



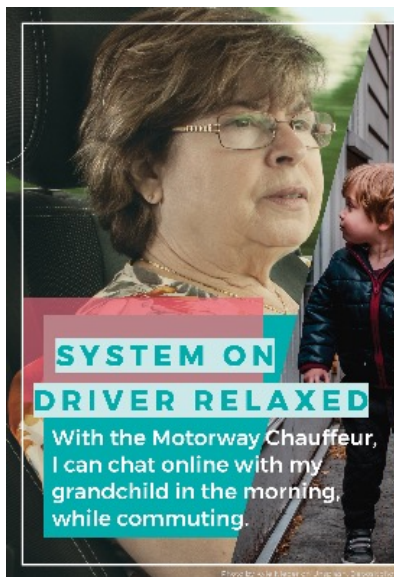
## Piloting Automated Driving

L3Pilot Final Event

**Luisa Andreone**  
Stellantis-CRF



# Piloting Motorway & Traffic Jam Chauffeurs



**SYSTEM ON  
DRIVER RELAXED**

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

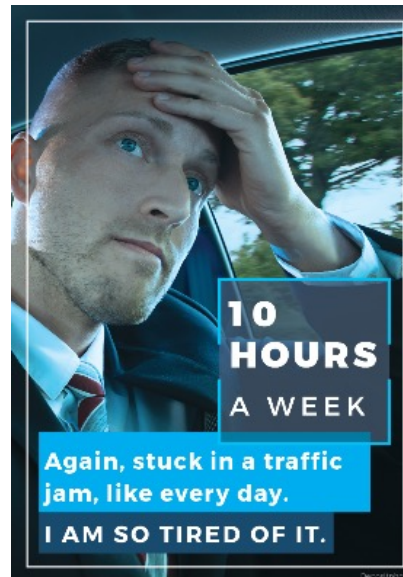
Photo by Lisa Hocken on Pixabay.com

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

L3 Pilot Driving Automation



**10 HOURS  
A WEEK**

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

Accipiter

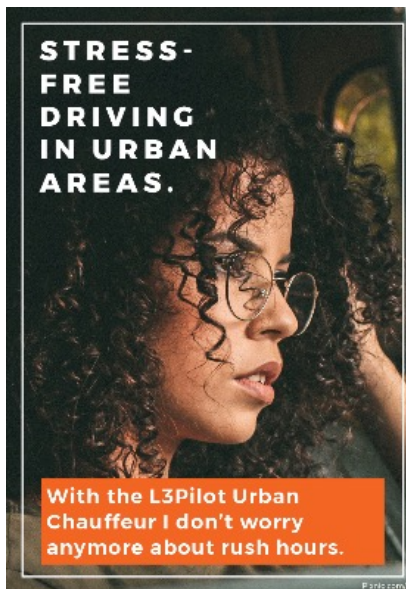
On motorways and similar roads the car takes over the driving in traffic jam up to 60 km/h. When the detection of slow driving vehicles in front indicates a traffic jam, the function can be activated. In some instances, the car changes the lane to react to a slower vehicle ahead or infrastructural reasons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

**TRAFFIC JAM CHAUFFEUR**

SAE LEVEL 0 1 2 3 4 5

L3 Pilot Driving Automation

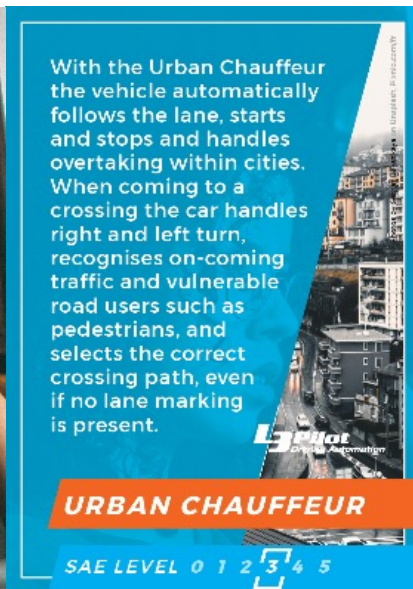
# Piloting Urban & Parking Chauffeurs



**STRESS-FREE DRIVING IN URBAN AREAS.**

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

P. Pflüger.com



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

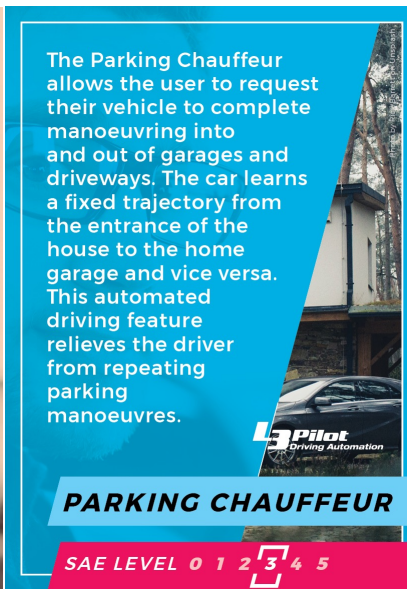
L3Pilot Driving Automation



**LUCKILY I HAVE MY PARKING BUDDY.**

Welcome to the L3Pilot home zone parking.

Depositphotos



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.

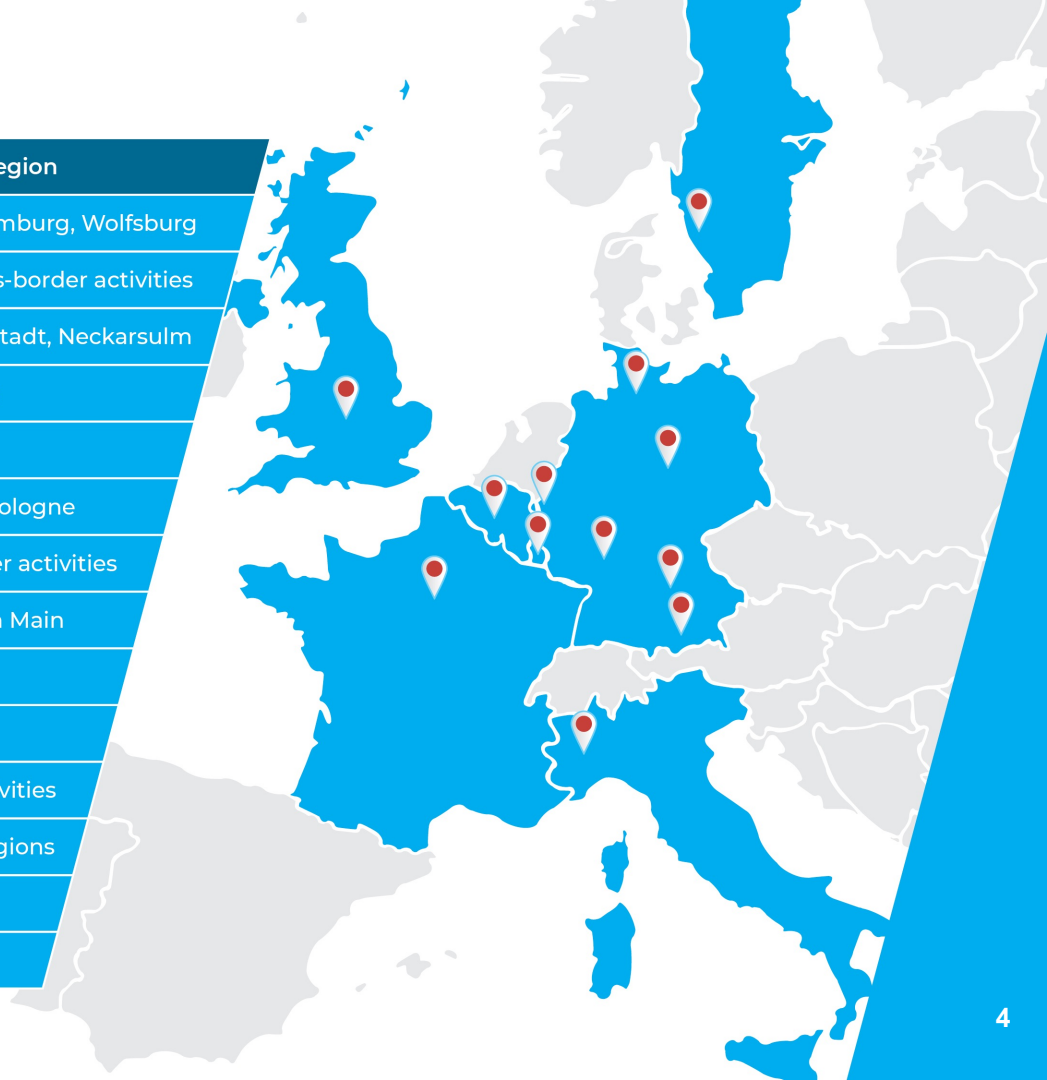
**PARKING CHAUFFEUR**

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

L3Pilot Driving Automation

# Pilot across Europe

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
STLA	FR, DE	cross-border activities
Renault	FR	Paris and other regions
Toyota	BE	Brussels
Volvo Cars	SE	Gothenburg



# Piloting Landscape

**Automated Driving Functions** in demonstrator cars ready for piloting

**Piloting methodology** for automated driving impacts: safety, technical, user acceptance, environment, traffic efficiency, social, economic, security

**Knowledge** on what data & information can be obtained piloting under various constraints

**Data toolchain** data “translation” into the L3Pilot defined Common Data Format and “uploaded” in the L3Pilot Consolidated Database for evaluation

**Legal, ethical framework, GDPR** analyzed and followed

# Piloting Numbers

**Automated Driving Functions** in demonstrator cars ready for piloting

**Apr. 2019, Feb. 2021** Piloting execution timing, despite the pandemic situation

**70 cars** equipped with AD vehicle functions in 14 Pilot Sites in 7 countries

**750 test subjects** experienced Automated Driving of SAE L3 either as a driver or on the passenger seat

**400,000 km** driven on motorways half in automated mode, half as baseline

**24,000 km** driven in urban scenarios 22,200 in automated mode, 1,800 as baseline

**3 pilot sites** on parking chauffeur, including close distance scenarios

# Piloting Cars



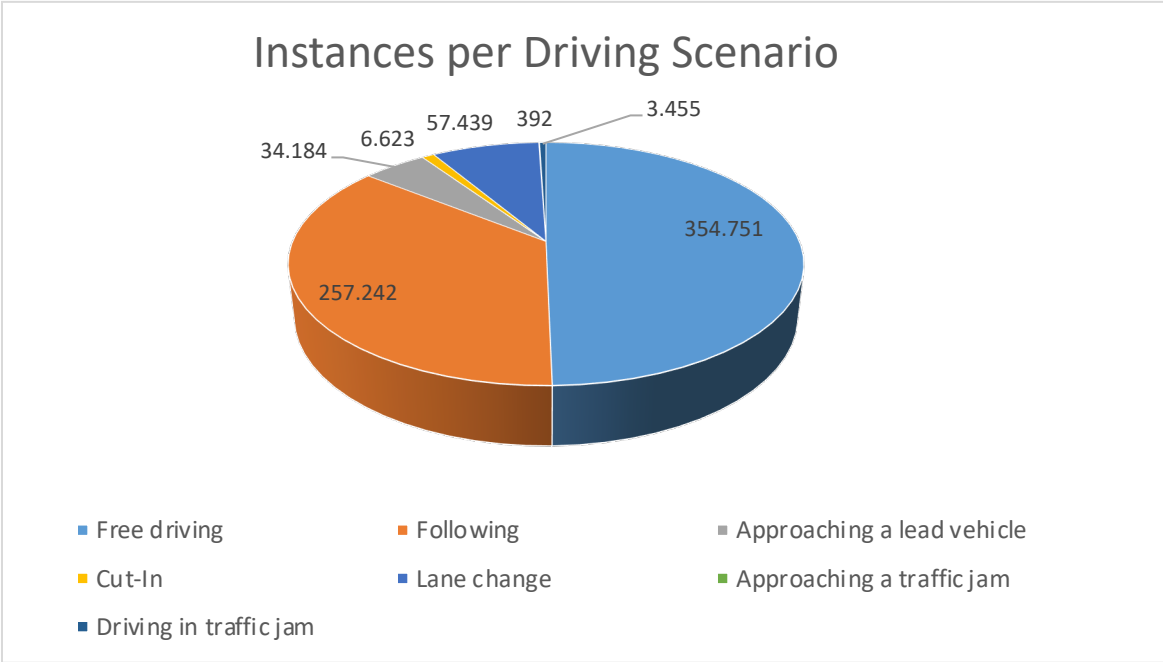
# Piloting Vehicles' Preparation Challenges

- Prepare and test **dozens of prototypes**
- Test **data acquisition chain and questionnaires**
- Propose an “understandable” **Taxonomy** of AD Functions
- Propose **cyber-protection recommendations**
- Draft **guidelines** to applying for **AD experiments exemptions** in Europe
- Ensure **no benchmark** between AD functions in the public reports

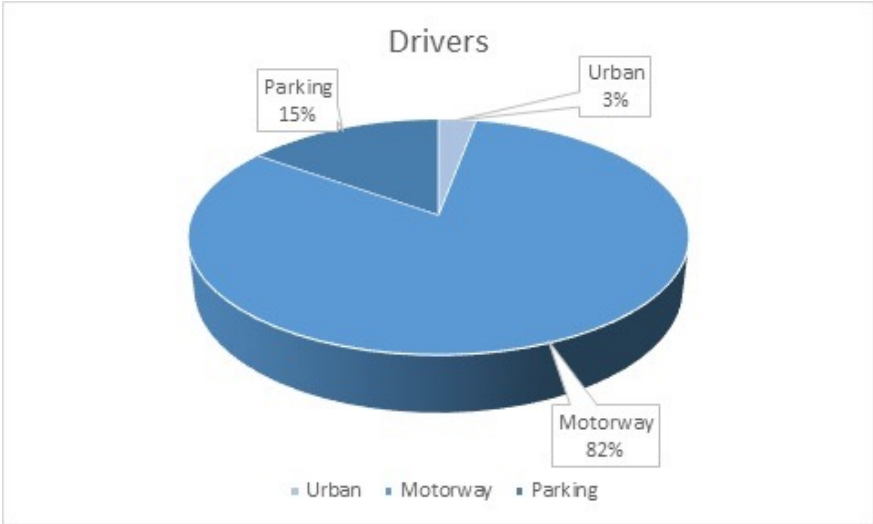
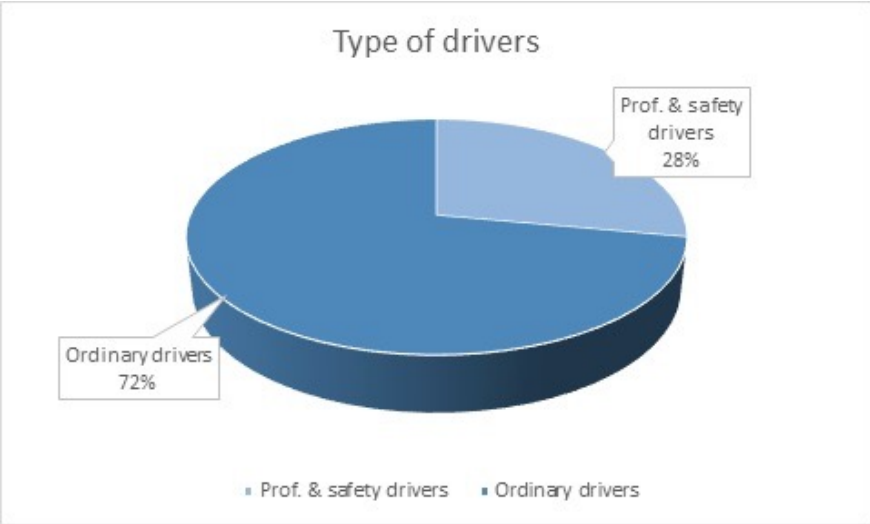




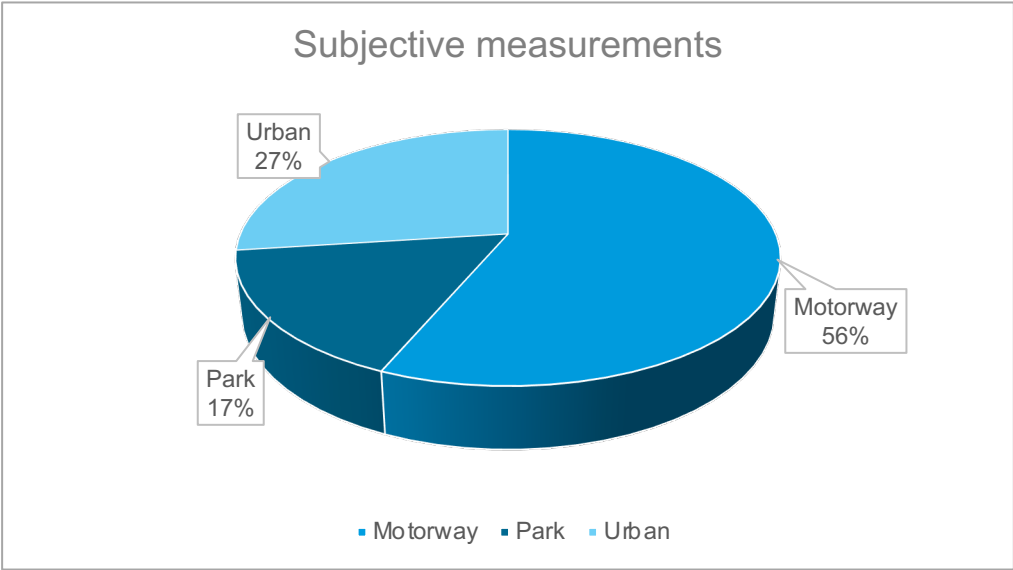
# Piloting Driving Instances



# Piloting Driving Subjects



# Piloting Subjective Measurements per Scenario



# Piloting Data

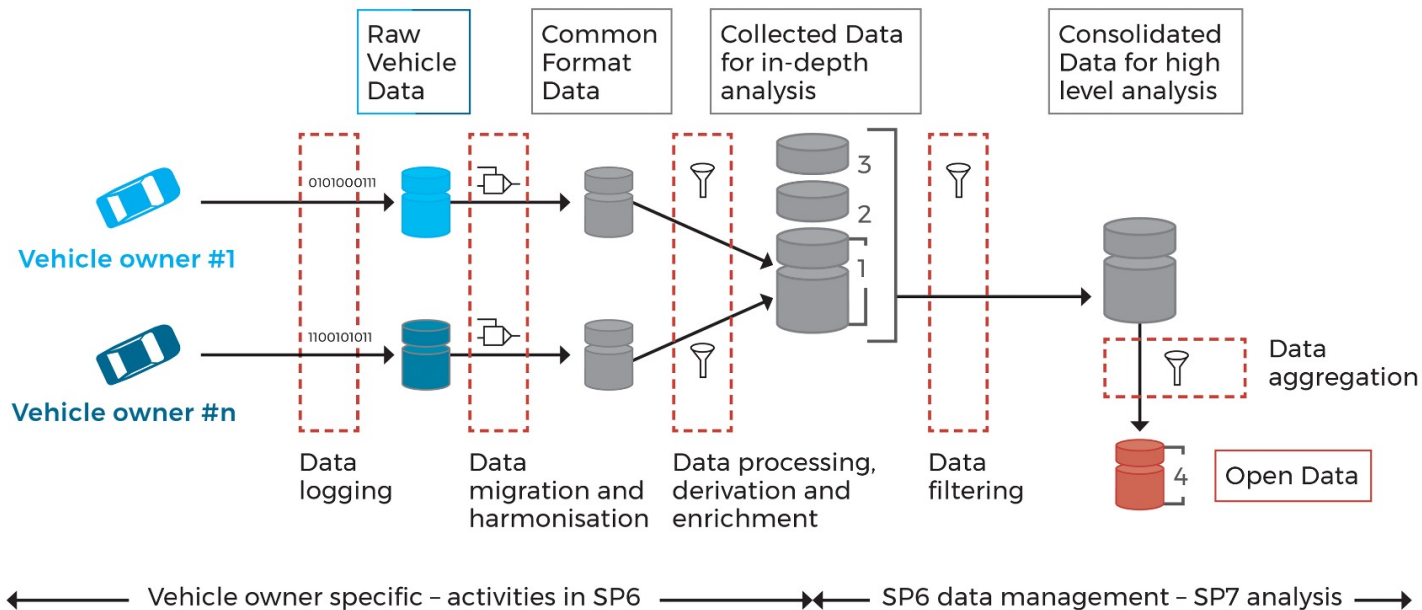
**COLLECTION** of objective and subjective data on driving vehicle automation

**CREATION** of the Consolidated Database to manage Pilots' data set

**TRANSLATION** of Pilots' raw data in the L3Pilot Common Data Format

**UPLOAD** of Pilots' data in the Consolidated Database together with evaluation experts

# Piloting Consolidated Database



## Piloting Outcomes

**Parking Chauffeur** is the most mature, challenge is the calculation of SLAM techniques in complex close-distance scenarios

**Traffic Jam Chauffeur** challenge is the calculation of a collision-free and lawful lane change maneuver at 50-60 km/h in dense traffic

**Motorway Chauffeur** major challenges are severe weather conditions; adverse weather, toll gates, construction zones are not yet included in the operational design domains

**Urban Chauffeur** is the most challenging, for the variety of traffic situations and obstructions, challenges are the prediction of the trajectory of pedestrians and other vulnerable road users

# Piloting Lesson Learnt

**Collaboration Tool & Harmonised Methodology** required for Pilots planning

**Consolidated Database & Common Data Format** for Pilots to manage own data and for evaluation experts

**Drivers** are newcomers to vehicle automation, professional driver safety courses are recommended

**Legal framework of permission** to test in different countries shall be harmonised





Thank you for your kind attention.

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