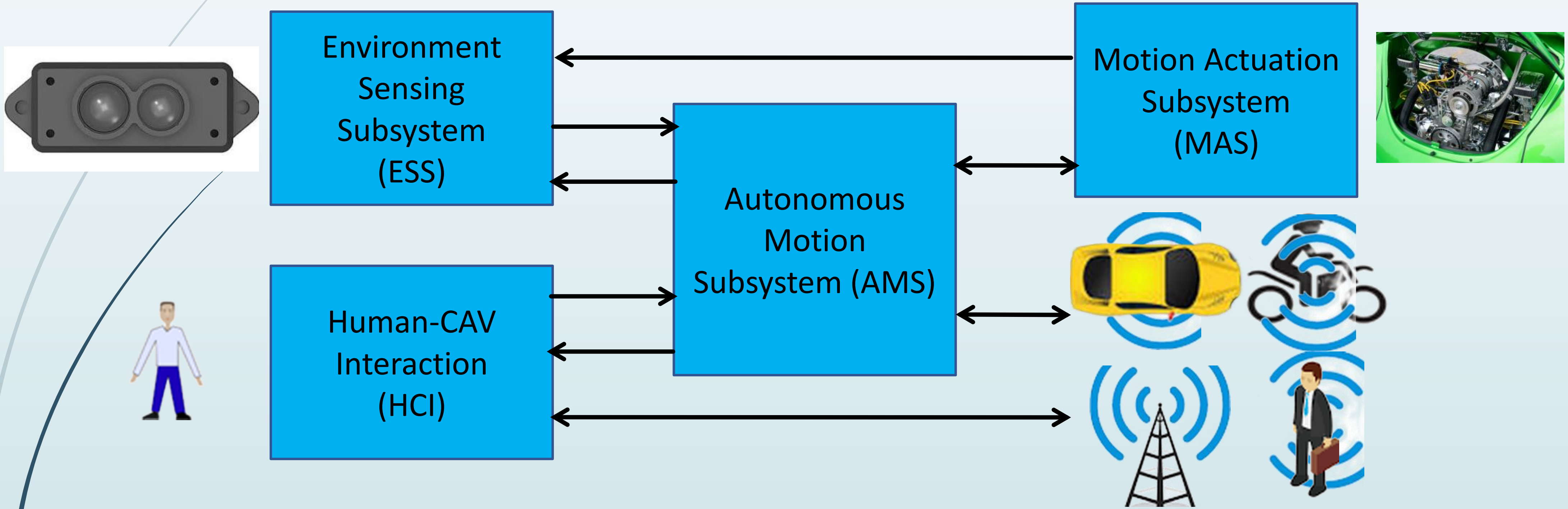
MPAI-CAV Overview

Define a CAV

A system that :

1. Interacts with a human and understands the utterances setting the mission (e.g., take me to lunch).
2. Plans a Route (e.g., from here to lunch).
3. Senses and digitally represents the external Environment (i.e., the space around the CAV).
4. Exchanges Environment representations with other CAVs and CAV-aware entities.
5. Decides how to execute the steps of the Route.
6. Implements decisions by issuing commands to actuate the motion decisions.

Reference model of Connected Autonomous Vehicle



MPAI requests comments on this CAV system partitioning.

Disclaimer

MPAI ➨ At this stage, *does not intend* to include the CAV's *mechanical* parts in the planned Connected Autonomous Vehicle – Architecture standard.

MPAI ➨ *Only intends* to reference the *interfaces* of the Motion Actuation Subsystem interacting with such mechanical parts.

Terms and definitions

- Use Cases and Functional Requirements collects > 100 terms and definitions.
- Here we will use a few Acronyms:

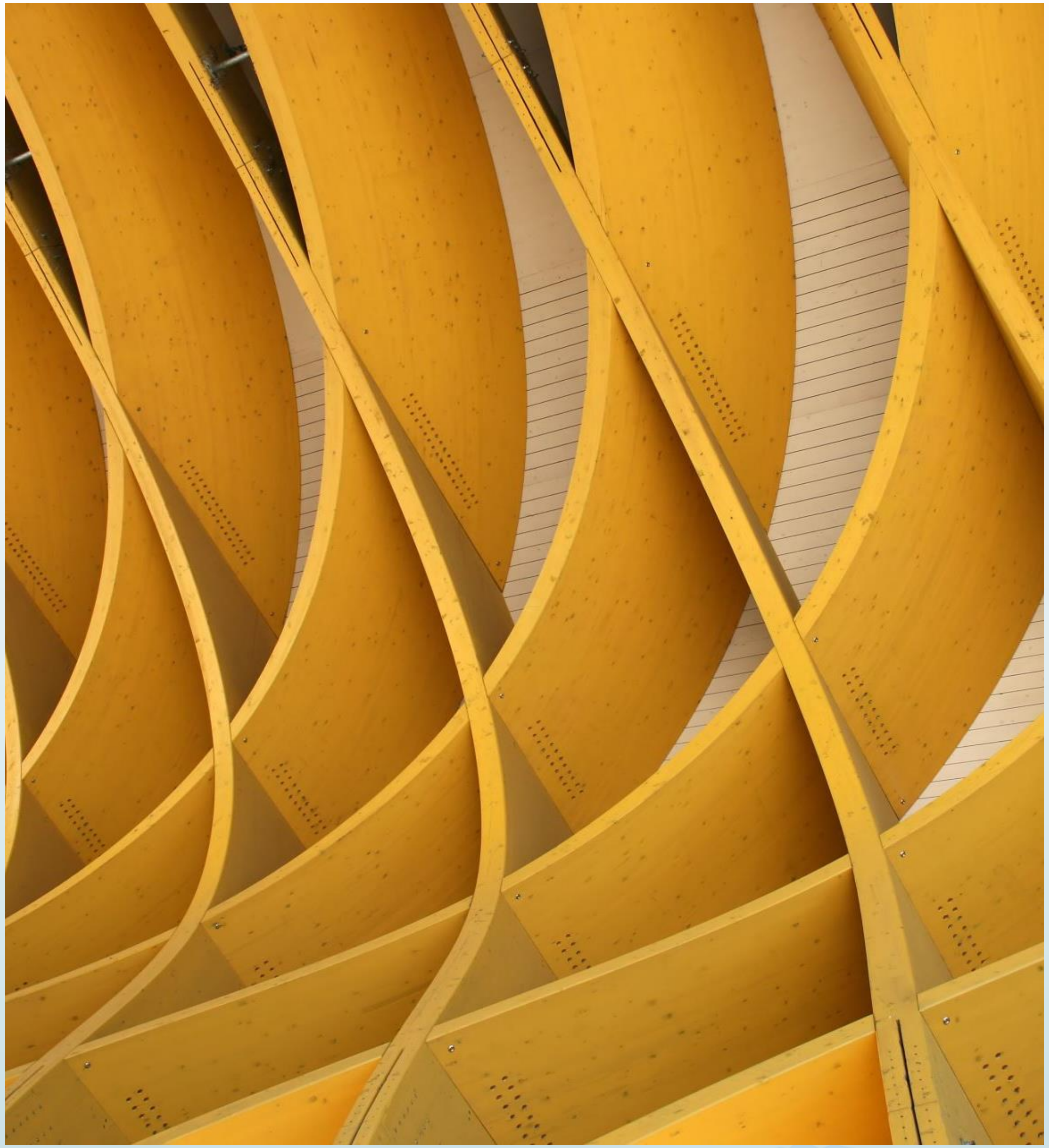
HCI	Human-CAV Interaction (Subsystem)
ESS	Environment Sensing Subsystem
AMS	Autonomous Motion Subsystem
MAS	Motion Actuation Subsystem
EST	Environment Sensing Technology
BER	Basic Environment Representation
FER	Full Environment Representation

Elements provided for each Subsystem

1. The functions.
2. The reference architecture.
3. The data in and out.
4. The functions of the Subsystem's Components.
5. The data in and out of each Component.
6. The topology of Components.

CAVs are explainable if Component function and I/O data semantics are known.

Components can be merged if the external interfaces of the merged Components are preserved



MPAI.
community

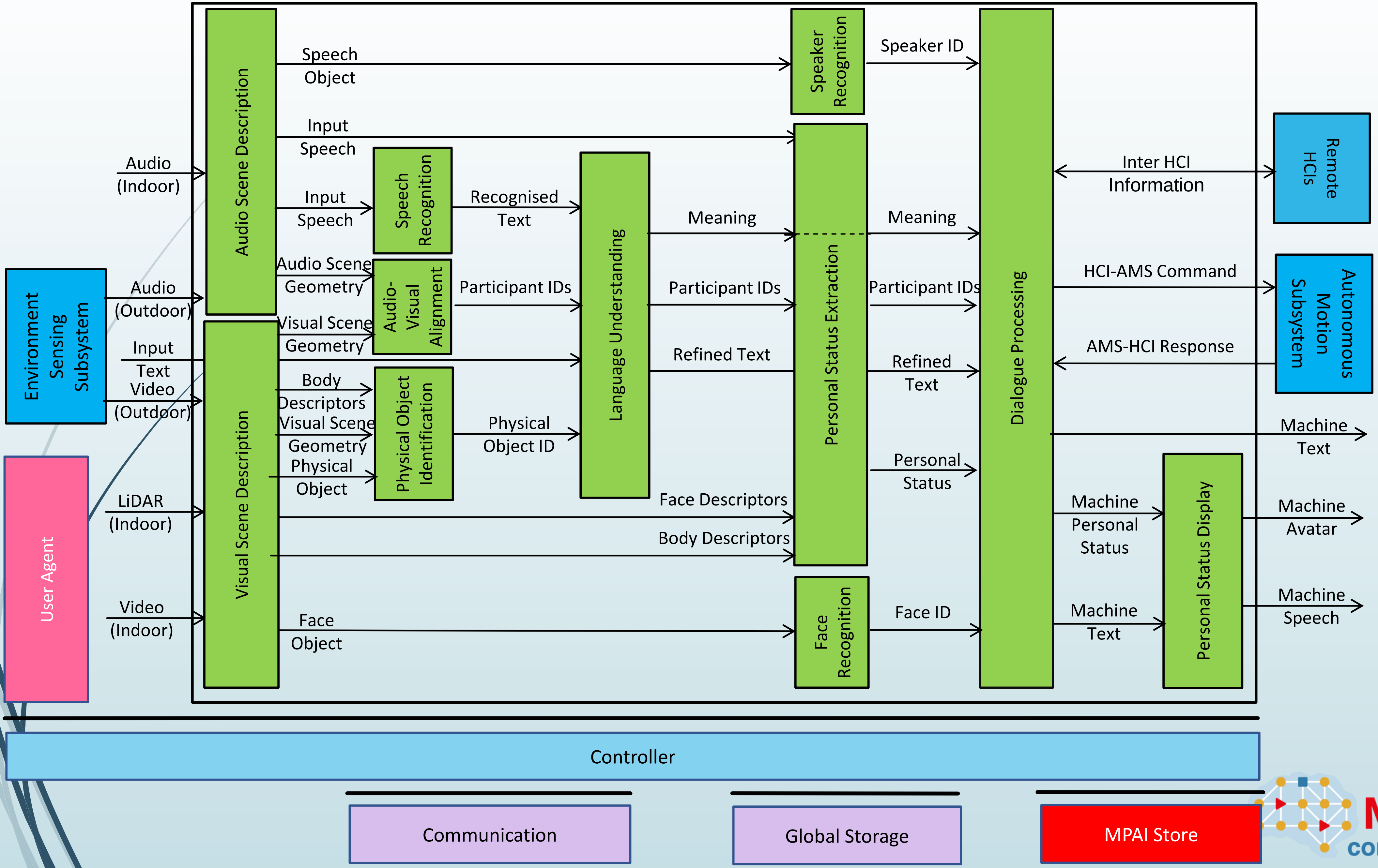
Human – Connected Autonomous Vehicle Interface (HCI)

1. Functions of Human-CAV Interaction

- **Authenticates** humans, e.g., to let them into the CAV.
- **Converses with humans** interpreting utterances based on humans' Personal Statuses, e.g., to go to a destination, or during a conversation.
- **Converses with the Autonomous Motion Subsystem** to implement human conversation and execute commands.
- Enables passengers to **navigate the Full Environment Representation**.
- **Appears as a speaking avatar** showing a Personal Status dependent on:
  - The content of the conversation.
  - The information it is aware of.
  - The Personal Status of the human it converses with.

MPAI welcomes **comments** on HCI.

2. Reference Architecture of Human-CAV Interaction



MPAI. community

3. I/O Data of Human-CAV Interaction

Input data	From	Comment
Full Environment Representation	Autonomous Motion Subsystem	Rendered by Full Environment Representation Viewers
Full Environment Representation Commands	Cabin Passengers	To control rendering of Full Environment Representation
Audio (ESS)	Environment Sensing Subsystem	User authentication, User command, User conversation
Audio	Cabin Passengers	User's social life, Commands/interaction with HCI
Video (ESS)	Environment Sensing Subsystem	Commands/interaction with HCI
Video	Cabin Passengers	User's social life, Commands/interaction with HCI
AMS-HCI Response	Autonomous Motion Subsystem	Response to HCI-AMS Command
Output data	**To**	**Comments**
FER Audio	Passenger Cabin	For passengers to hear external Environment
FER Video	Passenger Cabin	For passengers to view external Environment
Inter HCI Information	Remote HCI	HCI-to-HCI information
HCI-AMS Command	Autonomous Motion Subsystem	HCI-to-AMS information
Machine Text	Cabin Passengers	HCI's response to passengers
Machine Avatar	Cabin Passengers	HCI's avatar when conversing
Machine Speech	Humans in Environment, Cabin Passengers	HCI's response to humans, HCI's response to passengers

MPAI welcomes comments.

4. Functions of Human-CAV Interaction's AI Modules

AIM	Function
Audio Scene Description	Produces the Audio Scene Descriptors using the Audio captured by the appropriate (indoor or outdoor) Microphone Array.
Visual Scene Description	Produces the Visual Scene Descriptors using the visual information captured by the appropriate (indoor or outdoor) visual sensors.
Speech Recognition	Converts speech into Text.
Physical Object Identification	Provides the ID of the class of objects of which the Physical Object is an Instance.
Full Environment Representation Viewer	Converts the FER produced by the Autonomous Motion Subsystem into Audio-Visual Scene Descriptors that can be perceptibly rendered.
Language Understanding	Improves Text from Speech Recognition by using context information (e.g., Instance ID of object).
Speaker Recognition	Provides Speaker ID from Speech.
Personal Status Extraction	Provides the Personal Status of human.
Face Recognition	Provides Face ID from Face Object.
Dialogue Processing	Provides HCI's: 1. Text containing response to human. 2. Personal Status coherent with the Text produced by HCI.
Personal Status Display	Produce Machine's Speech, Face, and Body.

MPAI welcomes comments.

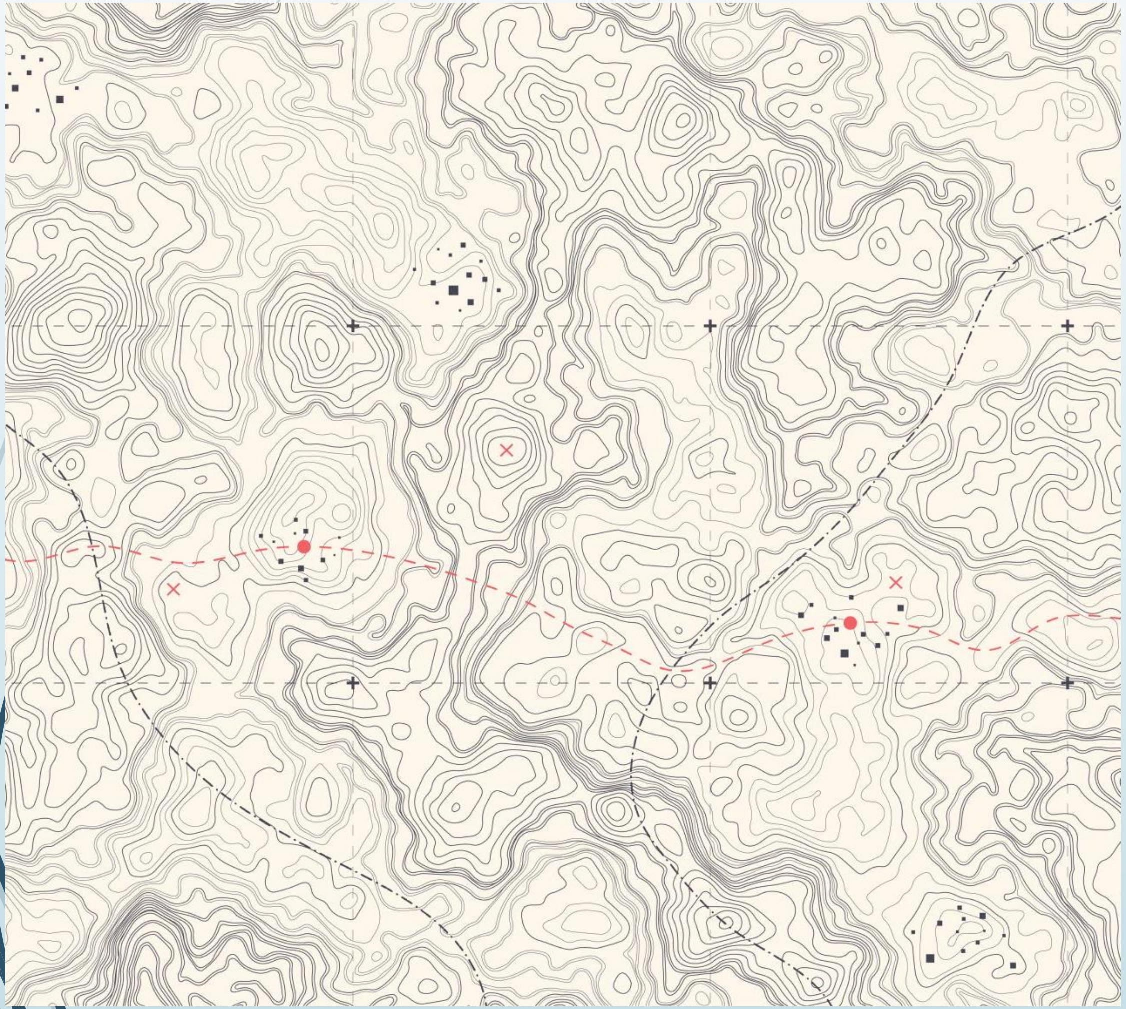
5. Input/Output Data of Human-CAV Interaction's AIMs

AIM	Input	Output
Audio Scene Description	Environment Audio (outdoor/indoor	Speech Objects Audio Scene Geometry.
Visual Scene Description	Environment Video (outdoor/ indoor)	Face Descriptors, Body Descriptors, Physical Objects, Visual Scene Geometry
Speech Recognition	Speech Object	Recognised Text
Physical Object Identification	Physical Object, Body Descriptors, Visual Scene Geometry	Physical Object ID
Full Environment Representation Viewer	FER Commands	FER Audio, FER Visual
Language Understanding	Recognised Text, Physical Object ID	Meaning, Refined Text
Speaker Recognition	Speech Descriptors	Speaker ID
Personal Status Extraction	Meaning, Speech Object, Face Descriptors, Body Descriptors	Personal Status
Face Recognition	Face Object	Face ID
Dialogue Processing	Speaker ID, Meaning, Refined Text, Personal Status, Face ID, AMS-HCI Response	AMS-HCI Commands , Machine Text, Machine Personal Status
Personal Status Display	Machine Text, Machine Personal Status	Machine Text, Machine Avatar, Machine Speech

MPAI welcomes comments.

Environment Sensing Subsystem (ESS)

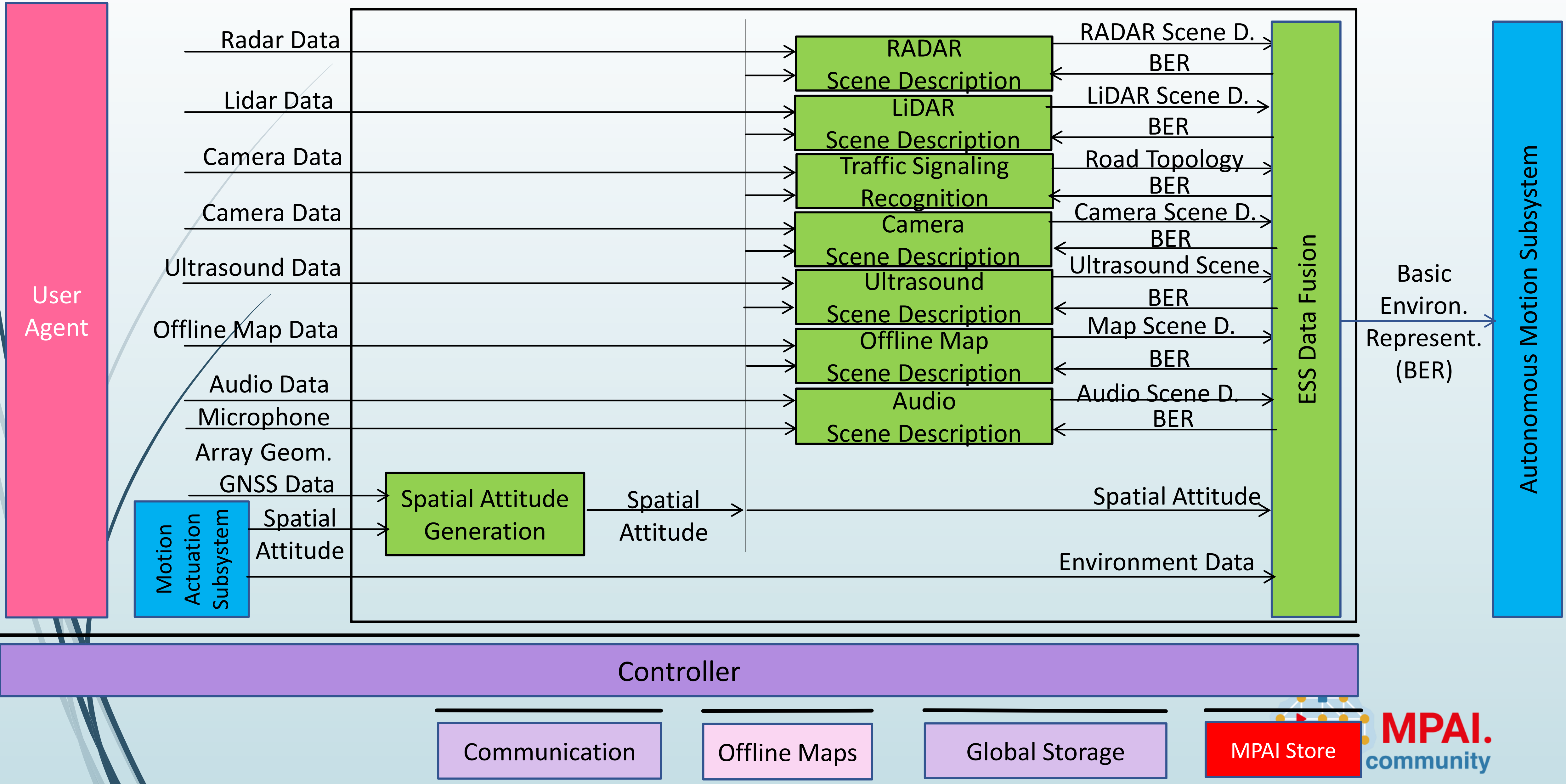
1. Functions of Environment Sensing Subsystem



- **Acquires Environment information** using Subsystem's RADAR, LiDAR, Cameras, Ultrasound, Offline Map, Audio, GNSS,…
- **Receives Ego CAV's Spatial Attitude and Environment Data** (temperature, humidity, etc.) from Motion Actuation Subsystem.
- **Produces Environment Sensing Technology Scene Descriptors** in a common format
- Produces the **Basic Environment Representation by i**ntegrating Scene Descriptors during the travel.
- **Passes the BERs, including Alerts**, to the Autonomous Motion Subsystem.

MPAI welcomes comments.

2. Reference Architecture of Environment Sensing Subsystem



MPAI. community

3. I/O Data of Environment Sensing Subsystem

Input data	From	Comment
Radar Data	~25 & 75 GHz Radio	Capture Environment with Radar
Lidar Data	~200 THz infrared	Capture Environment with Lidar
Camera Data (2/D and 3D)	Video (400-800 THz)	Capture Environment with Cameras
Ultrasound Data	Audio (>20 kHz)	Capture Environment with Ultrasound
Offline Mapa Data	Local storage	cm-level data at time of capture
Audio Data	Audio (16 Hz-20 kHz)	Capture Environment or cabin with Microphone Array
Microphone Array Geometry	Microphone Array	Microphone Array disposition
Global Navigation Satellite System (GNSS) Data	~1 & 1.5 GHz Radio	Get Pose from GNSS
Spatial Attitude	Motion Actuation Subsystem	To be fused with GNSS data
Other Environment Data	Motion Actuation Subsystem	Temperature etc. added to BER
Output data	**To**	**Comment**
Alert	Autonomous Motion Subsystem	Critical Environment Descriptor from EST (in BER)
Basic Environment Representation	Autonomous Motion Subsystem	ESS-derived representation of external Environment

MPAI welcomes comments.

MPAI. community

4. Functions of Environment Sensing Subsystem's AIMs

AIM	Function
RADAR Scene Description	Produces RADAR Scene Descriptors from RADAR Data
LiDAR Scene Description	Produces LiDAR Scene Descriptors from LiDAR Data
Traffic Signalisation Recognition	Produces Road Topology of the Environment from Camera and LiDAR Data.
Camera Scene Description	Produces Camera Scene Descriptors from Camera Data
Ultrasound Scene Description	Produces Ultrasound Scene Descriptors from Ultrasound Data.
Online Map Scene Description	Produces Online Map Data Scene Descriptors from Online Map Data.
Audio Scene Description	Produces Audio Scene Descriptors from Audio Data.
Spatial Attitude Generation	Computes the CAV Spatial Attitude using information received from GNSS and Motion Actuation Subsystem with respect to a predetermined point in the CAV defined as the origin (0,0,0) of a set of (x,y,z) Cartesian coordinates with respect to the local coordinates.
Environment Sensing Subsystem Data Fusion	Selects critical Environment Representation as Alert; produces CAV's Basic Environment Representation by fusing the Scene Descriptors of the different ESTs, The Basic Environment Representation (BER) includes all available information from ESS and MAS that enables the CAV to define a Path in the Decision Horizon Time. The BER results from the integration of: 1. The different Scene Descriptors generated by the different EST-specific Scene Description AIMs. 2. Environmental data. 3. The Spatial Attitude of the Ego CAV as estimated by the Motion Actuation Subsystem.

MPAI welcomes comments.

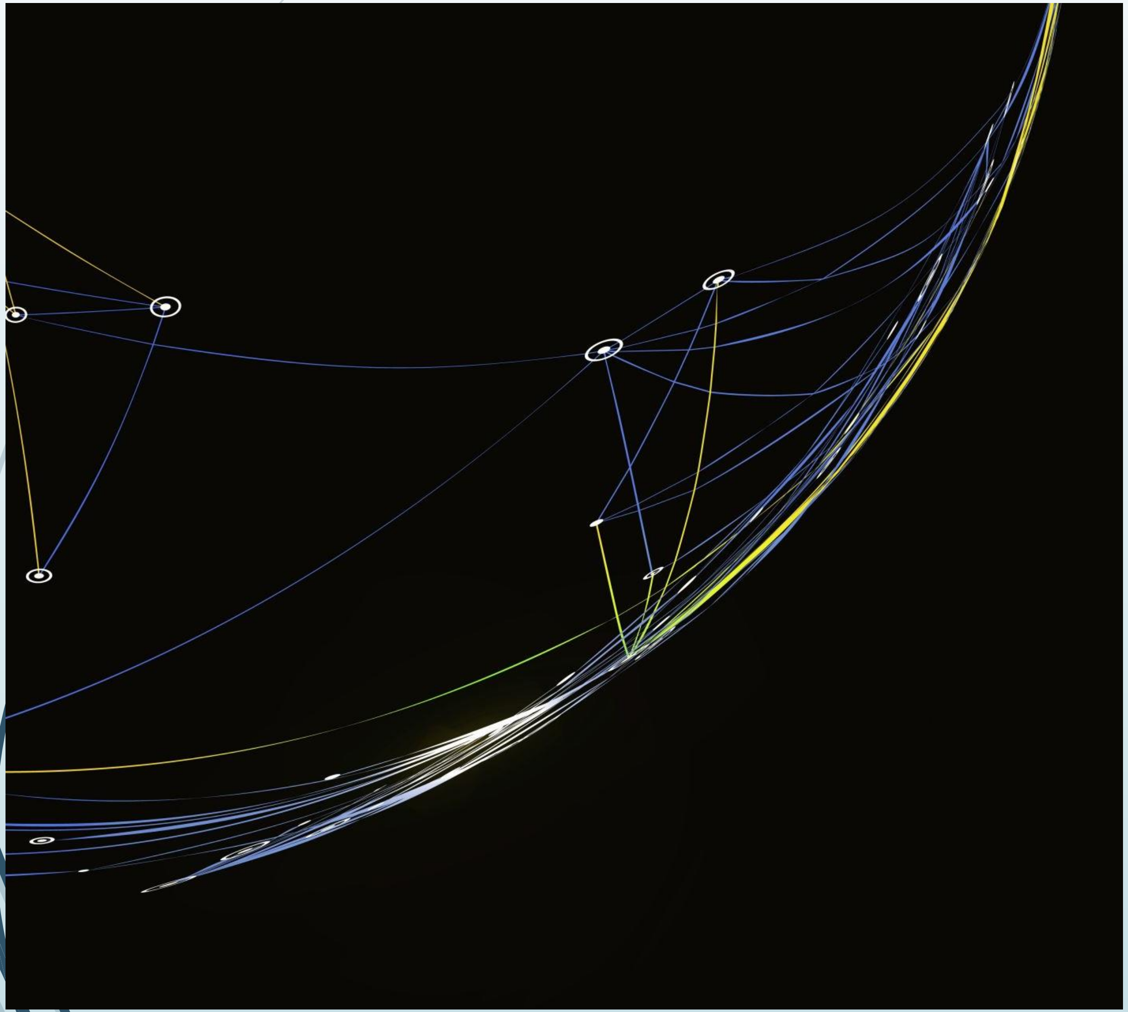
5. I/O Data of Environment Sensing Subsystem's AIMs

AIM	Input	Output
Radar Scene Description	Radar Data, Basic Environment Representation	Radar Scene Descriptors
Lidar Scene Description	Lidar Data, Basic Environment Representation	Lidar Scene Descriptors
Traffic Signalisation Recognition	Camera Data, Basic Environment Representation	Road Topology
Camera Scene Description	Camera Data, Basic Environment Representation	Lidar Scene Descriptors
Ultrasound Scene Description	Ultrasound Data, Basic Environment Representation	Ultrasound Scene Descriptors
Map Scene Description	Offline Map Data, Basic Environment Representation	Map Scene Descriptors
Audio Scene Description	Audio Data, Basic Environment Representation	Audio Scene Descriptors
Spatial Attitude Generation	GNSS Data, Spatial Attitude form MAS	Spatial Attitude
Environment Sensing Subsystem Data Fusion	RADAR Scene Descriptors, LiDAR Scene Descriptors, Road Topology, Lidar Scene Descriptors, Ultrasound Scene Descriptors, Map Scene Descriptors, Audio Scene Descriptors, Spatial Attitude, Other Environment Data	Basic Environment Representation Alert

MPAI welcomes comments.

Autonomous Motion Subsystem (AMS)

1. Functions of Autonomous Motion Subsystem

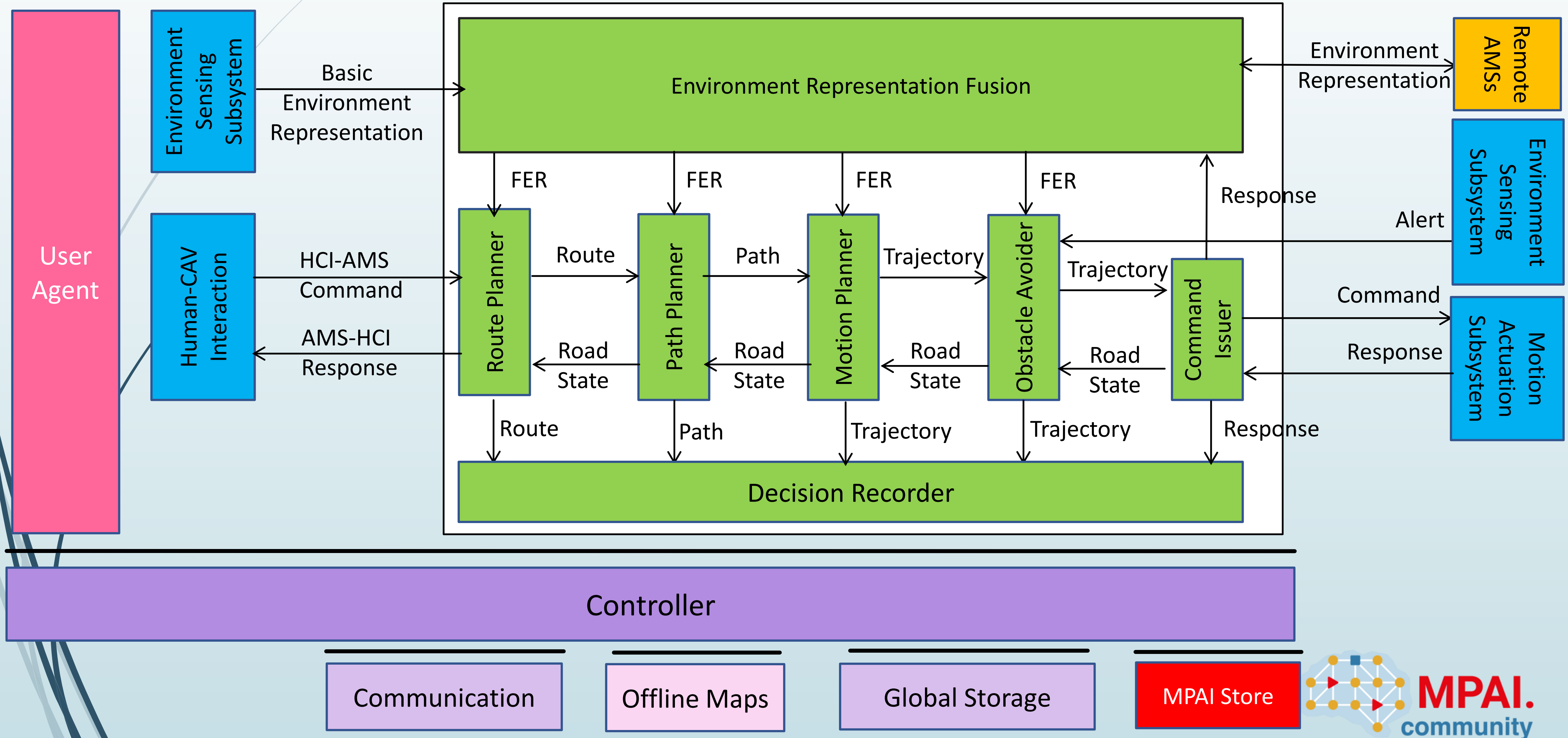


- **Computes** human-requested **Route(s)**.
- **Receives current BER** from Environment Sensing Subsystem.
- **Communicates with other CAVs' AMSs** (e.g., exchanges subsets of BER and other data).
- **Produces Full Environment Representation** by fusing its own BER with info from other CAVs in range.
- **Sends Commands to Motion Actuation Subsystem** to take the CAV to the next Pose.
- **Receives and analyses responses** from MAS.

MPAI welcomes comments.

MPAI. community

2. Reference Architecture of Autonomous Motion Subsystem



3. I/O Data of Autonomous Motion Subsystem

Input data	From	Comment
Command from HCI	Human-CAV Interaction	Human commands, e.g., “take me home”
Basic Environment Representation	Environment Sensing Subsystem	CAV’s Environment representation.
Other V2X Data	Other CAVs	Other CAVs and vehicles, and roadside units.
Feedback from MAS	Motion Actuation Subsystem	CAV’s response to Command.
Output data	**To**	**Comment**
Response to HCI	Human-CAV Interaction	MAS’s response to AMS Command
Command to MAS	Motion Actuation Subsystem	Macro-instructions, e.g., “in 5s assume this State”.
Full Environment Representation	Other CAVs	For information to other CAVs

MPAI welcomes comments.

4. Functions of Autonomous Motion Subsystem’s AIMs

AIM	Function
Full Environment Representation Fusion	Creates an internal representation of the Environment by fusing information from itself, CAVs in range and other transmitting units.
Route Planner	Computes a Route, through a road network, from the current to the target destination.
Path Planner	Generates a set of Paths, considering: 1. The Route. 2. Spatial Attitude. 3. Full Environment Representation. 4. Traffic Rules.
Motion Planner	Defines a Goal and a Trajectory to reach the Goal using the Spatial Attitude satisfying the CAV’s kinematic and dynamic constraints and considering passengers’ comfort.
Obstacle Avoider	Checks that the Trajectory is compatible with any Alert information. If it is, it passes the Trajectory to the Command Issuer. If it is not, it requests a new Trajectory. If Command Issuer informs Obstacle Avoider that there is an anomalous situation, Obstacle Avoider may issue a “discontinue previous Command” and forward to the next appropriate upstream AIM, possibly including the Route Planner. This may decide to communicate the Road State to the Human-CAV Interaction Subsystem.
Command Issuer	Instructs the MAS to execute the Trajectory considering the Environment conditions and receives MAS-AMS Responses about the execution.

MPAI welcomes comments.

5. I/O Data of Autonomous Motion Subsystem's AIMs

CAV/AIM	Input	Output
Environment Representation Fusion	Alert Basic Environment Representations Environment Representations from other CAVs Other data from other CAVs	Full Environment Representation
Route Planner	Full Environment Representation Offline maps	Route Estimated time
Path Planner	Route Full Environment Representation Offline maps	Set of Paths
Motion planner	Path Full Environment Representation	Trajectory
Obstacle Avoider	Trajectory Full Environment Representation	Trajectory Route State
Command to AMS	Trajectory Environment Data Feedback	Command

MPAI welcomes comments.

Motion Actuation Subsystem (MAS)

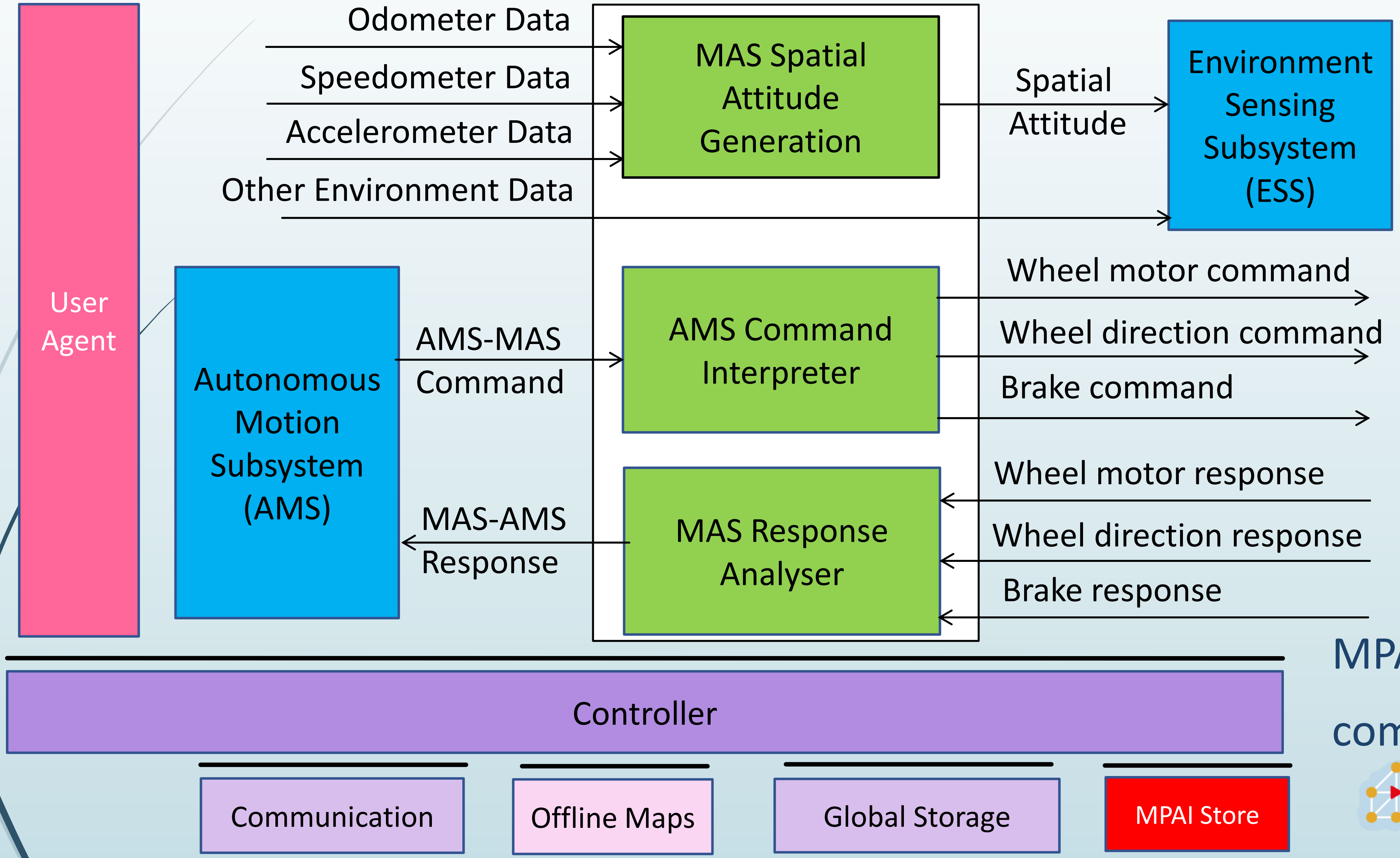
1. Functions of Motion Actuation Subsystem

- **Transmits spatial/environmental information** from sensors/mechanical subsystems to Environment Sensing Subsystem.
- **Receives Autonomous Motion Subsystem Commands**.
- **Translates Commands** into specific Commands to its own mechanical subsystems, e.g., brakes, wheel directions, and wheel motors.
- **Receives Responses** from its mechanical subsystems.
- **Sends Responses** to Autonomous Motion Subsystem about execution of commands.

MPAI welcomes comments and proposals.

MPAI. community

2. Reference Architecture of Motion Actuation Subsystem



MPAI welcomes comments.

3. I/O Data of Motion Actuation Subsystem

Input	Comments
Odometer	Provides distance data.
Speedometer	Provides instantaneous velocity.
Accelerometer	Provides instantaneous acceleration.
Other Environment data	Other environment data, e.g., humidity, pressure, temperature.
AMS-MAS Command	High-level motion command.
Wheel Motor Response	Forces wheels rotation, gives feedback.
Wheel Direction Response	Moves wheels by an angle, gives feedback.
Brake Response	Acts on brakes, gives feedback.
Output	Comments
MAS-AMS Response	Feedback from Response Analyser during and after Command execution.
Spatial Attitude	Position-Orientation and their velocities and accelerations.
Other Environment data	Other environment data, e.g., humidity, pressure, temperature.
Wheel Motor Command	Forces wheels rotation, gives feedback.
Wheel Direction Command	Moves wheels by an angle, gives feedback.
Brakes Command	Acts on brakes, gives feedback.

MPAI welcomes comments.

4. Functions of Motion Actuation Subsystem's AIMs

AIM	Function
Spatial Attitude Generation	Computes Ego CAV's Spatial Attitude using GNSS, odometer, speedometer, and accelerometer data.
AMS Command Interpreter	Receives, analyses, and actuates AMS-MAS Commands into commands to Brakes, Wheel directions, and Wheel motors.
MAS Response Analyser	Receives and analyses responses from Brakes, Wheel direction, and Wheel motor. Forwards MAS-AMS Response to AMS.

MPAI welcomes comments.

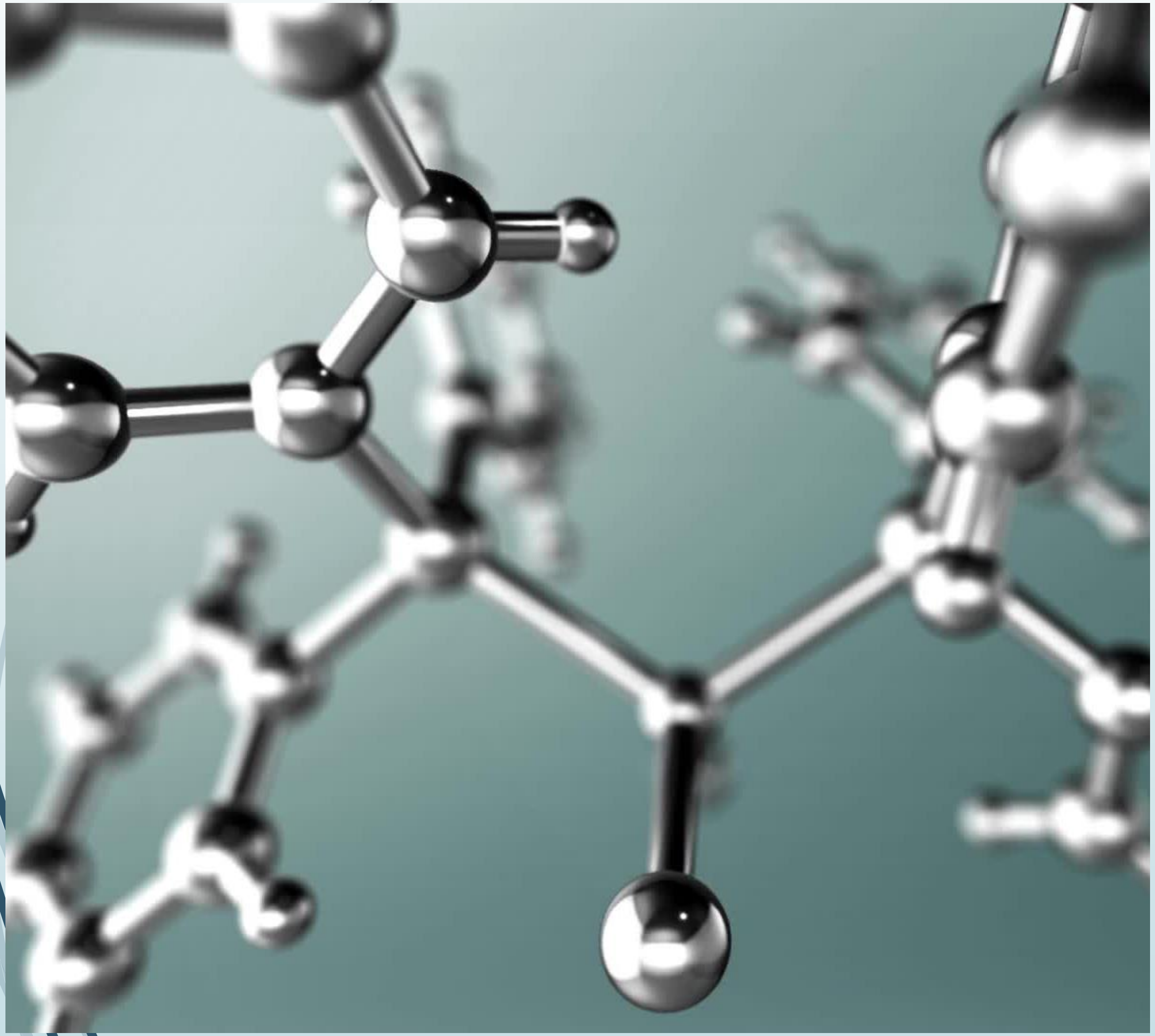
5. Input/Output Data of Subsystem's AIM

CAV/AIM	Input	Output
AMS Command Interpreter	AMS-MAS Command	Brake Command Wheel Motor Command Wheel Direction Command
MAS Response Analyser	Brake Response Wheel Direction Response Wheel Motor Response	MAS-AMS Response
MAS Spatial Attitude Generation	Odometer Speedometer Accelerometer	Spatial Attitude

MPAI welcomes comments.

MPAI-CAV and the Metaverse (MPAI-MMM)

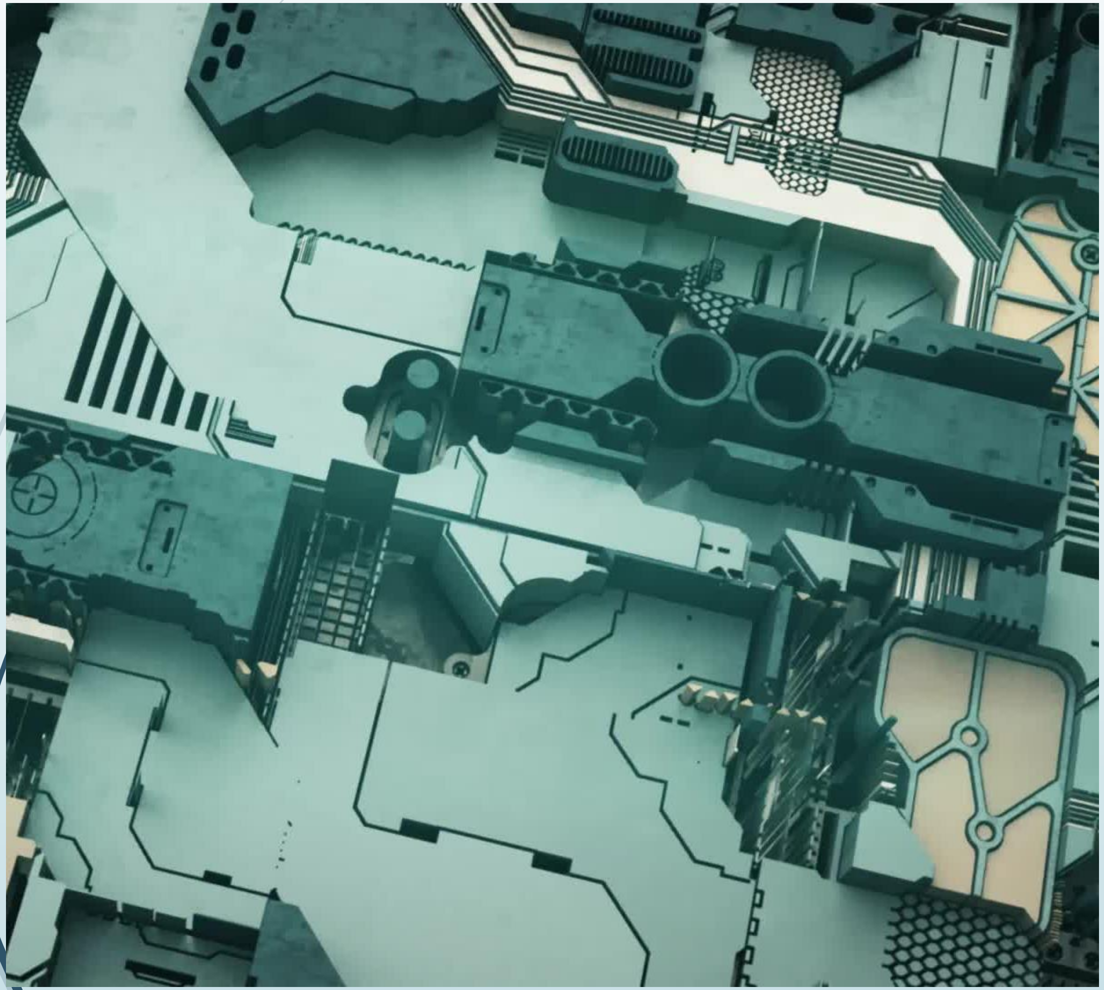
MPAI and the metaverse (M-Instance)



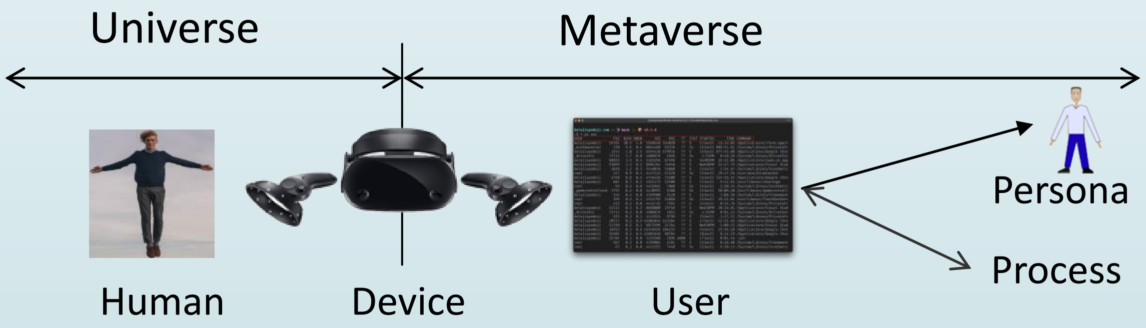
A set of Processes providing some/all of the following functions:

- **Sense data** from U-Locations.
- **Process** the sensed data.
- **Produce** M-Environments populated by Objects.
- **Process Objects** in this or other M-Instances.
- **Affect** U- and/or M-Locations in ways that are:
  - **Consistent with the goals** set for the M-Instance.
  - **Effected within the capabilities** of the M-Instance.
  - **Complying with the Rules** set for the M-Instance.

The MPAI Metaverse Model (MPAI-MMM)

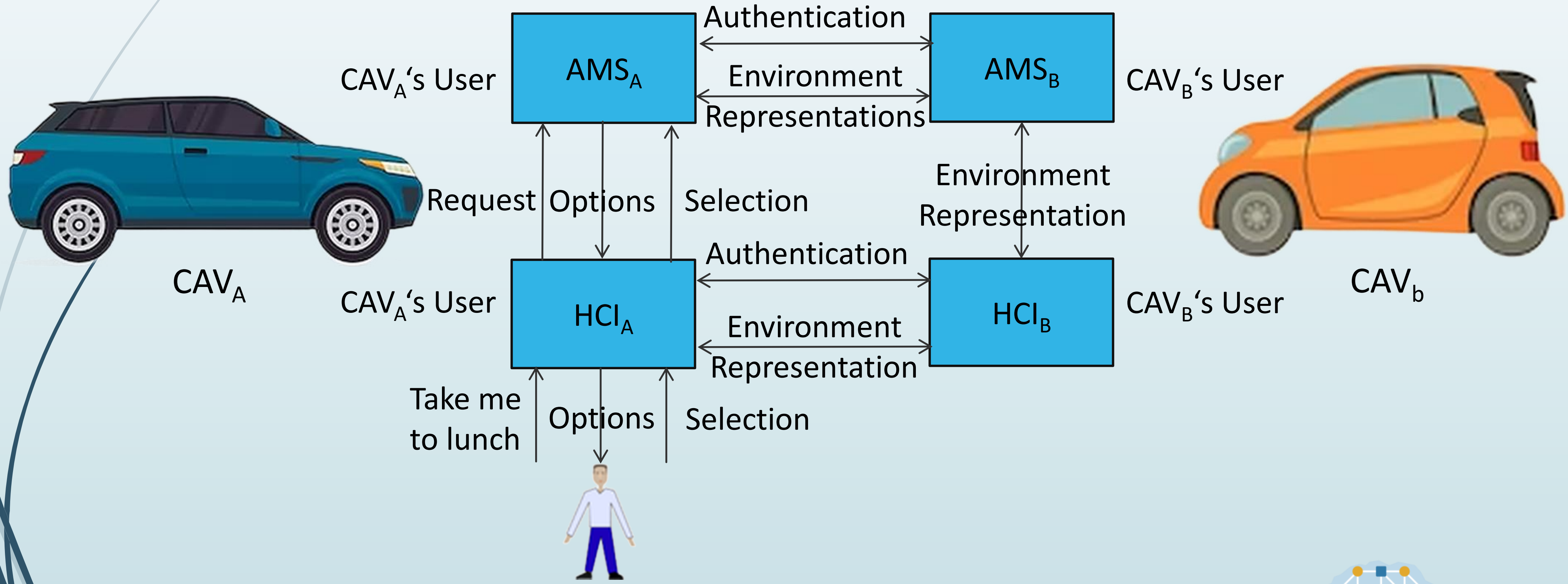


- The MMM Is composed of Processes – Users, Devices, Apps, Services – performing Actions on Items (data and metadata supported).
- The “User” Process represents a Human’s agency.



- A human can be represented by many Users.

A CAV-oriented MPAI-MMM use case

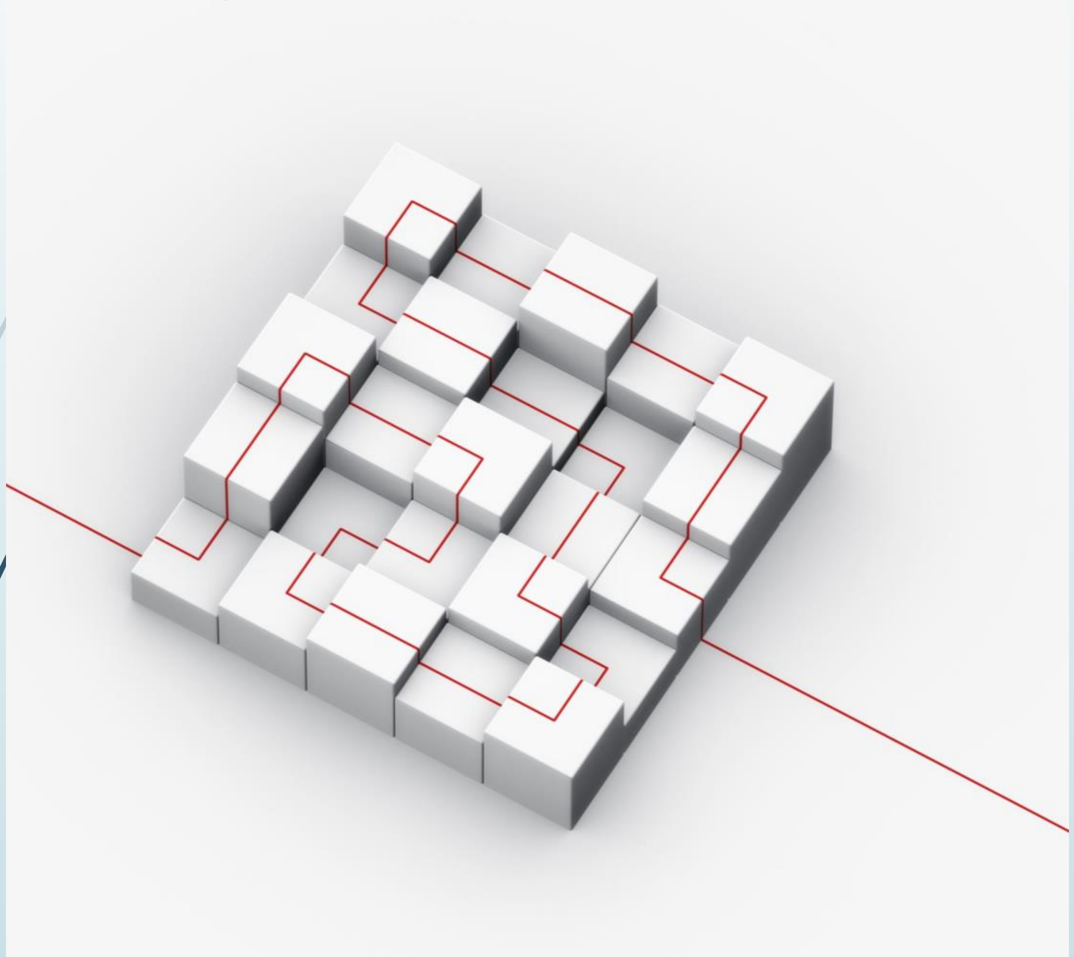


A CAV-oriented MPAI-MMM use case

HCI_A	1. <u>Authenticates</u> humans (e.g., recognises their voice). 2. <u>Interprets</u> human's message ("I want to go to lunch"). 3. <u>Sends</u> corresponding command to AMS_A (represents human in CAV_A's M-Instance)
AMS_A	1. <u>Gets a representation</u> of the real world from ESS_A (understands *where* it is). 2. <u>Asks</u> Route Planner for "Routes to restaurant". 3. <u>Sends</u> selection of Routes to HCI_A.
HCI_A	1. <u>Communicates</u> choices of Route to human (e.g., spoken version of AMS_A's response). 2. <u>Interprets</u> human's final choice (e.g., recognises their voice). 3. <u>Sends</u> command to AMS_A (e.g., execute Route #2).
AMS_A	1. Mutually <u>authenticates</u> AMS_B (nearby CAV). 2. <u>Improves</u> its real-world perception by "watching" AMS_B's perspective PoV. 3. <u>Activates</u> AMS_A's Processes eventually sending a resulting command to MAS_A.
AMS_B	1. <u>Improves</u> its real-world perception by watching AMS_A's perspective PoV. 2. <u>Activates</u> AMS_B's Processes eventually sending a resulting command to MAS_B.
HCI_A	1. Mutually <u>authenticates</u> HCI_B. 2. <u>Watches</u> CAV_B's Full Environment Representation.

What’s next?

And now?



- Technical Specification: Connected Autonomous Vehicle – Architecture is a WD published with a request for Community Comments.
- Anybody may make comment on the WD.
- **Comments should reach** secretariat@mpai.community by 2023/09/26 T 23:59 UTC.
- **No specific format** is required to make comments.
- MPAI plans: **publish MPAI-CAV – Architecture** at the 36th General Assembly (29 September 2023).

MPAI. community

What’s next?

- The CAV Architecture standard is the starting point for the next steps of the MPAI-CAV roadmap.
- To implement MPAI strategic plan, we need a standard for the **Functional Requirements** of data exchanged between subsystems and components.
- Activity to **start in October**.

MPAI. community

We look forward to working with you on this exciting MPAI project!

Join MPAI
Share the fun
Build the future

MPAI.
community