AVENUE

Autonomous Vehicles to Evolve to a New Urban Experience

DELIVERABLE

D3.1 First Cooperation with relevant initiatives and projects report

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Acronyms

AI – Artificial Intelligence
API – Application Protocol Interface
AV – Autonomous Vehicle
CAV – Connected and Autonomous Vehicles
CERN - European Organization for Nuclear Research
DMP – Data Management Plan
DTU test track - Technical University of Denmark test track
ECSEL - Electronic Components and Systems for European Leadership
EUCAD - European Conference on Connected and Automated Driving
FEDRO – (Swiss) Federal Roads Office
FOT – (Swiss) Federal Office of Transport
GDPR - General Data Protection Regulation
GIMS - Geneva International Motor Show -
GNSS - Global Navigation Satellite System
HARA – Hazard Analysis and Risk Assessment
IPR – Intellectual Property Rights
IT – Information Technology
ITU – International Telecommunications Union
ODD - Operational Domain Design
OEDR - Object And Event Detection And Response
PRM - Persons with Reduced Mobility
PSA – Group PSA (PSA Peugeot Citroën)
PTO – Public Transportation Operator
PTS - Public Transportation Services
SAE Level - Society of Automotive Engineers Level (Vehicle Autonomy Level)
SDK - Software Development Kit
SOTIF - Safety Of The Intended Functionality
SWOT – Strengths, Weaknesses, Opportunities, and Threats.
UITP - Union Internationale des Transports Publics

Executive Summary

We present the first version of the cooperation activities with projects and initiatives and the contributions from the Advisory Board.

1 Introduction

The target of the AVENUE project is to demonstrate and pilot the adaptability and efficiency of the deployment of small and medium autonomous vehicles (AV's) in Lyon, Luxembourg, Geneva, Copenhagen and 2-3 replicator cities as of the 3d year of the project. The AVENUE vision for future public transport in urban and suburban areas, is that autonomous vehicles will ensure safe, rapid, economic, sustainable and personalised transport of passengers, while minimising vehicle changes. The goal is to provide door to door autonomous transport allowing commuters to benefit from autonomous vehicles.
At the end of the AVENUE project - 4 year period - the mission is to have demonstrated that autonomous vehicles will become the future solution for public transport. The AVENUE project will demonstrate the economic, environmental and social potential of autonomous vehicles - for both companies and public commuters - while assessing the vehicle road behaviour safety.

WP3 objective is to create a web of collaborations to reach a broad spectrum of directly and non-directly relevant parties to maximise the output value of AVENUE.

The target of task T3.1 "Cooperation of related Initiatives and projects" is to identify relevant initiatives and projects and maintain communication channels, a network of promoting collaborations, knowledge exchange and technology transfer. The task will also valorize the Advisory Board experts, allowing them to have an overview of the project and provide a broader legal, environmental, technical and societal acceptance requirements perspective.

In this Deliverable D3.1 we describe the activities related to the contacts and communication with other projects and initiatives and the contributions of the advisory board experts.

2 Collaboration with relevant initiatives and projects

All project partners have actively created formal and informal contacts with other projects, initiatives, and related companies, based on their expertise and needs. In the following we present the most important contacts where an active collaboration is/can/will be established. Simple presentations and information given to companies by our partners is not included in this report, considered rather as a dissemination activity.

2.1 European Projects

Our first source and target of collaboration was with other INEA and EU projects. These collaboration was established and by Navya and the University of Geneva (project technical manager and project coordinator respectively). The AVENUE project took contact with the ARCADE support action project, which acts as concentration point for information exchange on mobility related projects. We were present in several events and meetings organised (EUCAD) and had the opportunity to discuss, present

and initiate contacts and collaborations with other related projects and experts (ex. FABULOS, SPACE, TER4RAIL, MOMENTUM, MySmartlife).

Having established contact with the FABULOS project we organised a webinar where we presented the Open Call for replicator and invited the FABULOS partner sites to participate, after explained the targets of AVENUE and the requirements for the replicator sites. However, first due to the procurement process which taking very long, none of the sites were able to confirm if and when they will be able to identify the number of vehicles and the exact site they plan to operate (Finally only Trikala submitted an application for a replicator site, but it was not retained due to lack of precise operation site).

The established contact with ERTICO allowed us to network and present the AVENUE targets to the different events organised (ex. ITS 2019) where we participated.

Siemens established contact and collaboration with the H2020 LIV:IN project, targeting the development new responsible approaches to innovation in the areas of smart homes and smart health. The LIV.IN project test site at Seestadt Aspern, is of high interest for the AVENUE project regarding the smart home (and in extension smart city) infrastructure which is addressing the issues of special needs citizens. \
Furthermore Siemens, via their Siemens Berlin office, established collaboration with the BVG site in Berlin, where they operate until the end of 2019 autonomous shuttle services. (And which we invited to join as replicator site, but the requirements set by AVENUE were beyond the anticipated services of BVG).
Furthermore, Siemens established contacts with the HUBCHAIN project in Osnabrück, where they will start operating in 2020 AV services using one Easymile shuttle for an on-demand service at a 1.1 Km circuit. Similarly contacts were established with the city of Mainz, where a test site will also start in 2020 (after a 20 days test in a 800m line in August 2019 with one Navya shuttle) and the with the region of Soest where a trial I under development for mid 2020. With all these sites Siemens exchanged information and experience from AVENUE, and we investigated if they would be interested (and if they have a strategic plan) to join AVENUE as replicator sites (but none was up to the requirements asked for the AVENUE replicator sites).

VIF brought in the contact and information exchange with the H2020 TRUSTVEHICLE (which they coordinate), where issues of safety and security, of interest to AVENUE, are exchanged. VIF also brought in the contact and cooperation with the ECSEL projects AUTODRIVE, PRYSTINE and NEWCONTROL, all concentrating on different security and safety of components and operations for automated vehicles.
Finally VIF, with its participation in the Austrian test ground Alp.Lab ALP.Lab, a sophisticated testing environment for testing and verifying the components and systems of automated driving in diverse and complex scenario, brings in AVENUE important information for safety evaluation of the autonomous shuttles.
Thanks to the common partners in the H2020 project nIoVe (CERTH, NAVYA, UniGE, TPG) which targets the cybersecurity for IoT vehicles, we are able to exchange important information in cybersecurity and technical issues and identify the implications for public transportation services in AVENUE.

Contact was also established with the Intereg projects, which investigate trans-border AVs shuttle services. Namely, the Ecosmile, for their anticipated site in Archamps (at the French site of the Geneva boarders) where an Easymile shuttle will be operated in late 2020 at an small industrial site and with

which we will be able to exchange information, and (by Sales-Lentz) and the TERMINAL and SHUTTLES projects, which target the greater Luxembourg area (Luxembourg, Germany, France).

2.2 Commercial Companies

The project partners also initiated contacts and collaboration or were invited by commercial companies active in related to AVENUE domains, in view of exploring collaboration possibilities. We had discussions and presentation with several companies (video conference, in exhibitions and fairs etc) and in the following we present some of the representative contacts for possible collaboration.

A first company that contacted us (the project coordinator) was Toyota Europe, in summer 2018, in order to investigate possible cooperation for the forthcoming Tokyo Olympic Games and the idea to use autonomous shuttles for the athletes and visitors.

A second company we contacted was Easymile, the second major constructor of Autonomous Shuttles in Europe, in view, first exchange ideas and issues, and then investigate the possibilities to integrate one of their sites as a replicator site in AVENUE. However, in spite many discussions there was finally no common ground for stronger collaboration. Regarding the replicator sites, none of the sites operated by Easymile was advanced enough to be integrated as replicator site (no site had more than 2 vehicles and none had any plans to deploy on-demand, door-to-door services).

Following the GIMS 2019 in Geneva, we established contact with OSR Enterprises AG, a Swiss company specialising in platforms for next generation mobility, interested to evaluate if their AI platform can be used in the AVENUE project, where we have identified the need for a 3rd computer for the services.

We established also a good collaboration with AKKA technologies, to the AKKA Academy in Geneva, where we collaborated in setting the Sustainable Mobility Hackthon in June 2019.

CentralSupelec established a collaboration with the PSA Autonomous vehicle group, where common presentations and exchange of issues are taking place in a regular basis.

Finally to be mentioned that NAVYA representing the AVENUE project in different events (ex. the 4th High Level Meeting in Vienna) established connections across different key stake holders (European governments working on AV, European commission related teams), where they presented the AVENUE project and targets and investigated possible future collaborations.

Sales-Lentz, via their participation in the 4th VDV Future Congress Autonomous Driving within Public Transport the established several connections (manufacturers, policy makers, stakeholders,…) allowing then to, from one side promote the project, and from the other side receive feedback and input regarding needs, and legal and regulatory issues.

2.3 Other initiatives

In addition to the collaboration with projects and companies, we have also established close collaboration with different initiatives related to mobility and autonomous vehicles.

The project coordinator is active member of the Nomads Foundation Mobility Hub, lead be ABB in Geneva, where several mobility actors in Switzerland and France participate, with target the creation of events and initiate contacts and projects in new models of transportation.

The project coordinator is also active participant of the Shift AUTOMOTIVE Forum (a partnership with IFA, Messe Berlin and Palexpo and is supported by the International Telecommunication Union (ITU)), organizing events in on future mobility in different international exhibitions.

In addition the project coordinator is vice-chair of the ITU Focus Group on Vehicular Multimedia, established to identify the need for new vehicular multimedia standards based on space and terrestrial networks integration. The group will make a proposal for a new standard for Vehicle Multimedia.

Siemens has also established a strong collaboration with associations of PRM e.g. expert group on environment, traffic and mobility of the associations for the blind and visually impaired. This collaboration allows us to recruit PRM who can validate the proposed project solutions, and also provide us needs and requirements for special needs passengers.

3 Advisory Board Contributions

The advisory board of the project was constituted initially by 5 members, who had accepted to serve in this role.

Prof. Huei Peng	**University of Michigan** - MCity project director; Autonomous vehicle deployment under DOT, USA funding
Mr. Arthur van der Wees	**Arthur's Legal B.V.** - Policy and legal issue related to IT; leading the horizontal topics on trust, data, processing, protection, security, accountability and other strategic, ethical and legal topics for the 5 H2020 Large Scale Pilots
Mr. Bruce Warner	**ABB** - Global application technology manager for railway and urban transport electrification systems.
Mr. Vincent Abadie	**Groupe PSA - Peugeot - Citroën - DS** - Vice President, expert Leader Autonomous Vehicle and ADAS.
Ms Lærke Flader	Danish Energy Association/Danish EV Alliance - Managing Director

From the original five (5) Advisory Board members only three (3) replied to the invitation to participate the frist three General meetings and namely Prof. Huei Peng, Mr. Arthur van der Wees and M. Bruce Warner. The other two, Mr. Abadi and Mme Flader, never replied to any of the messages and invitations send. Mr Warner, after participating in the 3rd general meeting and due to work overload withdraw from the board.

For this reason in September 2019 we invited 2 more persons to join, in September 2019 Mr. Benno Nager of the Swiss Federal Roads Office, Mr. Sascha Ott, from the Karlsruhe Institute of Technology (KIT). Mr Nager participated in the Geneva general meeting in October 2019. All of the new Advisory Board members confirmed to be present in the May 2020 General meeting in Copenhagen.

Each of the active members of the Advisory board made important contributions to the project. Mr. Arthur van der Wees, being a cyber-legal expert, was able to clarify the issues related to data ownership, usage and protection, GDPR restrictions, European legal and regulatory issues, commenting on issues that should be faced in the implementation of services, and commented on the pertinence of proposed transport and passenger services.

Prof. Peng, as director of the MCity project, provide valuable input on the issues and solutions they gave in facing similar problems as in AVENUE (like collection of video for the evaluation of passenger behavior) provided technical, legal and regulatory information regarding the United States. He made many comments in the General meeting regarding services, transport issues and why some vehicle data cannot be extracted from the vehicle.

Mr Benno Nager, present in the Geneva General meeting in October 2019, (and in bilateral discussions with TPG) provided valuable input in the requirements, processes and legal issues for the homologation of AVs, as well as advice in presenting the homologation file for the Belle-Idee site. Mr Nager promotes the AVENUE project in the Swiss federal authorities as well as in international forum he participates, as an example of the future mobility solutions.

All active board members also acted as ambassadors for the project, promoting the project and its targets to different forums they participate, and using the project as an example of service in public transportation.