



EUCAD 2021

BO4 Key Vehicle Technologies for CCAM

Vehicle Automated Functions Challenges

Luisa Andreone, Stellantis-CRF

L3Pilot European Project, Piloting Leader
Hi-Drive European Project, Enabling Technology Leader

April 22, 2021



LUCKILY I HAVE MY PARKING BUDDY.

Welcome to the L3Pilot home zone parking.

The Parking Chauffeur allows the user to request their vehicle to complete manoeuvring into and out of garages and driveways. The car learns a fixed trajectory from the entrance of the house to the home garage and vice versa. This automated driving feature relieves the driver from repeating parking manoeuvres.

PARKING CHAUFFEUR

SAE LEVEL 0 1 2 **3** 4 5

10 HOURS A WEEK

Again, stuck in a traffic jam, like every day. I AM SO TIRED OF IT.

On motorways and similar roads the car takes over the driving in traffic jam up to 60 km/h. When the detection of slow driving vehicles in front indicates a traffic jam, the function can be activated. In some instances the car changes the lane to react to a slower vehicle ahead or infrastructural reasons like exit lanes.

TRAFFIC JAM CHAUFFEUR

SAE LEVEL 0 1 2 **3** 4 5

SYSTEM ON DRIVER RELAXED

With the Motorway Chauffeur, I can chat online with my grandchild in the morning, while commuting.

With the Motorway Chauffeur the car adapts to various traffic conditions. It follows the lane and adjusts speed considering various factors such as keeping a safe distance to the vehicle in front or following the speed limit. If a preceding slower vehicle is detected the car overtakes automatically as soon as it is safely possible.

MOTORWAY CHAUFFEUR

SAE LEVEL 0 1 2 **3** 4 5

STRESS-FREE DRIVING IN URBAN AREAS.

With the L3Pilot Urban Chauffeur I don't worry anymore about rush hours.

With the Urban Chauffeur the vehicle automatically follows the lane, starts and stops and handles overtaking within cities. When coming to a crossing the car handles right and left turn, recognises on-coming traffic and vulnerable road users such as pedestrians, and selects the correct crossing path, even if no lane marking is present.

URBAN CHAUFFEUR

SAE LEVEL 0 1 2 **3** 4 5





Partner	Country	Region
Volkswagen	DE	Hamburg, Wolfsburg
Aptiv	DE, LU, FR	cross-border activities
AUDI	DE	Ingolstadt, Neckarsulm
BMW	DE	Munich
CRF	IT	Turin
FEV	DE	Aachen, Cologne
Ford	DE, BE, UK	cross-border activities
Honda	DE	Frankfurt am Main
ika	DE	Aachen
JLR	UK	Coventry
PSA	FR, DE	cross-border activities
Renault	FR	Paris and other regions
Toyota	BE	Brussels
Volvo Cars	SE	Gothenburg



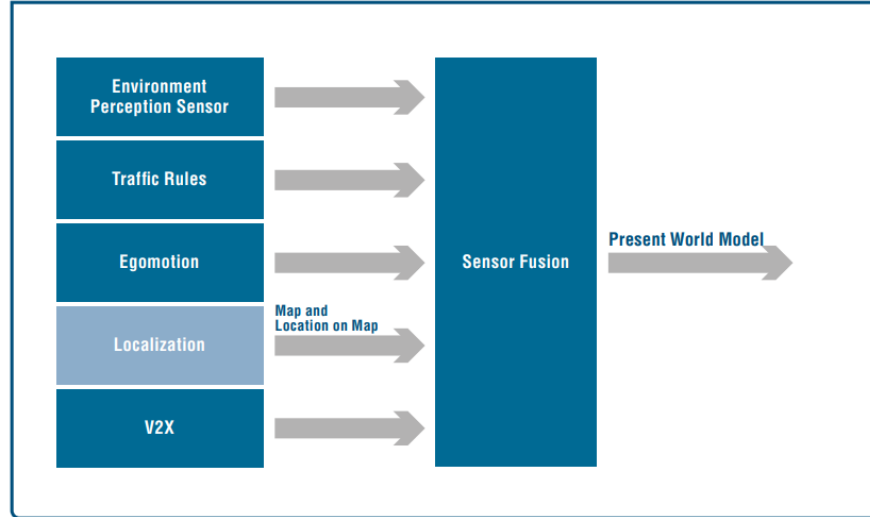
© L3Pilot consortium





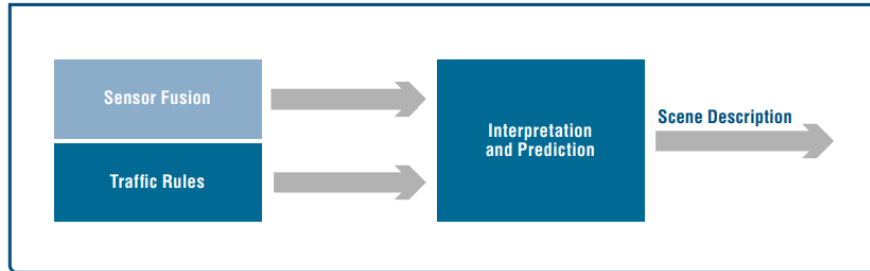
PERCEIVE

static and dynamic road actors / objects



PREDICT

the future behaviors of road actors



Challenges identified in L3Pilot can be mapped within the key components identified in the White Paper:

“Safety First for Automated Driving” (ed. Sep. 2019)



Connectivity for Vehicle Automation



Machine Learning for Vehicle Automation



SENSING Large dataset of automatically annotated traffic scenarios (from Camera, Radar, LIDAR) to train supervised machine learning algorithms for road actors classification and tracking.

PLANNING Machine Learning algorithms for maneuvers selection and trajectory planning.





CONTACT

Luisa Andreone

Product Development - Advanced Technology & Pre-Development Programs Collaboration & Network

Collaboration Projects - Automation & Connectivity

luisa.andreone@crf.it