

# Task 3.2 Technology & Vehicles

**Technology** is understood in this context to consist of 4 Thematic areas:

**In-vehicle enablers** like sensors, environment model and driving strategy are precondition for all.

**Human Factors** are a challenge for all automation levels and their applications (passenger cars, trucks) and also highly relevant to all use cases and levels, while

**Connectivity** is considered as an important factor enhancing further the benefits of automated driving in terms of safety, traffic efficiency and comfort.

**Deployment** is the crucial phase of bringing technology to the people and society.

Those Thematic areas have different challenges depending on concrete CAD applications: Passenger cars, trucks and buses, urban mobility.

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## Scenario in 2030

- 1) Multiple level of automation simultaneously deployed on the roads, from L0 to 4. L4 passenger vehicles are available in limited ODD for most EU markets, L4 Freight vehicles (Trucks and freight-movers) in operation in several freight EU corridors as well as in confined areas, L4 Urban Mobility vehicles (shuttles, buses and PRT:s) in operation in several EU cities. Number of vehicles with L0/1/2 automation is still the big majority.
- 2) Many traffic participants remain unexposed to automation.
- 3) Vehicles will run with a human controller as back-up (in vehicle or remotely). There will be mixed traffic in most ODDs. In some dedicated areas the human control can be shifted to remotely controller (e.g. freight) but for *passenger* transport *in most ODDs* there need to be controls (steering wheel, pedals, buttons) due to the possible rapid change of the ODD due to weather and other conditions. The interior design of automated vehicles will be adapted to driver state (e.g. attention level) and personal preferences.
- 4) Most automation application from and above L3 is using connectivity V2V or/and V2X including infrastructure extensively
- 5) Vehicle from L3 and above are using dedicated systems of systems architectures, which became unavoidable to address system complexity, redundancy, and safety. From perception to actuation. Fusion of technologies and equipment is expected to transform perception systems allowing more powerful, accurate data usage.
- 6) System security became a must, is standardized and largely deployed
- 7) Significant field experience is gathered for L3 and above, enabling higher maturity levels (embedded systems, human factors, ...)
- 8) Explainable Ai is solved and usable to validate AI based driving function, but AI based understanding of complex driving situation still requires a very high amount of sensors and is highly energy consuming



# EU CAD Projects by Thematic Area

	Technology & Vehicle			
	In-vehicle enablers	Connectivity	Human Factors	Deployment
5G-CROCO	■	■	■	■
5G-MOBIX	■	■	■	■
ADASTRA	■	■	■	■
AUTOCITS	■	■	■	■
AUTOMATE	■	■	■	■
AUTOPILOT	■	■	■	■
AVENUE	■	■	■	■
CoEXist	■	■	■	■
Dreams4Cars	■	■	■	■
Drive Sweden	■	■	■	■
Enable-S3	■	■	■	■
ENSEMBLE	■	■	■	■
FABULOUS	■	■	■	■
HEADSTART	■	■	■	■
ICT4CART	■	■	■	■
INFRAMIX	■	■	■	■
InterACT	■	■	■	■
L3Pilot	■	■	■	■
MANTRA (CEF?)	■	■	■	■
MAVEN	■	■	■	■
SmartwayZ.NL	■	■	■	■
TransAID	■	■	■	■
Transforming Transport	■	■	■	■
TrustVehicle	■	■	■	■
VI-DAS	■	■	■	■

*and many more...*

