AWARE2ALL

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Project Summary

Safety systems and human-machine interfaces oriented to diverse population towards future scenarios with increasing share of highly automated vehicles

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THE PROJECT IN A NUTSHELL

Topic: HORIZON-CL5 2022 D6-01-02: Reliable occupant protection technologies and HMI solutions to ensure the safety of highly automated vehicles

Type of action: Research and Innovation Action (RIA)

Coordinator: VICOMTECH

Start date: 01/11/2022

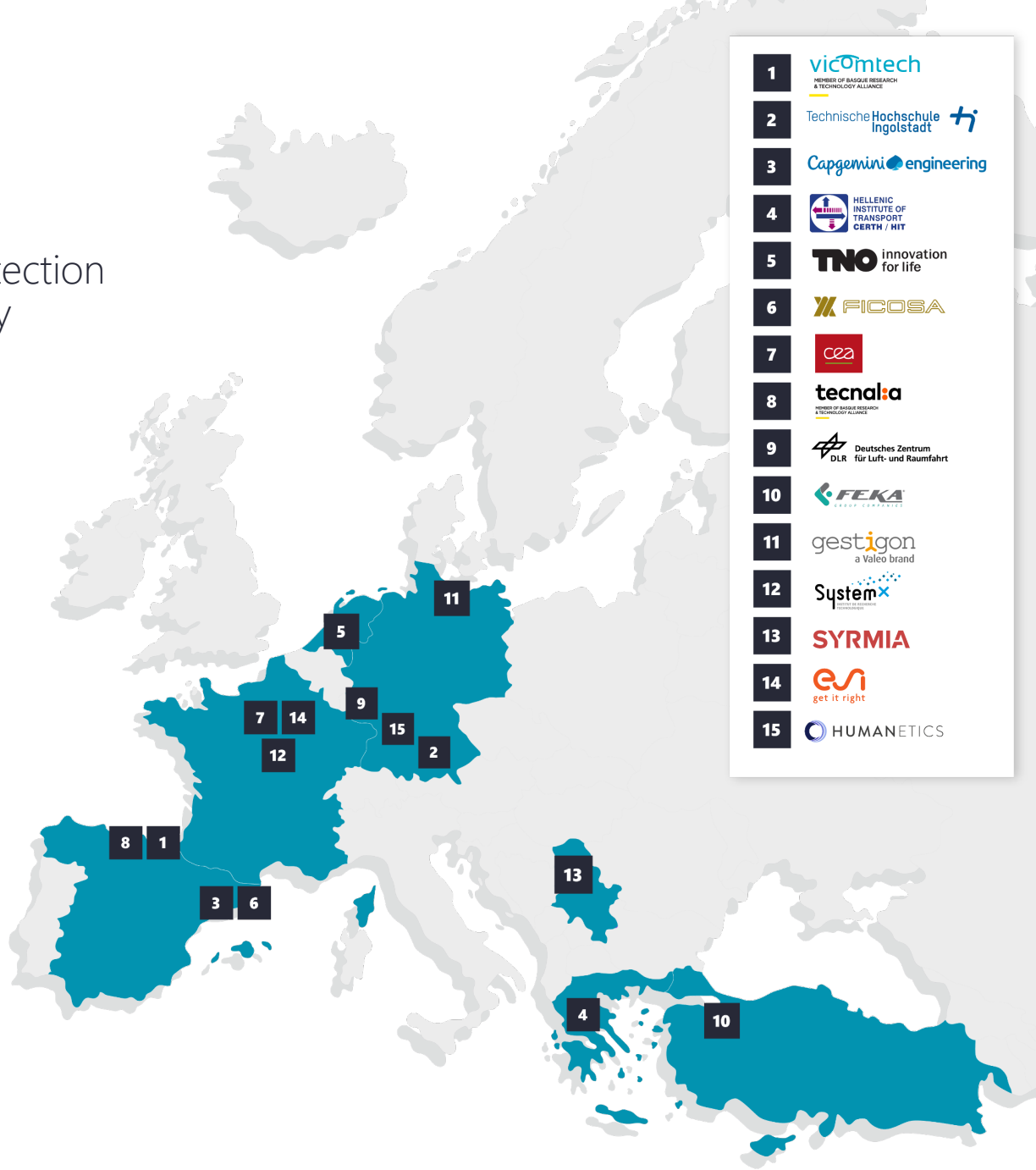
End date: 31/10/2025

Duration: 36 months

Budget: 7,999,817.50 €

Project number: 101076868

https://cordis.europa.eu/project/id/101076868



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MOTIVATION

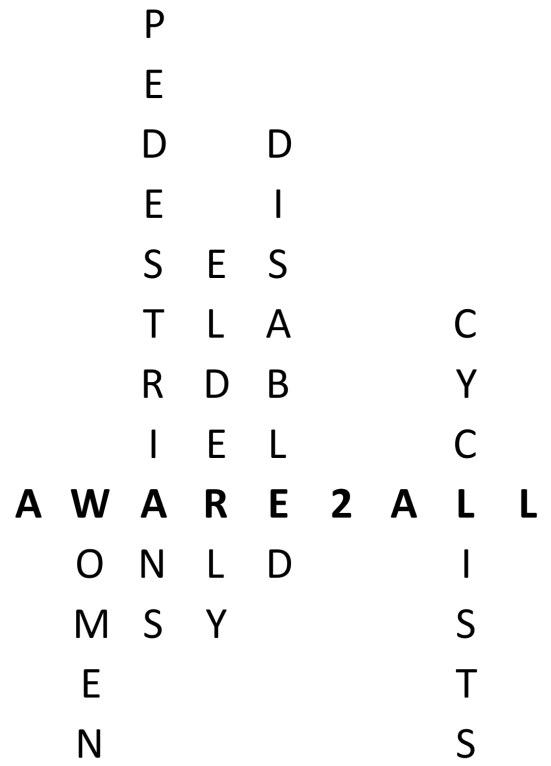
In 2020 someone died on European roads every 25 minutes.

EU-wide, around 70% of road fatalities in urban areas involve vulnerable road users.

There is increased safety risk across age groups (children, adults, older adults), types of impairment (e.g., sensory, developmental, cognitive, physical impairments), and among users of mobility devices.

Most user studies in the field of automotive safety are conducted with predominantly young male and technologically educated participants.

AWARE2ALL will effectively address the changes in road safety derived from the introduction of Autonomous Vehicles, putting special focus on underrepresented populations (female, elderly, sensorial or physical disabilities, cultural minorities, low digital abilities) to ensure that results provide safety to any (type of) occupant and HRU[1].



AWARE2ALL acronym

It is an acronym including diversity of the AWARE2ALL project

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OBJECTIVES

The main objective of AWARE2ALL is to address the new safety challenges posed by the introduction of HAVs[2] in mixed road traffic, through the development of inclusive and innovative safety (passive and active) and HMI[3] (internal and external) systems that will consider the variety of population and will objectively demonstrate relevant improvements in mixed traffic safety.

- **OBJ 1**: Definition and prioritisation of relevant Use Cases.
- **OBJ 2:** Develop one virtual prototype of passive safety (D1), addressing the variety of possible occupant postures and orientations and taking a large diversity of occupants into account.
- **OBJ 3**: Develop two active safety physical prototypes (D2, D3) to ensure that the vehicle is able to anticipate hazardous situations and act proactively, considering that a driver is not available (D2) and situations with driver available (D3).
- **OBJ 4**: Development of a hybrid (virtual and physical) prototype (D3) of iHMI[4] that will adapt, dynamically, the required bi-directional interaction with the driver/occupants.
- **OBJ 5**: Extension of the current ODD[5] definition by including occupant/driver state definition.
- **OBJ 6**: Develop an eHMI[6] physical prototype (D4) for effective communication and interaction with diverse HRU[1].
- **OBJ 7**: Develop innovative testing methods and tools for performance assessment of AWARE2ALL safety and HMI[3] solutions.

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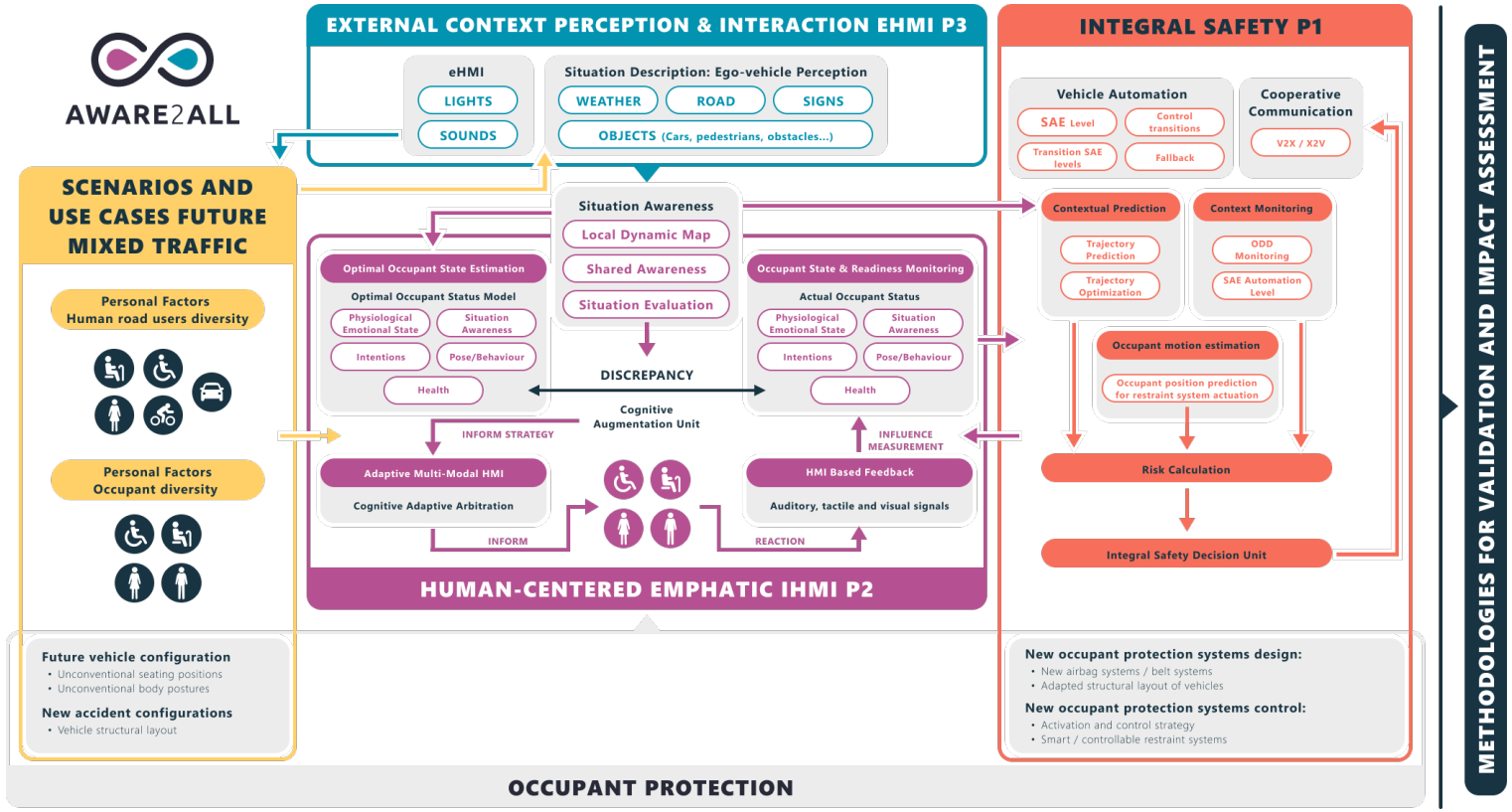
CONCEPT

AWARE2ALL concept is based on three pillars:

P1 – Integral safety, to guarantee always that even if a crash is unavoidable, the severity is minimised.

P2 – Interior situation awareness, to ensure that occupant alertness is adequate for the current driving mode.

P3 – Exterior situation awareness, to inform road users about the vehicles state and intentions.



Pillars table

Summary table of the 3 project pillars

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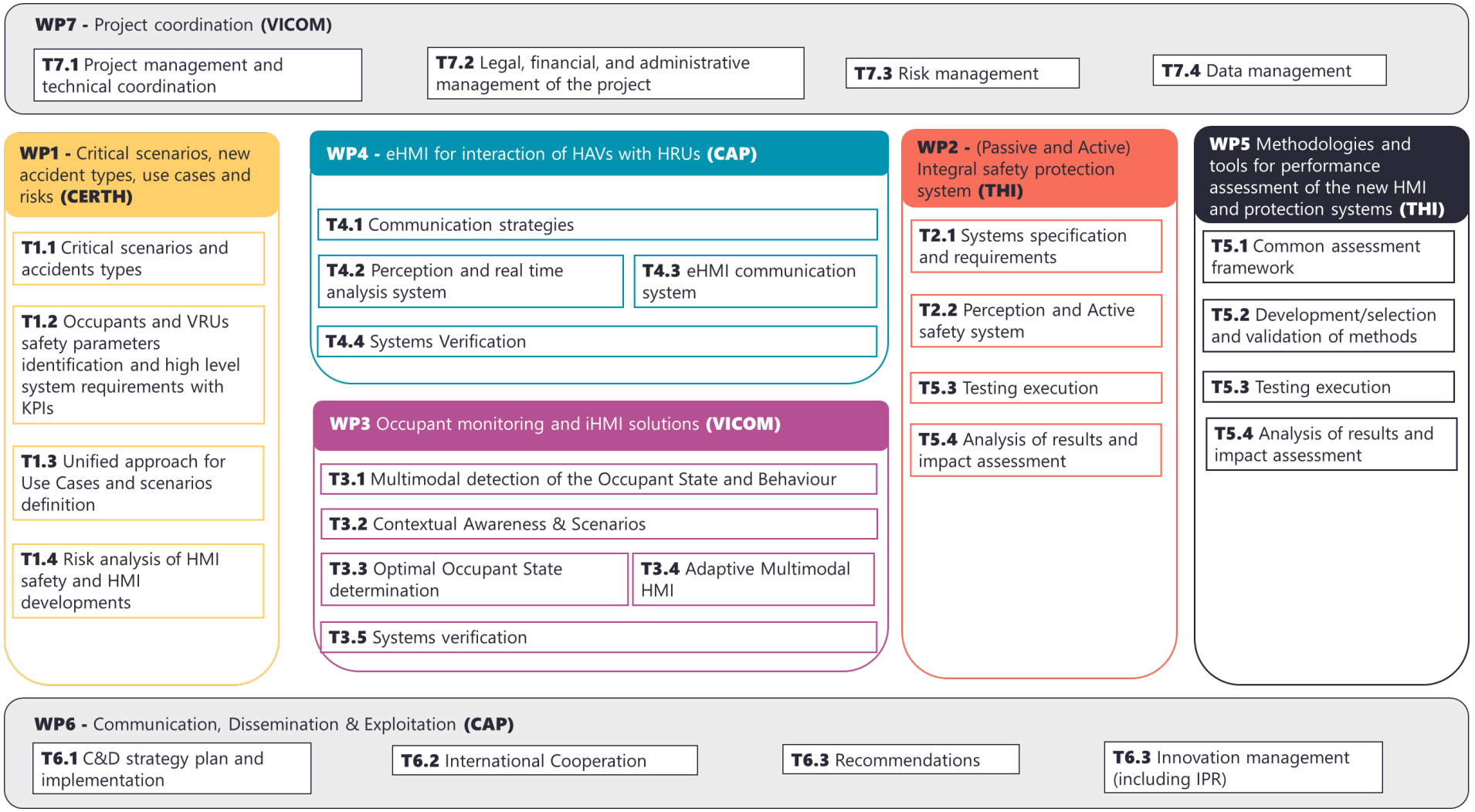
WORKPLAN



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EXPECTED RESULTS

Systems developed in AWARE2ALL will be implemented in a total of four demonstrators:

DEMO 1 (D1)

Passive Safety virtual prototype

Occupant protection (restraint systems) + new vehicle interior

DEMO 2 (D2)

Active safety – no driver available (shuttle) physical prototype

AEB[7] + Fallback / Emergency maneuvering

DEMO 3 (D3)

iHMI[4], OMS[8] and Active safety – driver available hybrid prototype

Handover / Handback + iHMI[4] + OMS[8]

DEMO 4 (D4)

eHMI[6] physical prototype

Perception system and eHMI[6]

Simulation V2X[9] Vehicle Driving Simulation VRUs[10]

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CONTACTS

Project Coordinator:

VICOMTECH - Oihana Otaegui (ootaegui@vicomtech.org)

Communication and Dissemination Manager:

CAPGEMINI ENGINEERING – Carles Bertolín (carles.bertolinsaez@capgemini.com)

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ACRONYMS & TERMS

Abbreviations

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ACRONYMS & TERMS

AWARE2ALL

Acronym	Definition
HRU[1]	Human Road Users.
HAV[2]	Highly Automated Vehicle.
HMI[3]	Human Machine Interfaces.
iHMI[4]	Internal Human Machine Interfaces.
ODD[5]	Operational Design Domain.
eHMI[6]	External Human Machine Interfaces.
AEB[7]	Autonomous Emergency Braking.
OMS[8]	Occupancy Monitoring Systems.
V2X[9]	Vehicle to everything.
VRU[10]	Vulnerable Road Users.

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