

PARTNERS



AVENUE

Autonomous
Vehicles to
Evolve to a
New Urban
Experience

**Technology and
functioning**

Follow Us!



Twitter.com/avenue_project
Facebook.com/avenue.project.h2020
Youtube.com/avenue H2020 Project

www.h2020-avenue.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 769033



*The highest actual level of autonomy
Level 4*

These technologies have been successfully implemented within the **AVENUE project** and have been deployed simultaneously on open roads in a world first. The work of the team has also been to put these technologies into practical implementation and to bring these and their benefits to the daily life of all of us as soon as possible

Sensors / perception

Different sensors are needed so that the driverless vehicle can unequivocally comprehend every traffic situation even in bad lighting/weather conditions.

Cameras: object or pedestrian's detection. Can measure angles with a wide angle of vision up to 300m

Radar system: active technology emitting electromagnetic waves and receiving the echo from its surrounding. Determine the distance/relative speed of each objects with high accuracy. Function in any weather/visibility condition

Lidars: use laser pulses to recognize objects and angles with high accuracy. They record the 360° environment of the vehicle via a point cloud which allows a 3d reconstruction of the scene. Also detect road edges, and identify lane markings

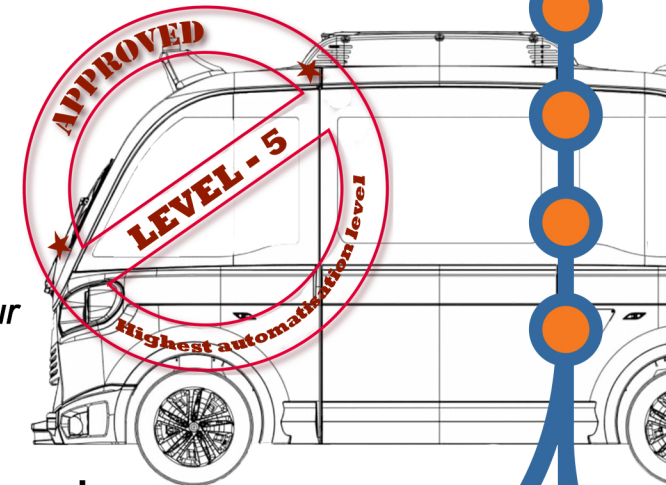
Stereoscopic/infrared camera: ultrasonic sensors depict the world around the shuttle as it moves and create a dynamic picture of the environment

Electric propulsion

15-seater vehicle

*Its 25kw of power,
allow it to reach 45km/h*

Sends 25gb of data per hour



Automated minibuses rely on sensors, actuators, complex algorithms, machine-learning systems, and powerful processors

Communication

Automated minibuses are equipped with vehicle-to-vehicle (V2V) and to infrastructure (V2I) communication, allowing vehicles to signal their intentions and moves, and to tell traffic information that will be useful for all

Generating itineraries

A simple and intuitive application allows users to get a vehicle where they are fast as possible or to plan a route in advance. It offers many possibilities to personalise the service. The route is dynamically generated taking account all the reservations. These technologies are world firsts in real life conditions that have been developed within the *AVENUE project*

Processing/understanding

The software: process and merges the information from all the sensors in real-time to create a virtual representation. It then creates a viable path within this environment and controls acceleration, braking, and steering accordingly. The software seeks to bring sense to the information of the sensors, to recognize what are the necessary information, and helps understand which is a vehicle, a person, or whatever else