Automated Vehicles to Evolve to a New Urban Experience

DELIVERABLE

D10.8 Final version Communication and dissemination tools and materials

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Acronyms

AM: Automated Minibus
WP: Work Package
ORM: Online Reputation Management
IoT: Internet of Things
CEO: Chief Executive Officer
CIO: Chief Information Officer
CISO: Chief Information Security Officer
EEN: European Enterprise Network
NCPs: National Contact Points
EU: European Union
PT: Public transit
PTO: Public Transit Operator

Table of contents

List of Tables

List of Figures

Executive Summary

The purpose of this document is to present the digital and offline dissemination materials and tools that have been used throughout the AVENUE project with the aim of raising the project and its different deployments' awareness and to show to the public the advantages of the AM technology advent and of the associated On demand and Door-to-door services.

These materials and tools took many forms (they can be viewed/consulted by all on the AVENUE website):

- Some video contents produced by the AVENUE teams
- A series of Webinars
- Some contents made by some Youtubers to promote the AVENUE project
- A set of brochures on the different benefits of the AM technology and presenting each deployment site
- Some Operational data summary for each site
- Tree large posters
- The Public deliverables
- A Website
- A social media channel on most social networks

We have also estimated here the extent of the dissemination of these materials, the number of people they reached, and the impact on individuals.

1. Introduction

AVENUE aims to design and carry out full-scale demonstrations of urban transport automation by deploying, for the first time worldwide, fleets of Automated minibuses in low to medium demand areas of 4 European demonstrator cities (Geneva, Lyon, Copenhagen and Luxembourg) and 2 to 3 replicator cities. The AVENUE vision for future public transport in urban and suburban areas, is that Automated vehicles will ensure safe, rapid, economic, sustainable and personalised transport of passengers. AVENUE introduces disruptive public transportation paradigms on the basis of on-demand, door-to-door services, aiming to set up a new model of public transportation, by revisiting the offered public transportation services, and aiming to suppress prescheduled fixed bus itineraries.

Vehicle services that substantially enhance the passenger experience as well as the overall quality and value of the service will be introduced, also targeting elderly people, people with disabilities and vulnerable users. Road behaviour, security of the Automated vehicles and passengers' safety are central points of the AVENUE project.

At the end of the AVENUE project four-year period the mission is to have demonstrated that Automated vehicles will become the future solution for public transport. The AVENUE project will demonstrate the economic, environmental and social potential of Automated vehicles for both companies and public commuters while assessing the vehicle road behaviour safety.

1.1 On-demand Mobility

Public transportation is a key element of a region's economic development and the quality of life of its citizens. Governments around the world are defining strategies for the development of efficient public transport based on different criteria of importance to their regions, such as topography, citizens' needs, social and economic barriers, environmental concerns and historical development. However, new technologies, modes of transport and services are appearing, which seem very promising to the support of regional strategies for the development of public transport.

On-demand transport is a public transport service that only works when a reservation has been recorded and will be a relevant solution where the demand for transport is diffuse and regular transport is inefficient.

On-demand transport differs from other public transport services in that vehicles do not follow a fixed route and do not use a predefined timetable. Unlike taxis, on-demand public transport is usually also not individual. An operator or an automated system takes care of the booking, planning and organization.

It is recognized that the use and integration of on-demand Automated vehicles has the potential to significantly improve services and provide solutions to many of the problems encountered today in the development of sustainable and efficient public transport.

1.2 Fully Automated Vehicles

A self-driving car, referred in the AVENUE project as **a Fully Automated Vehicle** (**AV**), also referred as Autonomous Vehicle, is a vehicle that is capable of sensing its environment and moving safely with no human input.

The terms *automated vehicles* and *autonomous vehicles* are often used together. The Regulation 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles defines "automated vehicle" and "fully automated vehicle" based on their autonomous capacity:

- An "automated vehicle" means a motor vehicle designed and constructed to move autonomously for certain periods of time without continuous driver supervision but in respect of which driver intervention is still expected or required
- "fully automated vehicle" means a motor vehicle that has been designed and constructed to move autonomously without any driver supervision

In AVENUE we operate ***Fully Automated minibuses for public transport***, (previously referred as Autonomous shuttles, or Autonomous buses), and we refer to them as simply *Automated minibuses* or *the AVENUE minibuses.*

In relation to the SAE levels, the AVENUE project will operate SAE Level 4 vehicles.

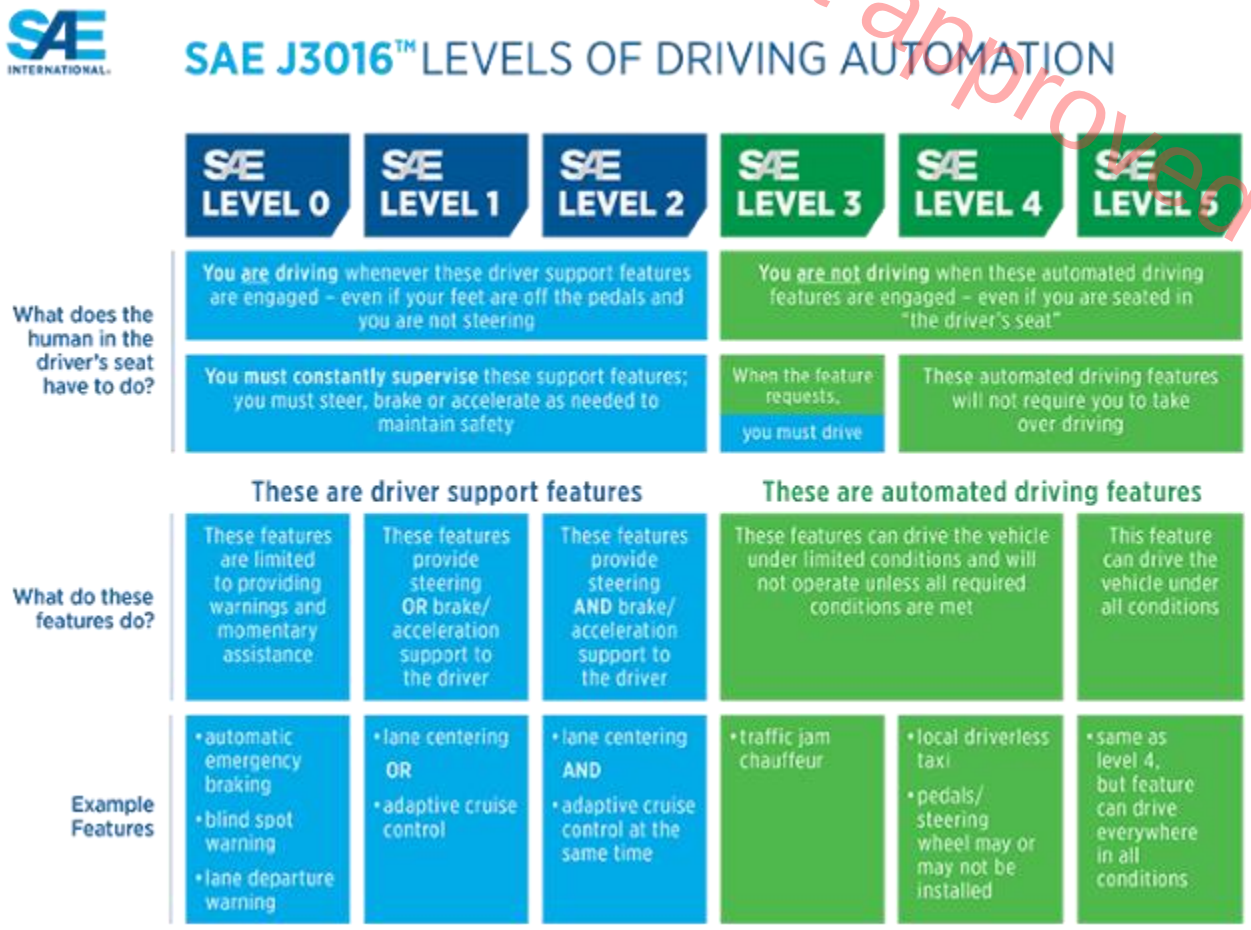


Table 1: SAE Driving Automation levels (©2020 SAE International)

1.2.1 Autonomous vehicle operation overview

We distinguish in AVENUE two levels of control of the AV: micro-navigation and macro-navigation. Micro navigation is fully integrated in the vehicle and implements the road behaviour of the vehicle, while macro-navigation is controlled by the operator running the vehicle and defines the destination and path of the vehicle, as defined the higher view of the overall fleet management.

For micro-navigation Automated Vehicles combine a variety of sensors to perceive their surroundings, such as 3D video, LIDAR, sonar, GNSS, odometry and other types sensors. Control software and systems, integrated in the vehicle, fusion and interpret the sensor information to identify the current position of the vehicle, detecting obstacles in the surround environment, and choosing the most appropriate reaction of the vehicle, ranging from stopping to bypassing the obstacle, reducing its speed, making a turn etc.

For the Macro-navigation, that is the destination to reach, the Automated Vehicle receives the information from either the in-vehicle operator (in the current configuration with a fixed path route), or from the remote-control service via a dedicated 4/5G communication channel, for a fleet-managed operation. The fleet management system takes into account all available vehicles in the services area, the passenger request, the operator policies, the street conditions (closed streets) and send route and stop information to the vehicle (route to follow and destination to reach).

1.2.2 Automated vehicle capabilities in AVENUE

The Automated vehicles employed in AVENUE fully and automatically manage the above defined, micro-navigation and road behaviour, in an open street environment. The vehicles are Automatically capable to recognise obstacles (and identify some of them), identify moving and stationary objects, and automatically decide to bypass them or wait behind them, based on the defined policies. For example, with small changes in its route the AVENUE mini-bus is able to bypass a parked car, while it will slow down and follow behind a slowly moving car. The AVENUE mini-buses are able to handle different complex road situations, like entering and exiting round-about in the presence of other fast running cars, stop in zebra crossings, communicate with infrastructure via V2I interfaces (ex. red light control).

The mini-buses used in the AVENUE project technically can achieve speeds of more than 60Km/h. However, this speed cannot be used in the project demonstrators for several reasons, ranging from regulatory to safety. Under current regulations the maximum authorised speed is 25 or 30 Km/h (depending on the site). In the current demonstrators the speed does not exceed 23 Km/h, with an operational speed of 14 to 18 Km/h. Another, more important reason for limiting the vehicle speed is safety for passengers and pedestrians. Due to the fact that the current LIDAR has a range of 100m and the obstacle identification is done for objects no further than 40 meters, and considering that the vehicle must safely stop in case of an obstacle on the road (which will be "seen" at less than 40 meters distance) we cannot guarantee a safe braking if the speed is more than 25 Km/h. Note that technically the vehicle can make harsh break and stop with 40 meters in high speeds (40 -50 Km/h) but then the break would too harsh putting in risk the vehicle passengers. The project is working in finding an optimal point between passenger and pedestrian safety.

Due to legal requirements a **Safety Operator** must always be present in the vehicle, able to take control any moment. Additionally, at the control room, a **Supervisor** is present controlling the fleet operations. An **Intervention Team** is present in the deployment area ready to intervene in case of incident to any of the mini-busses. In table 2 provides and overview of the AVENEU sites and OOD

	Summary of AVENUE operating sites demonstrators							
	TPG		**Holo**			**Keolis**	**Sales-Lentz**	
	Geneva		**Copenhagen**	**Oslo**	**Copenhagen**	**Lyon**	**Luxembourg**	
Site	Meyrin	Belle-Idée	Nordhavn	Ormøya	Slagelse	ParcOL	Pfaffental	Contern
Funding	TPG	EU + TPG	EU + Holo	EU + Holo	EU + Holo	EU + Keolis	EU + SLA	EU + SLA
Start date of project	August 2017	May 2018	May 2017	August 2019	August 2020	May 2017	June 2018	June 2018
Start date of trial	July 2018	June 2020	September 2020	December 2019	August 2021	November 2019	September 2018	September 2018
Type of route	Fixed circular line	Area	Fixed circular line	Fixed circular line	Area	Fixed circular line	Fixed circular line	Fixed circular line
Level of on-demand service*	Fixed route / Fixed stops	Flexible route / On-demand stops	Fixed route / Fixed stops	Fixed route / Fixed stops	Flexible route / On-demand stops	Fixed route/Fixed stops	Fixed route / Fixed stops	Fixed route / Fixed stops
Route length	2,1 km	38 hectares	1,3 km	1,6 km	5,5 km	1,3 km	1,2 km	2,3 km
Road environment	Open road	Semi-private	Open road	Open road	Open road	Open road	Public road	Public road
Type of traffic	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed

Speed limit	30 km/h	30 km/h	30 km/h	30 km/h	30 km/h	8 to 10 km/h	30 km/h	50 km/h
Roundabouts	Yes	Yes	No	No	No	Yes	No	No
Traffic lights	No	No	No	No	No	Yes	Yes	Yes
Type of service	Fixed line	On demand	Fixed line	Fixed line	On demand	Fixed line	Fixed line	Fixed line
Concession	Line (circular)	Area	Line (circular)	Line (circular)	Area	Line (circular)	Line (circular)	Line (circular)
Number of stops	4	> 35	6	6	7	2	4	2
Type of bus stop	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Bus stop infrastructure	Yes	Sometimes, mostly not	Yes	Yes	Yes	Yes	Yes	Yes
Number of vehicles	1	3-4	1	2	2	2	2	1
Timetable	Fixed	On demand	Fixed	Fixed	On-demand	Fixed	Fixed	Fixed
Operation hours	Monday-Friday (5 days)	Sunday-Saturday (7 days)	Monday-Friday (5 days)	Monday-Sunday (7 days)	Monday-Friday (5 days)	Monday-Saturday (6 days)	Tuesday & Thursday Saturday, Sunday & every public holiday	Monday - Friday
Timeframe weekdays	06:30 – 08:30 / 16:00 – 18:15	07:00 – 19:00	10:00 – 18:00	7:30 – 21:30	07:00-16:00	08:30 – 19:30	12:00 – 20h00	7:00 – 9:00 16:00 – 19:00
Timeframe weekends	No service	07:00 – 19:00	No service	9:00 – 18:00	No service	08:30 – 19:30	10:00 – 21:00	No Service
Depot	400 meters distance	On site	800 meters distance	200 meters distance	On site	On site	On site	On site
Driverless service	No	No	No	No	No	No	No	No
Drive area type/ODD	B-Roads	Minor roads/parking	B-Roads/minor roads	B-Roads	B-Roads/parking	B-Roads	B-Roads	B-Roads/parking
Drive area geo/ODD	Straight lines/plane	Straight lines/ plane	Straight lines/ plane	Curves/slopes	Straight lines / curves	Straight Lines/ plane	Straight lines/ plane	Straight lines/ plane
Lane specification/ODD	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane
Drive area signs/ODD	Regulatory	Regulatory	Regulatory, Warning	Regulatory	Regulatory	Regulatory	Regulatory	Regulatory
Drive area surface/ODD	Standard surface, Speedbumps	Standard surface, Speedbumps	Standard surface Speedbumps, Roadworks	Frequent Ice, Snow	Standard surface, snow during winter	Standard surface, Potholes	Standard surface	Standard surface

Table 2: *Summary of AVENUE operating site (+ODD components)*

2 Dissemination Material and Tools

2.1 Preamble

The Work Package 10 targets to coordinate the dissemination, and to organise and implement a well-focused dissemination & communication plan covering various dissemination channels, with the objective of creating high levels of awareness and sustained engagement of the AVENUE activities and solutions.

To reach the awareness level intended, dissemination has been supported by many communication materials and tools. Important aspects are also good, long-term relations to national and local media and for this purpose press kits have been made available.

The AVENUE dissemination material and tools promoted the project and its activities and are distinguished in on- and off-line material and tools.

Online material and tools:

- A project logo and graphic identity
- A contact E-mail
- An e-newsletter
- Some social media tools (Twitter, Facebook, LinkedIn)
- Youtube AVENUE channel video contents
- The contents made by the influencers on AVENUE
- The AVENUE project website
- The public deliverables

Offline material and tools:

- A project logo and graphic identity
- The brochures and posters
- The press releases and press kits
- Some video contents (to show on big screens via USB-sticks during the public events)

The dissemination strategy and plan are described in the deliverable D10.1.

2.2 The AVENUE Logo

Figure 1: the AVENUE project logo

The building of the project's image started with the design of a distinctive logo. This logo has been included in the design and production of the AVENUE website, social media, brochures, leaflets, posters, as well as in all the public and private communication material produced by the consortium. The fact we always used this same AVENUE logo contributed to the strong visual identity of the project that helped support its awareness and increased the project visibility among the interested stakeholders and target audience.

2.3 Project Promotion Material

The crisis situation and the lockdowns and public restrictions caused by the COVID 21 global pandemic led to the cancellation of many of the events where the AVENUE project was supposed to be showcased and where the promotional material was supposed to be shared with the general public. Nevertheless, we distributed no less than 1390 brochures and 300 operational data summaries.

2.3.1 PowerPoint template

The main idea of the PowerPoint template is that we have a basic feel-and-look with the AVENUE style, and where we can add visual background, based on the partner using it and the context. The template can thus be "personalised" by each partner to put value in its own contribution, but clearly identifiable as part of the AVENUE project.

Figure 2: the AVENUE project PowerPoint title template

Figure 3: the AVENUE project PowerPoint template

2.3.2 Brochures

Several brochures have been developed throughout the project to better explain the AVENUE project aims and objectives and to describe the various project deployments and the benefits of the AM technology and of the door-to-door/on demand services. Some printed versions of the brochures were used in order to ensure the promotion of the project by all the partners when participating in public events but were also available in electronic format on the AVENUE project Website (https://h2020-avenue.eu). They were also used to provide information to the influencers we invited to cover the project prior to their visit and were distributed at the semi-annual AVENUE team meetings.

The brochures design is based on the project logo colours and logic, which allows all brochures to respect the distinctive aesthetic signature of the AVENUE project. All the brochures are half-folded and have the same external face on which appears the distinctive cover page of the project on one side (front face of the brochure when folded) and the different partners of the project on the other side (back face of the brochure when folded), the only differing features being the title of the brochure and a specific illustration to facilitate their identification during the events in which we have participated.

Figure 4: AVENUE brochure generic outer side

A first AVENUE brochure was produced with general information about the AVENUE project and the activities that we aimed to develop within the project. It provides information about the project as a whole, its objectives, the expected results and some information about the consortium.

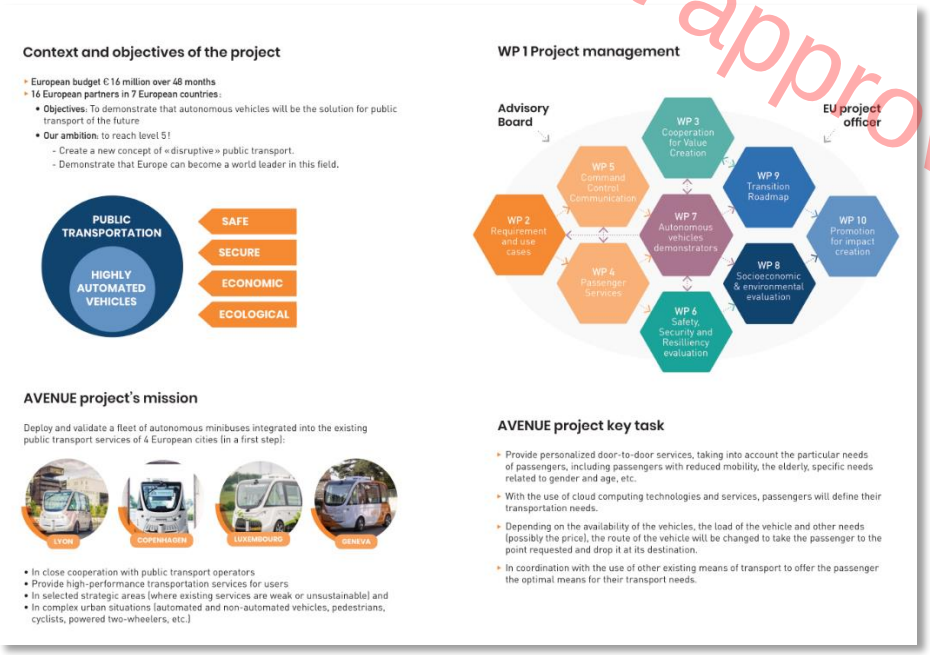


Figure 5: AVENUE general information brochure inner side

In addition to this first main general information brochure, we have also developed a series of more specific brochures destined to the general public (and that consider that they would also be presented to young people). Some of these brochures highlight the potential advantages of the AM advent while some others aim to present in detail the different AVENUE deployment sites with a more colourful and attractive aesthetics making the link with the different themes addressed in the brochures. These brochures having been used within the framework of French-speaking events; they are also available in this language.

Here is a list of these brochures:

- Brochure on the benefits of the AM technology for the population/individuals
- Brochure on the potential environmental benefits of the advent of an AM PT system
- Brochure on the benefits for elderly and mobility impaired people
- Brochure on the accident reduction potential
- Brochure on the AM technological operating principles
- Brochure on the Lyon demonstration deployment site
- Brochure on the Belle-idée demonstration deployment site
- Brochure on the Meyrin demonstration deployment site (*Xa line*)
- Brochure on the Luxembourg demonstration deployment site
- Brochure on the Copenhagen/Slagelse demonstration deployment site

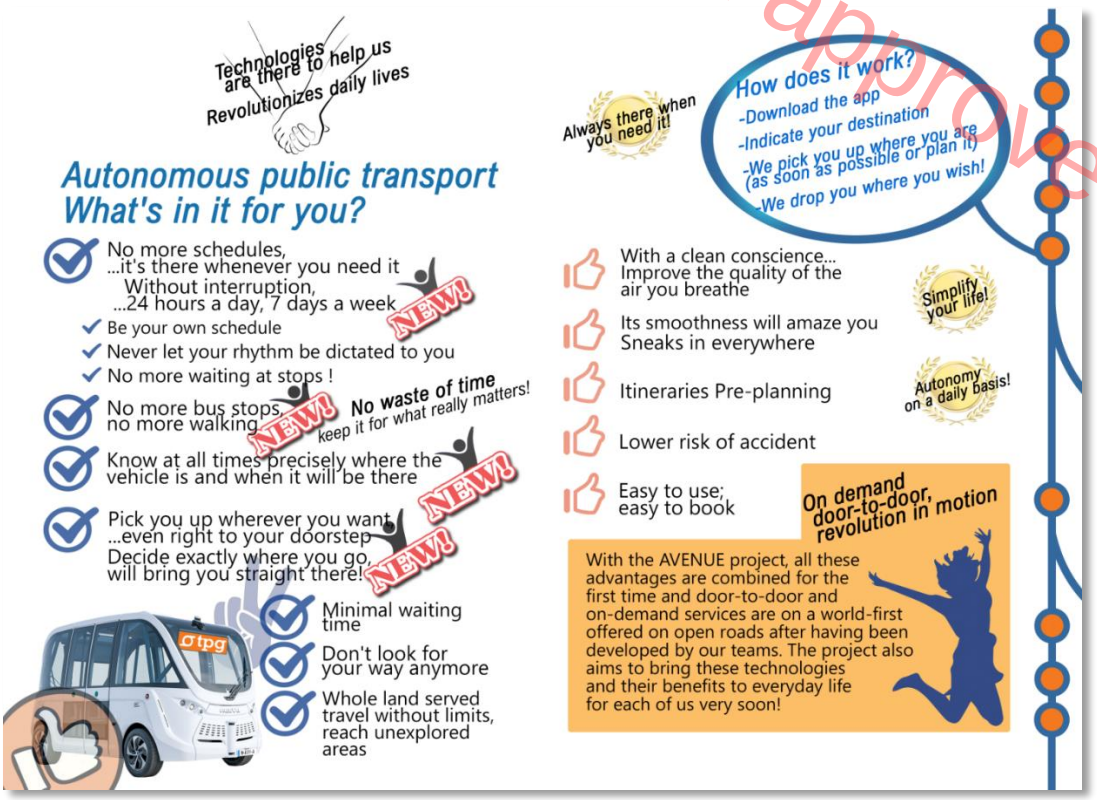


Figure 6: Brochure on the benefits of the AM technology for the population/individuals, inner face

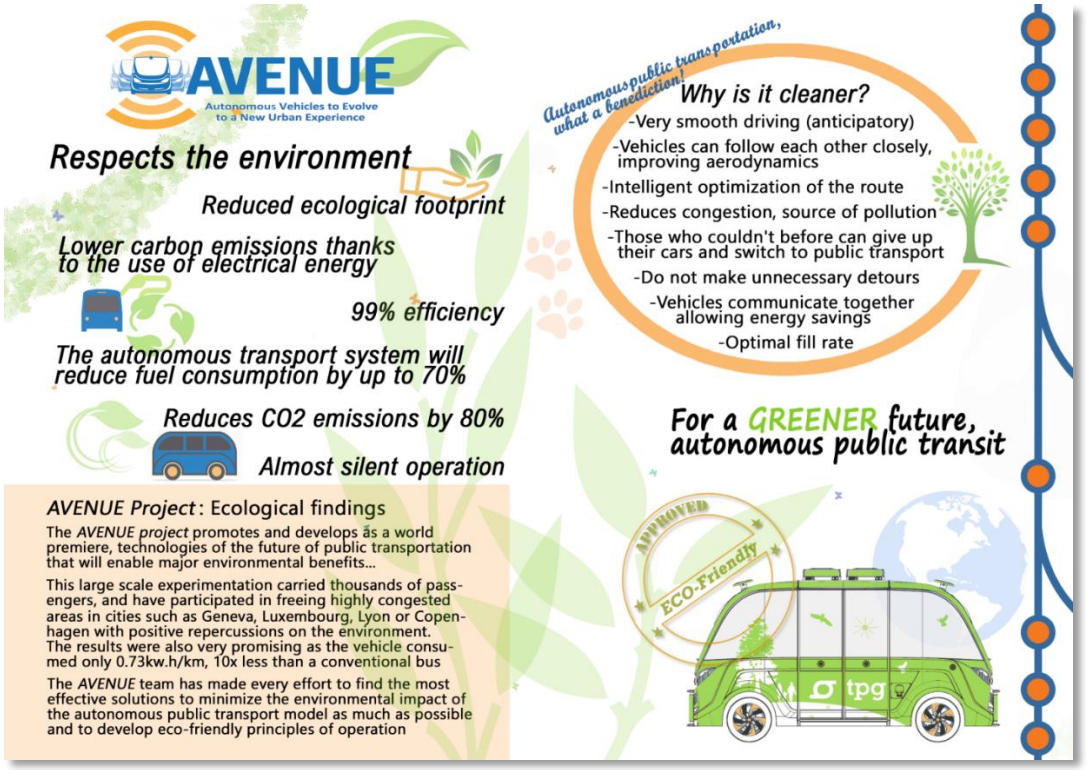


Figure 7: Brochure on the AM technology potential environmental benefits inner face

Figure 8: Brochure on the benefits for the elderly/mobility impaired people, inner face

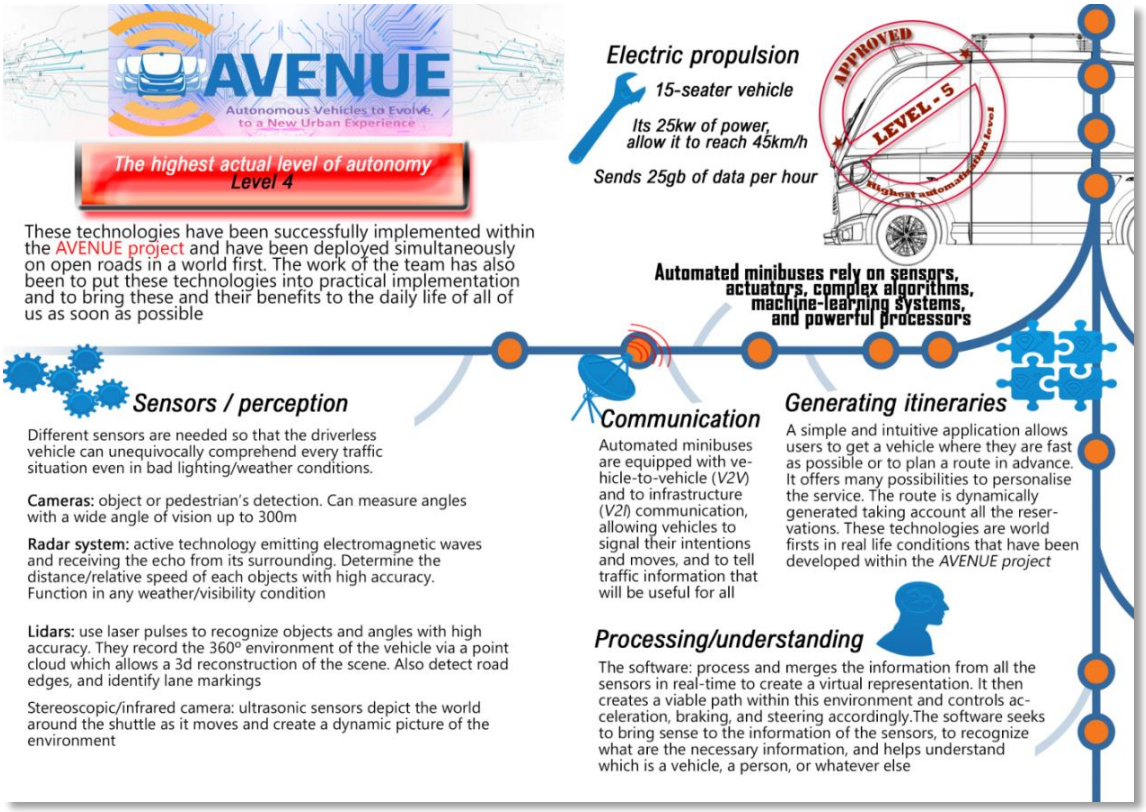


Figure 9: Brochure on the technological operating principles of AM technology inner face

Belle-Idée demonstration
Operation phase and Results

Based on the extensive experience and knowledge gained from all *AVENUE* deployment sites, a new project was set up in spring 2020 at the *Belle-Idée* hospital area in Geneva, where the full power of automated minibuses, with *on-demand, door-to-door* services, was deployed. The deployment by the Geneva Public Transportation operator (*TPG*), at the Belle-Idee site is the most advanced Automated minibus public transportation deployment, operating a regular on-demand service in open, mixed traffic roads.

Three *Navya* Autonom® minibuses are deployed, operating under mission management mode, that is receiving directly the destination via the fleet orchestration service (by *IOKI*), without safety-driver intervention. Passengers use the provided mobile app (by *MobileThinking*) to book a ride, which is transmitted to the Fleet Orchestration Platform which chooses the optimal vehicle to fulfill the request. The service automation aims to be end-to-end human intervention-free, from depot door opening at the start of the service to the end, including induction based recharging, and of course itinerary organisation. The service operates under almost every weather condition and is meant for day and night operation.

During this experiment, the vehicles faced the regular traffic on a daily basis for weeks without generating a single incident. The behaviour of the vehicle was rough and unsteady at first but day after day it improved greatly and the journeys are now particularly smooth. Only poorly parked cars and vegetation are still causing some issues. We reached almost 100% automated operation during the initial testing and validation and during regular operation.

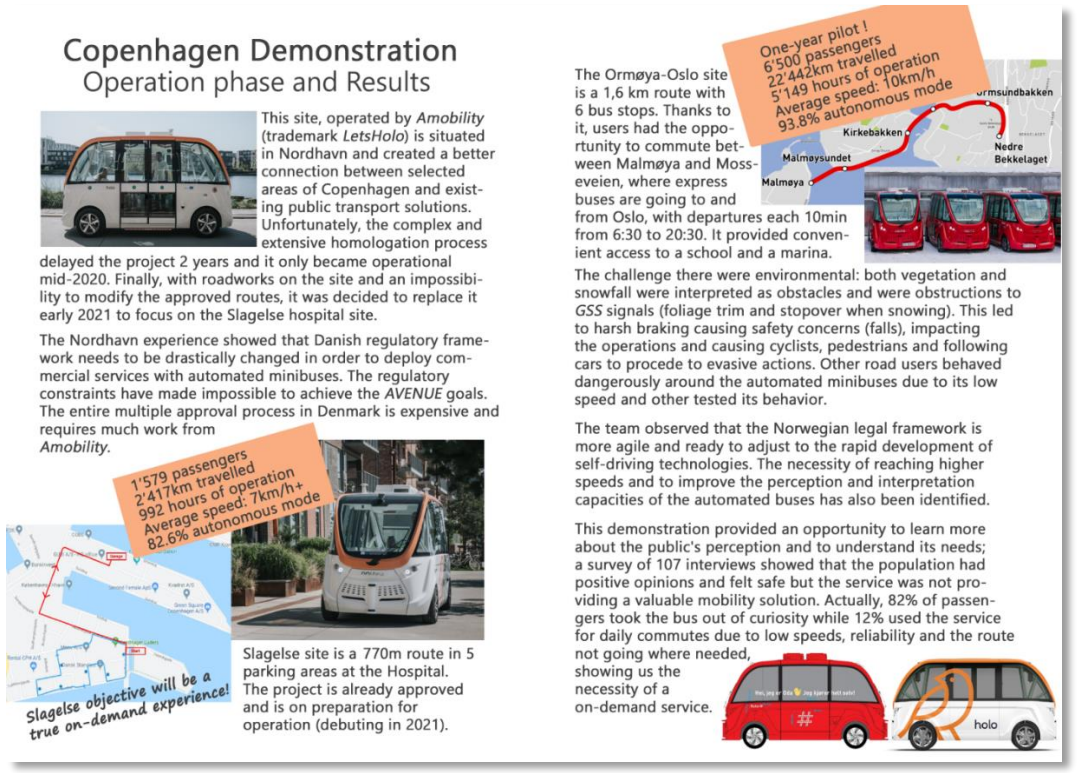
One of the most promising of the AVENUE projects!
It's a World first for on-demand/door-to-door on open road conditions !

The booking application is now fully functional and allows an on-demand access throughout the whole area.

The app and the on-demand/ door-to-door services are now being daily tested in order to prevent any malfunction or bug.

The Belle-Idée site set-up:
- 38 hectares
- 9Km of routes
- 3'000 users
- 30 buildings
- 75 virtual stops
- ≈100% autonomy rate
- Operating hours : 7:30–19:30 (with extra shuttle during the 7:30-9:30 and 15:30-18:30 pick hours)

Figure 10: Information brochure on the Swiss deployment site (Belle-idée) inner face



Copenhagen Demonstration
Operation phase and Results

This site, operated by *Amobility* (trademark *LetsHolo*) is situated in Nordhavn and created a better connection between selected areas of Copenhagen and existing public transport solutions. Unfortunately, the complex and extensive homologation process delayed the project 2 years and it only became operational mid-2020. Finally, with roadworks on the site and an impossibility to modify the approved routes, it was decided to replace it early 2021 to focus on the Slagelse hospital site.

The Nordhavn experience showed that Danish regulatory framework needs to be drastically changed in order to deploy commercial services with automated minibuses. The regulatory constraints have made impossible to achieve the *AVENUE* goals. The entire multiple approval process in Denmark is expensive and requires much work from *Amobility*.

1'579 passengers
2'417km travelled
992 hours of operation
Average speed: 7km/h+
82.6% autonomous mode

Slagelse objective will be a true on-demand experience!

Slagelse site is a 770m route in 5 parking areas at the Hospital. The project is already approved and is on preparation for operation (debuting in 2021).

One-year pilot !
6'500 passengers
22'442km travelled
5'149 hours of operation
Average speed: 10km/h
93.8% autonomous mode

The Ormøya-Oslo site is a 1,6 km route with 6 bus stops. Thanks to it, users had the opportunity to commute between Malmøya and Mossveien, where express buses are going to and from Oslo, with departures each 10min from 6:30 to 20:30. It provided convenient access to a school and a marina.

The challenge there were environmental: both vegetation and snowfall were interpreted as obstacles and were obstructions to *GSS* signals (foliage trim and stopover when snowing). This led to harsh braking causing safety concerns (falls), impacting the operations and causing cyclists, pedestrians and following cars to procede to evasive actions. Other road users behaved dangerously around the automated minibuses due to its low speed and other tested its behavior.

The team observed that the Norwegian legal framework is more agile and ready to adjust to the rapid development of self-driving technologies. The necessity of reaching higher speeds and to improve the perception and interpretation capacities of the automated buses has also been identified.

This demonstration provided an opportunity to learn more about the public's perception and to understand its needs; a survey of 107 interviews showed that the population had positive opinions and felt safe but the service was not providing a valuable mobility solution. Actually, 82% of passengers took the bus out of curiosity while 12% used the service for daily commutes due to low speeds, reliability and the route not going where needed, showing us the necessity of a on-demand service.

Figure 11: Information brochure about the Danish (Nordhavn and Slagelse) and Swedish deployment sites (Ormøya) inner face

Figure 12: Information brochure on the deployment site in Luxemburg (Pfaffenthal, Esch-sur Alzette and Contern), inner face

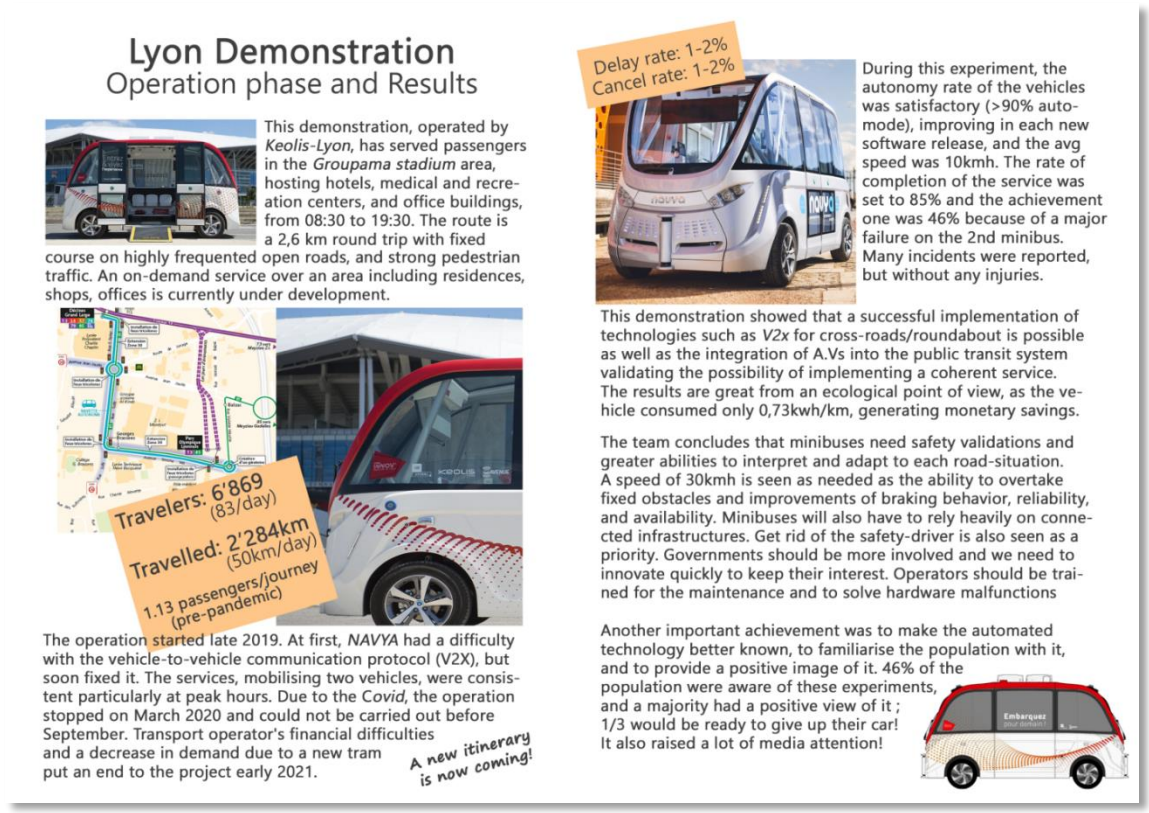


Figure 13: Information brochure on the French deployment site (Lyon-Groupama stadium), inner face

Figure 14: Information brochure on the Geneva « *Xa line* », inner face

A series of operational data summary leaflets gathering all the figures related to the operational phase of the demonstrators and replicators deployments was also developed (proportion of autonomous driving, travelled distance, passenger count, length of the route and other specificities).

Here is an exhaustive list of these leaflets:

- Operational data summary for the Lyon deployment
- Operational data summary for the Luxembourg deployment
- Operational data summary for the Geneva deployment
- Operational data summary for the Copenhagen deployment
- Operational data summary for the Sion-Uvrier deployment

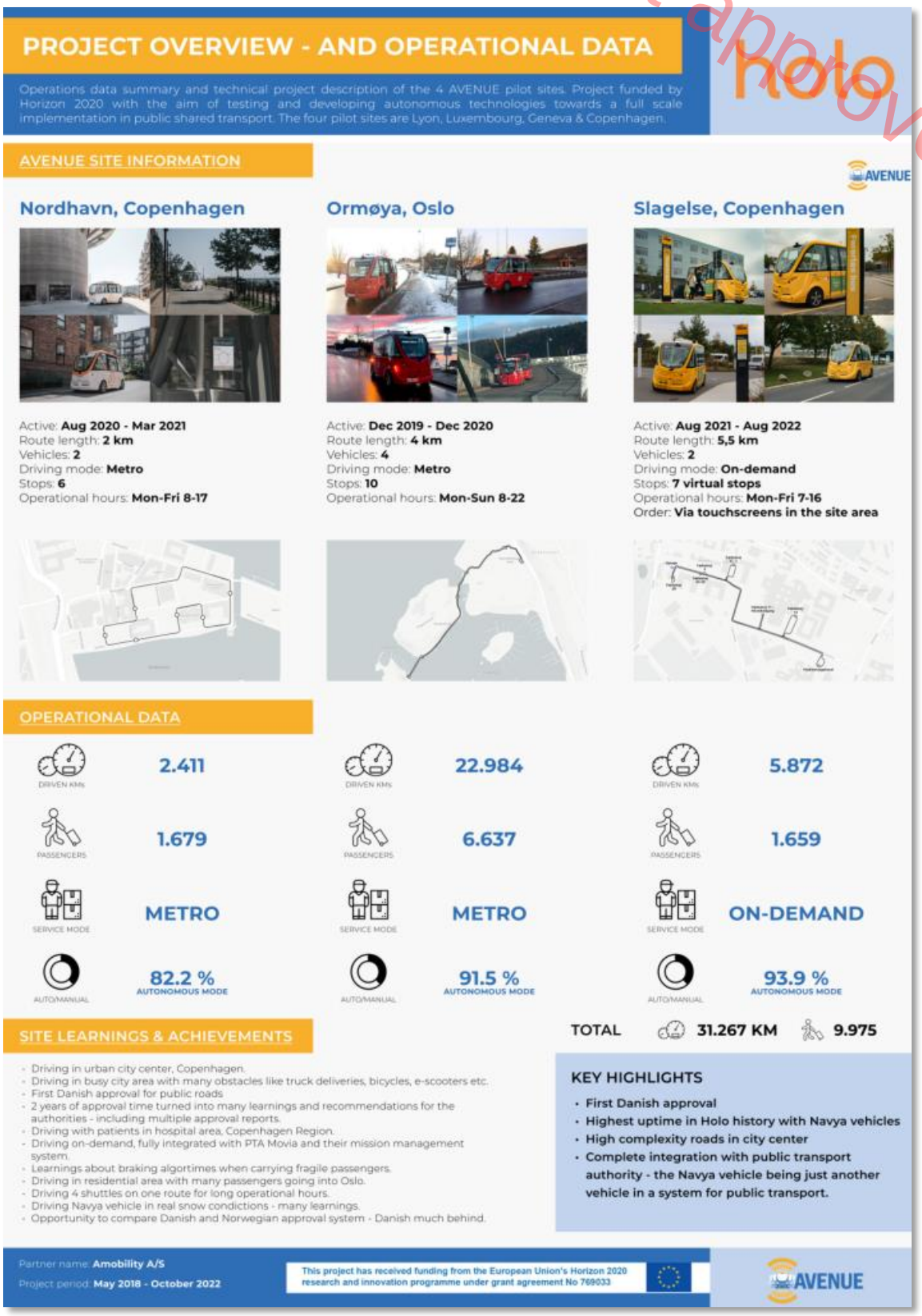


Figure 15: Leaflet « project overview and operational data » for the different demonstrations carried out by Holo

Figure 16: Leaflet « project overview and operational data » for the different demonstrations carried out by Keolis

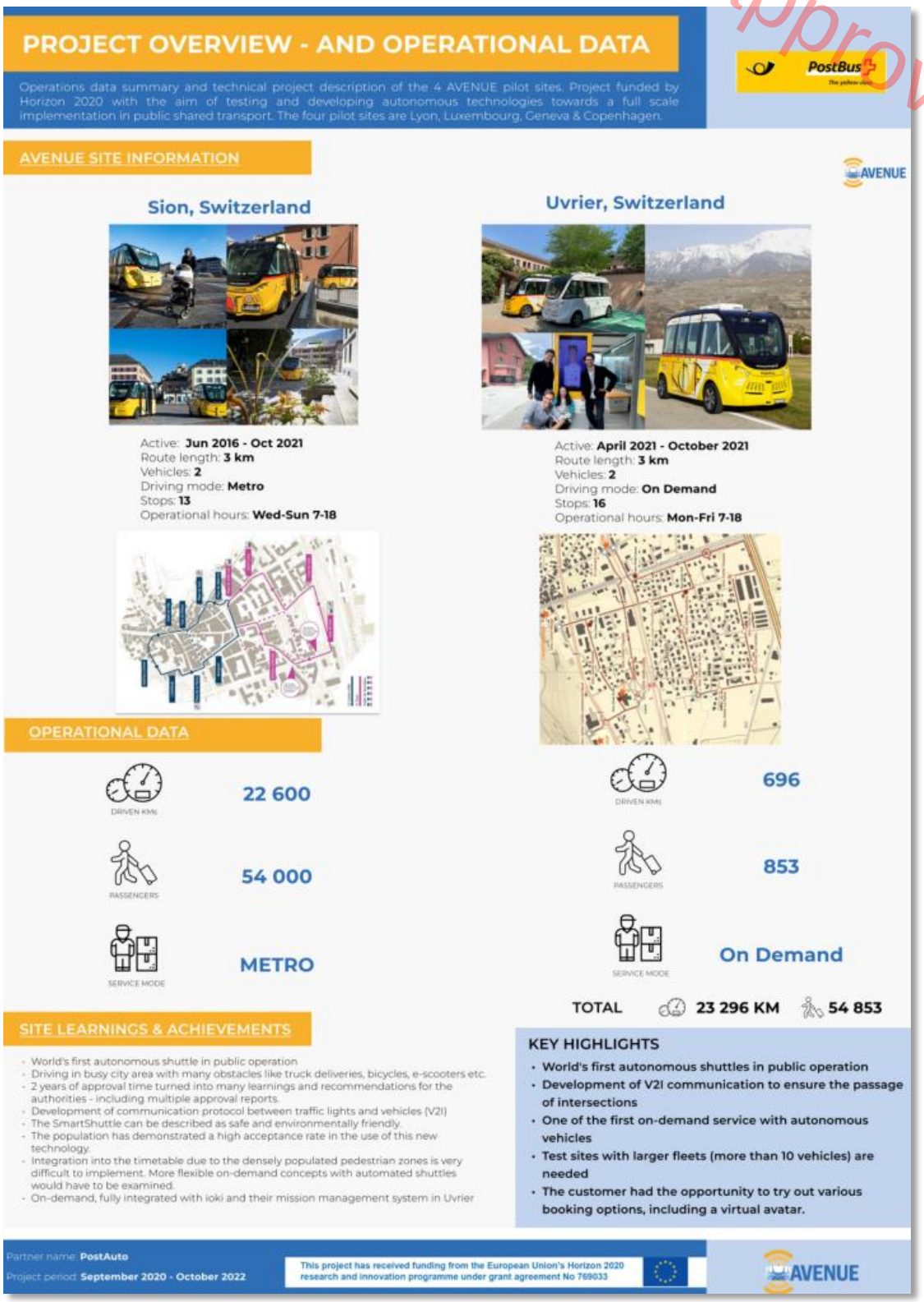


Figure 17: Leaflet « project overview and operational data » for the different demonstrations carried out by Post-auto

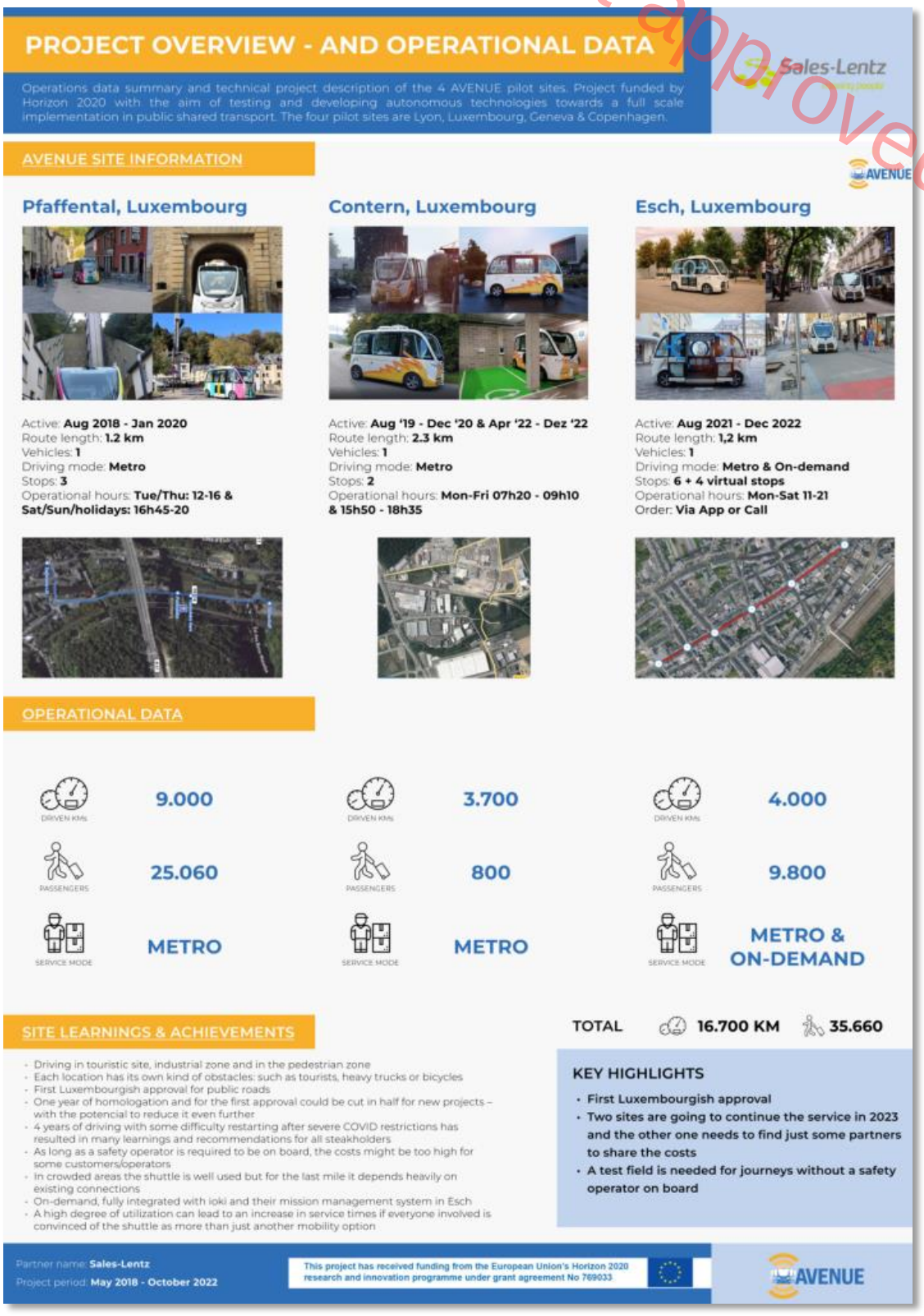


Figure 18: Leaflet « project overview and operational data » for the different demonstrations carried out by Sales-Lentz

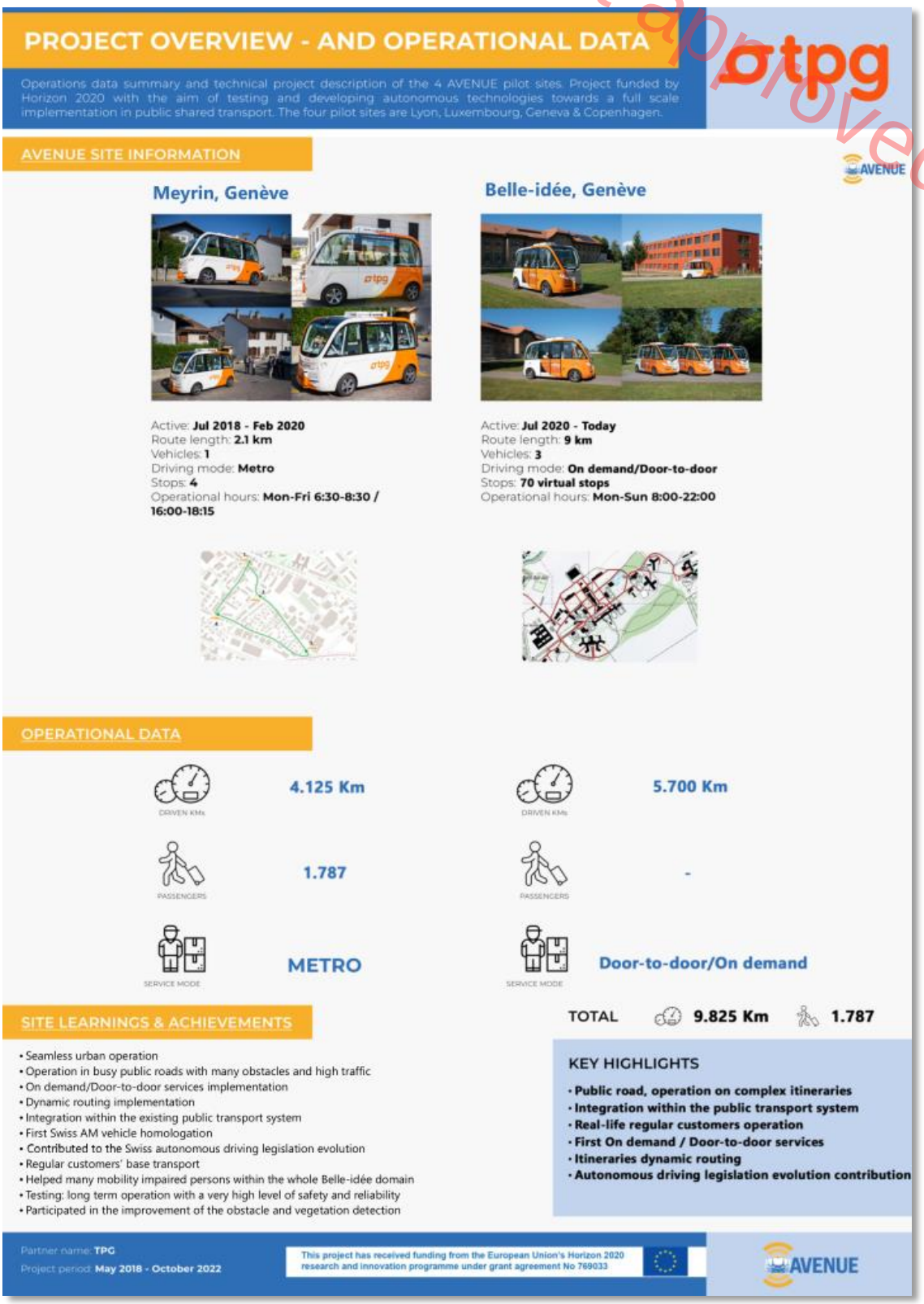


Figure 19: Leaflet « project overview and operational data » for the different demonstrations carried out by TPG

The various demonstrations' PTOs have also developed brochures and leaflets presenting the projects, explaining how the reservation system functions or giving the schedules of their services. Here is the list of these brochures:

- Parc OL flyer (Keolis Lyon)
- Carpostal Smartshuttle Uvrier flyer

Figure 20: Lyon Groupama stadium leaflet (side A)

Figure 21: Lyon Groupama stadium leaflet (side B)

Figure 22: Sion-Uvrier half fold brochure inner face

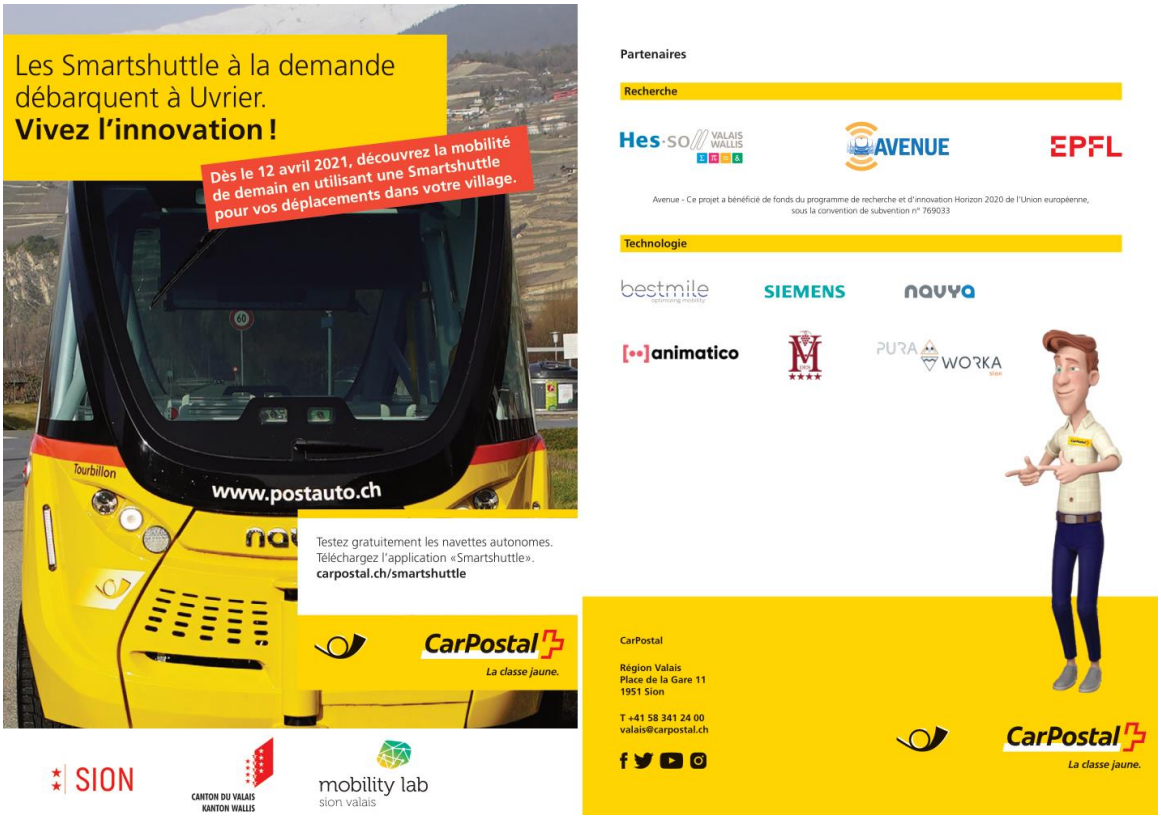


Figure 23: Sion-Uvrier half fold brochure outer face

2.3.3 Posters

A first AVENUE poster is produced in colour and in 103x186 cm format. It was used to inform about general objectives of the AVENUE project and have been displayed mainly within public events. An exemplar of the poster has also been placed in a visible place of the offices of each partner to disseminate the project activities towards other colleagues of the organizations and external visitors.

The first AVENUE poster follows the design and consensus of the main general information brochure.

Figure 24: General information Poster

During the course of the project, a second series of roll-up posters have been realised. They were placed in a prominent position in the stands of the various events on specific metal exhibition frames.

Figure 25: Expected results and site description posters

2.3.4 Newsletters and mailing list

The objective of the newsletter was to inform our target audiences about AVENUE project. The newsletter has been used once per year to provide an outline of the project activities and intermediate findings for that year. It also featured the events and partnerships initiatives relevant to the project. It was also sent to the newsletter subscribers and to AVENUE partners via the mailing list for further dissemination through their own channels. It was also shared via the dedicated project website and through the project's social media channels. It was possible for everyone to subscribe to this newsletter through the subscription form available on the website.

2.4 The Project Website

The AVENUE project website (https://h2020-avenue.eu) has undergone various changes, until reaching an elaborate form and a very extensive content. Its objective is to provide the public with information about the project so that they can appreciate the magnitude of the program, but also the advances of the project that are updated on a daily basis and finally the achievements that have been made possible, offering an easy overview of the major revolutions enabled by this European project. It also provides material to the press through its press kit.

The AVENUE website features:

- A detailed presentation of all the consortium partners as well as their respective roles in the project
- A description of all the demonstration and replicator sites
- The AVENUE project concept and approach
- The list of the project's main objectives (6 of them)
- The 13 main achievements (having met the above-mentioned objectives and also gone much further)
- A summary of the AVENUE recommendations
- A results summary section allowing visitors to see the results of the project in a nutshell (results are classified by theme: economic impact, environmental impact, social impact)
- Easy access to the public deliverables and thus to the detail of the results of the AVENUE project
- Easy access to project dissemination materials and tools
- Free access to the EASI-AV© software developed by the AVENUE teams to estimate the economic impact and viability of a potential AM deployment according to each specific local context. It also allows to estimate the total ownership costs and expected profit margin and to make comparative approaches on these different criteria. This tool is primarily intended for the various interested stakeholders for whom it is a tool of choice in view of the implementation of any AM services
- A dynamic display system of the different media coverage, news, events, scientific publications and a direct link to all these elements. We have also integrated a filtering feature that allows to display these elements by demonstration/replicator site but also according to the different social media source.
- Direct access to all the video contents but also to the webinar series
- Some links to various AVENUE social networks channels and other direct contact methods
- A newsletter subscription form

Figure 26: AVENUE Website homepage

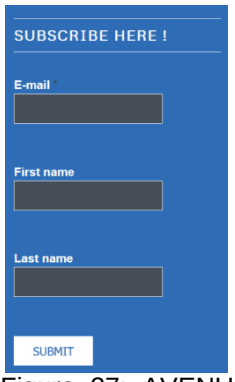


Figure 27: AVENUE Website subscription form

2.5 Social Media Channels

A strong social media presence ensured the project exposure to the largest possible audience. Social media has been used as a channel to promote other project channels and materials, but also to enable engagement with wider audiences.

Our social media activities are available on the deliverable D10.6.

2.5.1 Facebook page

The AVENUE Facebook profile has been employed in order to engage with a wide and diverse audience of individuals and receive their opinion as immediate feedback. Owing Facebook orientation, this channel was mainly intended to make the project more discoverable and accessible to non-scientific readers. The content of the page includes AVENUE findings, activities and other project related news, as well as images and visual material to engage the audience. It has been managed by UniGe and updated on a monthly basis and has 117 followers (M54). Our Facebook activities are available on the deliverable D10.6.

This Facebook page also highlights some links to the AVENUE website and various social media.

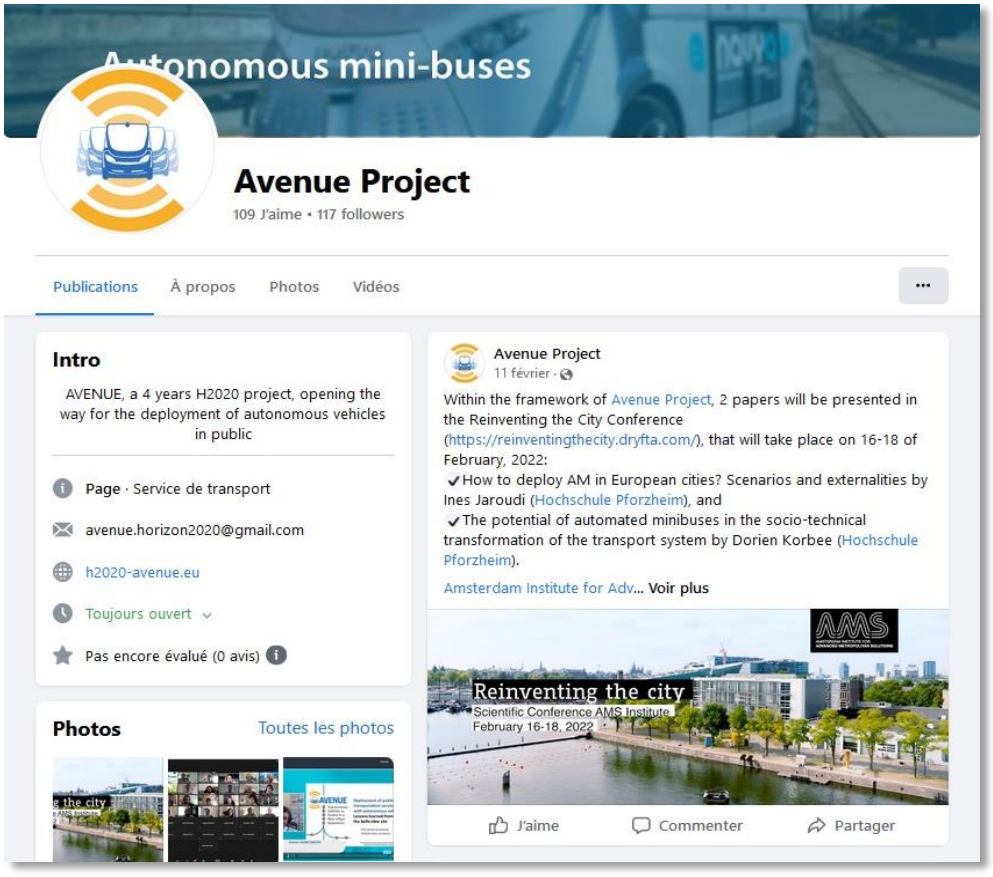


Figure 28: The AVENUE project Facebook page showing the follower's count

2.5.2 Twitter page

The AVENUE project Twitter account has been used throughout the project to ensure rapid dissemination of AVENUE project achievements and to communicate in real time about external events where AVENUE is represented and/or promoted. The AVENUE website's visitors are enabled to tweet updates and news immediately by using the tweet link, which is displayed on the website and we also provided answers to the private message inquires. Through Twitter, AVENUE findings have fed the public debate and have been presented to policy-makers in a direct way. The AVENUE Twitter has been updated on a weekly basis throughout the four and half years of the project and totals more than 300 tweets and 659 followers. This page also allowed to maintain a bridge with the public, to answer questions.

This Facebook page also highlights some links to the AVENUE website and various social media.

Our Twitter activities are available on the deliverable D10.6.

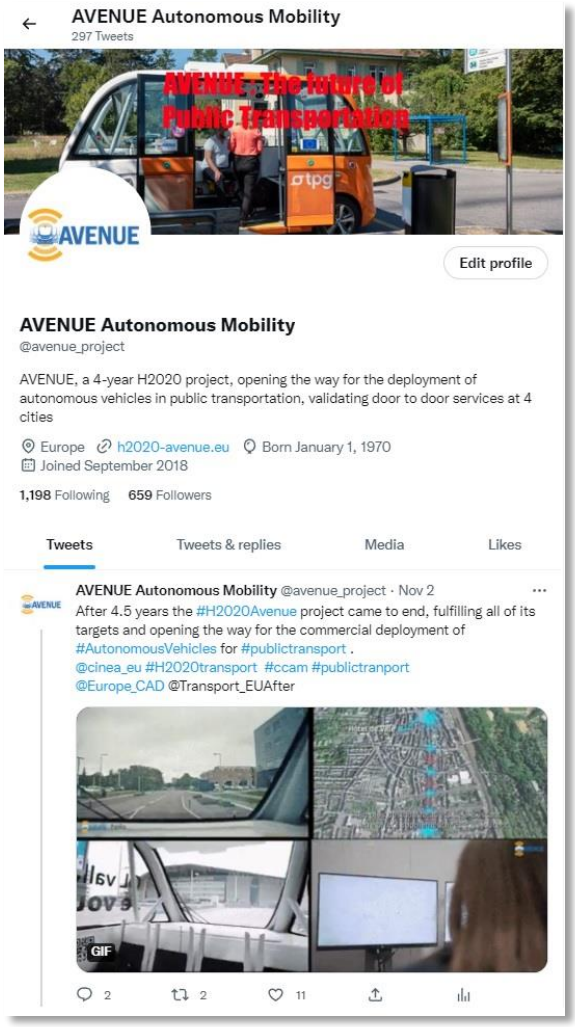
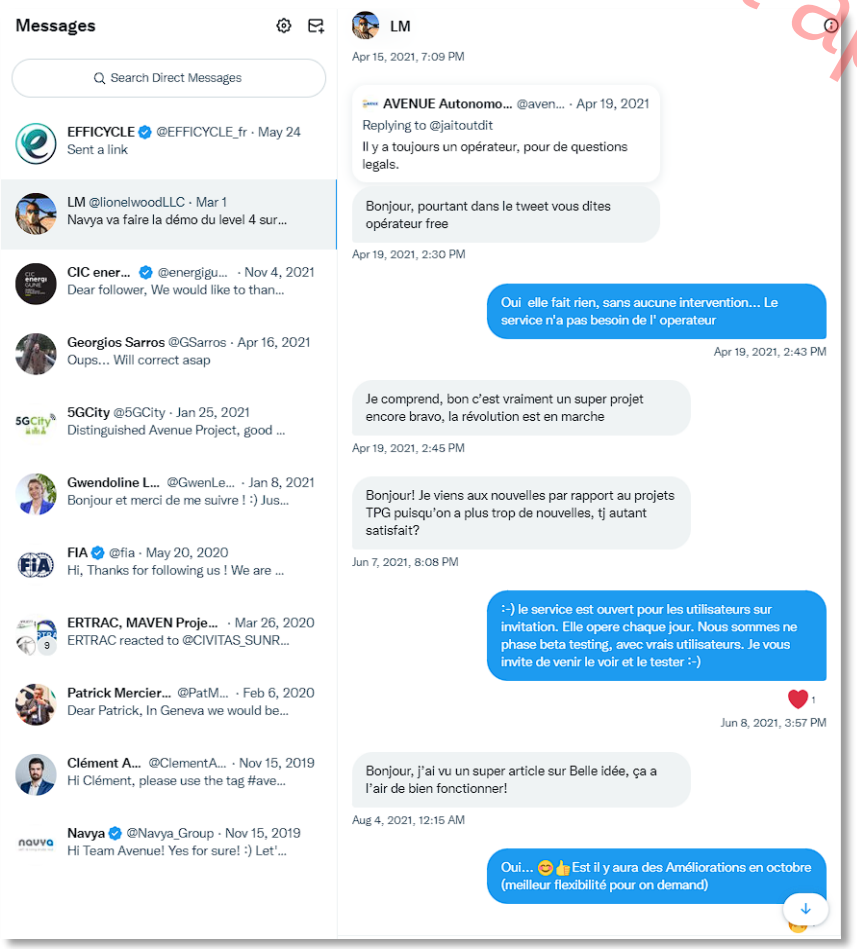


Figure 29: The AVENUE project Twitter page showing followers count and the last post



Discussion content:

-Hello, in the last tweet you say operator free

-Yes, the operator does nothing, it's without any intervention. The service does not need the operator

-I understand, well it's really a great project, congratulations again, the revolution is on the way

-Hello again! What are the news for the TPG project since we don't have much news, are you still satisfied?

-It operates every day. We are in beta test phase, with real users. I invite you to come and see and test it :-)

-Hi, I saw a great article about Belle-idée, it looks like it works well!

-Yes... There will be some improvements in October (better flexibility for on demand)

Figure 30: Excerpt from one of the many conversations with Twitter AVENUE project followers

2.5.3 LinkedIn

AVENUE partners shared news relevant to AVENUE through a LinkedIn profile. Owing the Twitter orientation this channel was intended to address a broader professional community of stakeholders (as identified in the target audiences) to promote project findings and ensure AVENUE sustainability upon project completion. The AVENUE consortium has gathered direct feedback from the audience through the sharing of news and promoting of the upcoming events. The LinkedIn profile has been updated by UniGe every two months and has a total of 442 followers. Our social media activities are available on the deliverable D10.6.

This LinkedIn page also highlights some links to the AVENUE website and various social media.

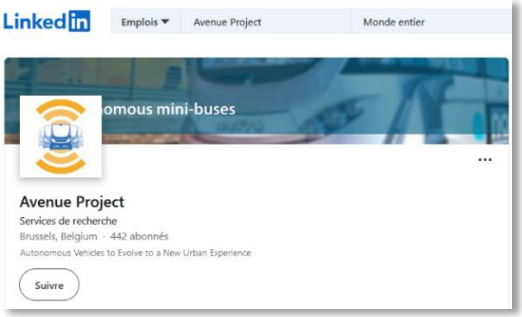


Figure 31: The AVENUE project LinkedIn page showing the follower's count

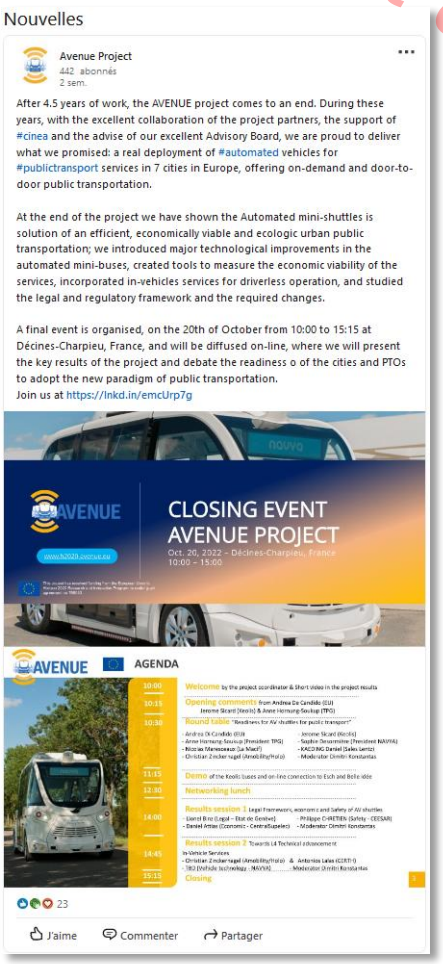


Figure 32: The last news-post published on the LinkedIn AVENUE page

2.5.4 Youtube

The short video clips are capable of explaining in an accessible way how autonomous vehicle technologies work and what the benefits for end-users can be. The AVENUE YouTube account has been serving as a channel for the publication of 20 videos presenting the project and the AM technology advantages and the various project's deployment. It has been updated very frequently by UniGe. Our Youtube activities are available on the deliverable D10.6.

The channel, totalizing more than 5'000 views (rewarding us of a Youtube achievement), and more than 120h of viewing, has been a great success and has maximized the awareness of the project.

Through this Youtube channel we were also able to answer questions from the public.

Our Youtube channel also highlights some links to the AVENUE website and various social media.

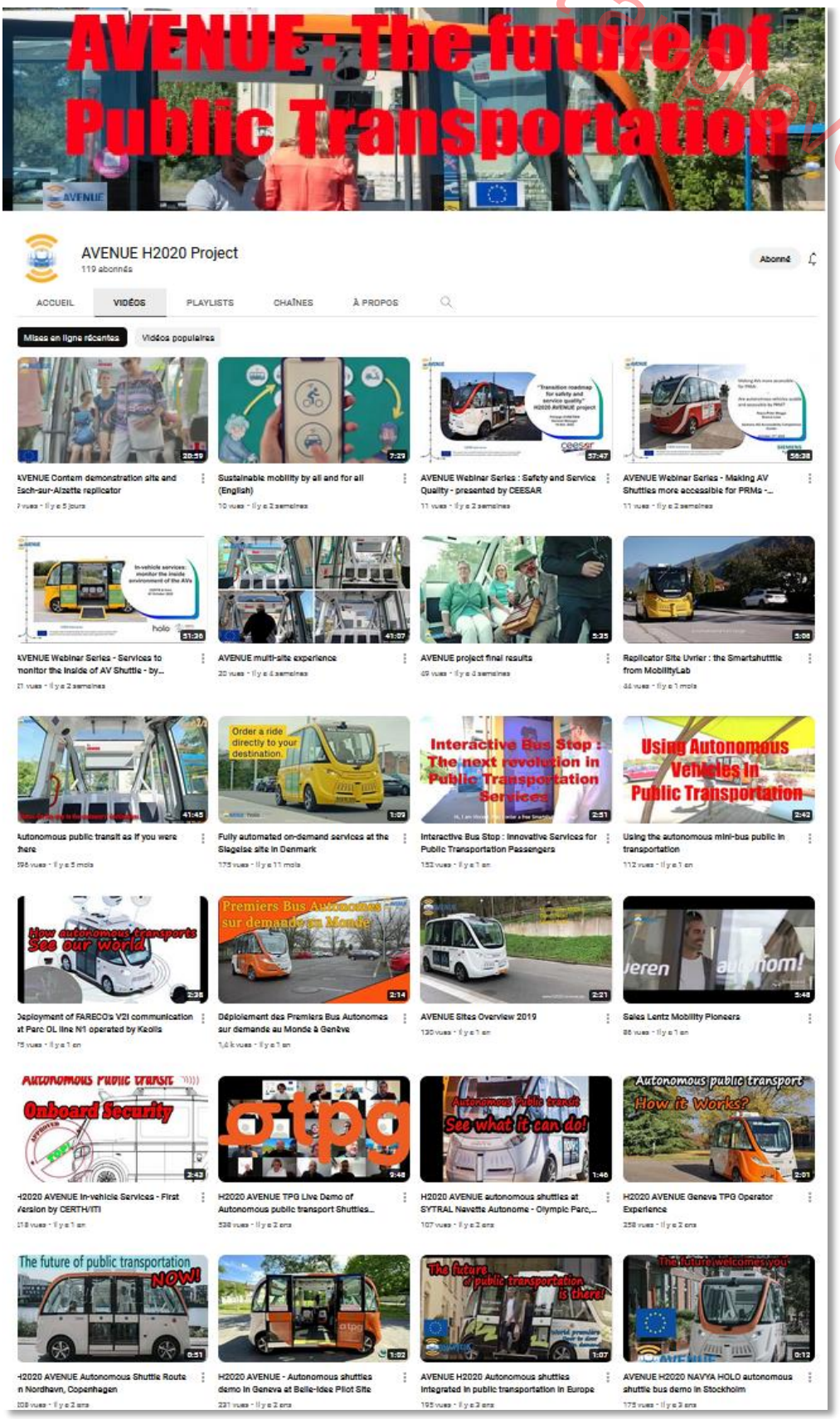


Figure 33: AVENUE project Youtube video page with all the video published by our teams

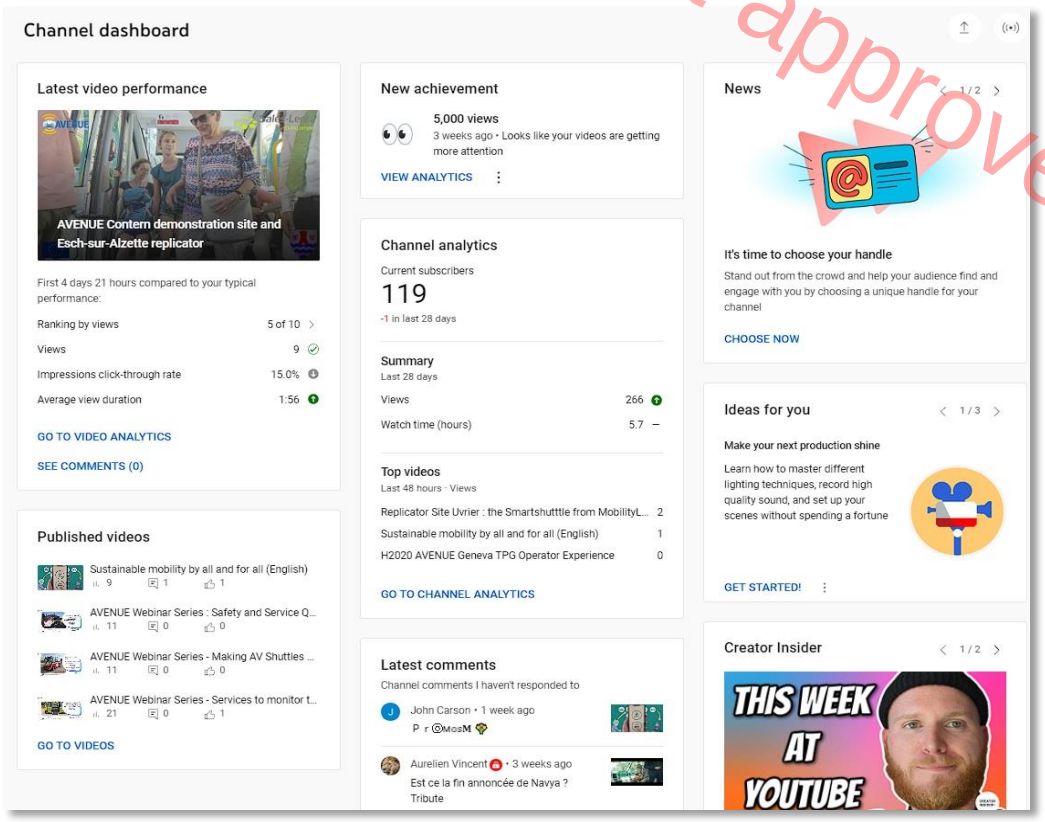


Figure 34: The Youtube dashboard page showing the total subscriber's count, our "Youtube achievements" and the latest video results and follower comments

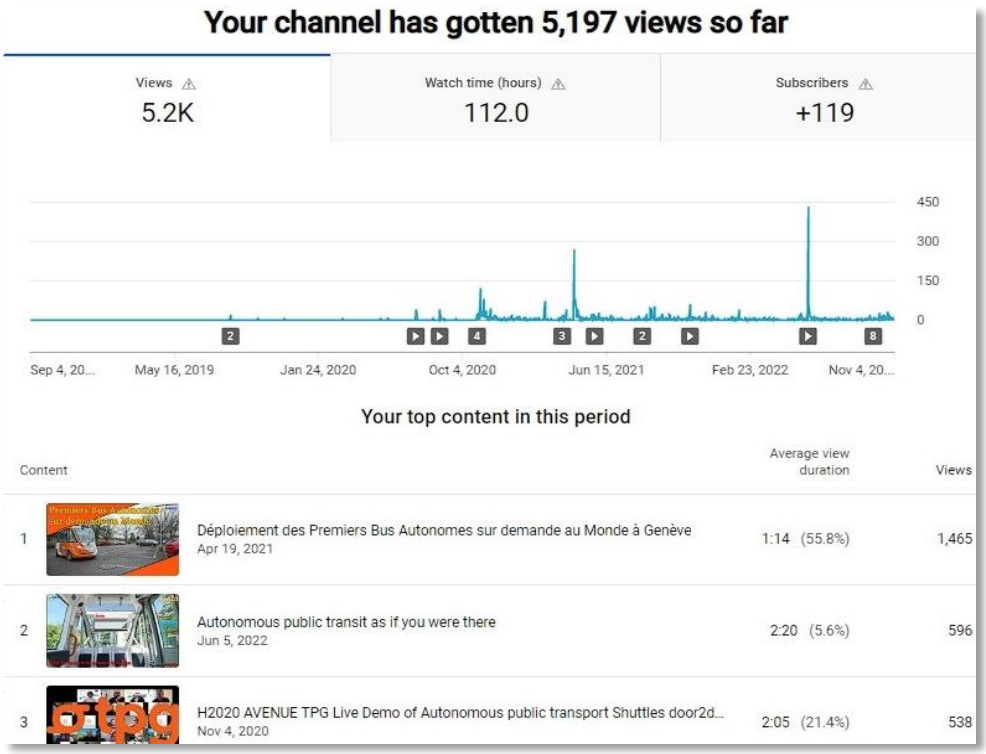


Figure 35: Youtube analytic with view count, total watching time, total followers and the number of views for our top 3 videos

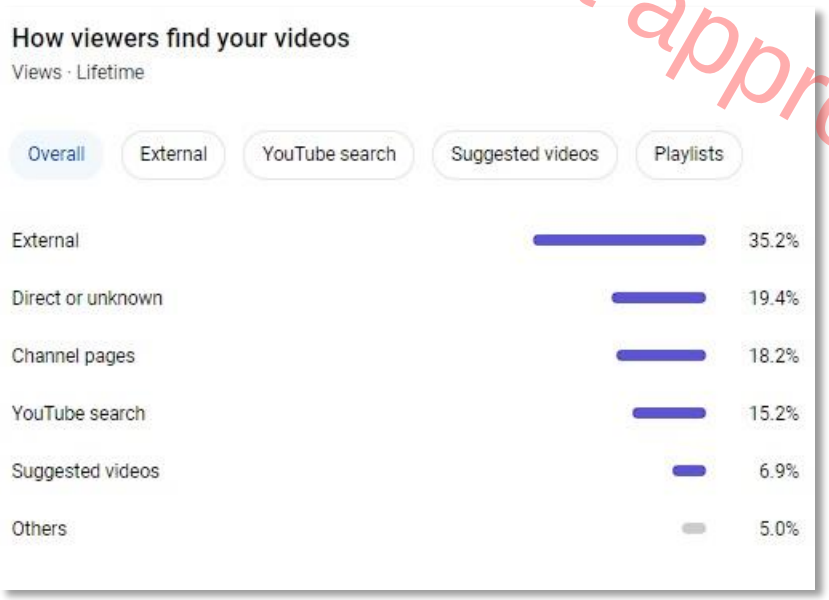


Figure 36: How the AVENUE Youtube channel viewers found our contents

This YouTube channel also allowed us to estimate the impact of the various other social media and to realize in a tangible way their success, indeed, only 6.9% of the views having been suggested by YouTube.

2.6 AVENUE project's video contents

Around twenty video contents have been developed by the AVENUE project teams. They aim to promote the AVENUE project and the advantages of the AM technology and the Door-to-door/on demand services and to facilitate their acceptance (as we have shown in the social impact assessment-D8.9 the fact of being informed of the existence of the AM technology facilitates this process).

These videos have been posted on the AVENUE project's Youtube channel and are also available on the AVENUE website. Some of these contents have also been projected on large screens during different events and during semi-annual general meetings.

Some videos were produced by the academic centres linked to the project (HSPF and UniGe):

- An animated video presenting the concept of autonomous public transport as imagined within the AVENUE project and showing that this technology can solve the problems currently faced by urban areas (pollution, congestion, accidents, parking problems).
- An AVENUE multisite on-board experience video: it is an edited/composite video of 4K footage that was captured on all the deployment sites using a material kit provided by the University of Geneva with precise instructions to ensure the quality and uniformity of the footage. The video is more than 40 minutes long.
- A final video, composed on the basis of footage from many other AVENUE video contents presents all the AVENUE project's results in a synthetic way and in a dynamic atmosphere.

- A video with multiple viewpoints/perspectives has been recorded at the Belle-Idée site. It shows a typical user's experience/journey starting from the reservation process until the arrival at the destination and this over several tens of minutes.
- Another on-board experience video but this time specific to the Luxembourg project (with Contern and Esch-sur-Alzette sites).

More video contents specific to the different demonstration/replication sites have been produced by the concerned PTOs whose titles are as follows:

- Autonomous bus in Nordhavn (by Holo)
- Timelapse of the autonomous shuttle route (by Holo)
- Holo autonomous bus demo in Stockholm (by Holo)
- Autonomous shuttle route in Nordhavn (by Holo)
- Launching service shuttle at Chalmers (by Holo)
- Sales Lentz mobility pioneers (by Sales-Lentz)
- Olympic parc video (by Keolis)
- Deployment of FARECO's V2I communication at Parc OL line n1 (by Fareco and Keolis)
- Déploiement des Premiers Bus Autonomes sur demande au Monde à Genève (by TPG)
- Using the autonomous mini-bus in public transportation (by TPG)
- Autonomous shuttles demo in Geneva at Belle-Idée pilot site (by TPG)
- AVENUE Geneva TPG operator experience (by TPG)
- Interactive Bus stop: innovation service for public transportation passengers (by Postauto)
- The smart Shuttle from mobility labs (by Postauto)

The COVID-19 pandemic various public restriction measures forced the general meetings to be organized virtually. To allow the team members to visit the different deployments as if they were there, some livestream footage with up to 8 parallel live video sources was presented. The images were first collected and assembled dynamically in a variety of arrangements by a specific server before being rebroadcast on YouTube on the fly so that everyone could see the activity of the AMs in real time. This required the use of 5G technology, a certain technical organization, specific hardware such as powerful smartphones for recording and transferring the footage, multiple types of mounts/holders, phone coolers and mobile power sources (the shuttles did not offer an available electric supply) but also a rather complex software arrangement (for the transferring, the footage arrangement and the final broadcasting but also for the live-face blurring process).

All these contents described above had a real dissemination, as they were seen more than 5'000 times on AVENUE's Youtube channel and also by hundreds of people during the different public events and AVENUE meetings.

Figure 37: Extract from the Youtube AVENUE channel's multisite on-board video «AVENUE multisite experience » (by TPG, Sales-Lentz, Holo, Keolis and UniGe)

Figure 38: Extract from the Youtube AVENUE channel's animation video of the AVENUE concept « Sustainable mobility by all and for all » (by HSPF)

Figure 39: Extract from the Youtube AVENUE channel's video « The smart Shuttle from mobility labs » (by Post-auto)

Figure 40: Extract from the Youtube AVENUE channel's video « Autonomous bus in Nordhavn » (by Holo)

Figure 41: Extract from the Youtube AVENUE channel's video « Sales Lentz mobility pioneers » (by Sales-Lentz)

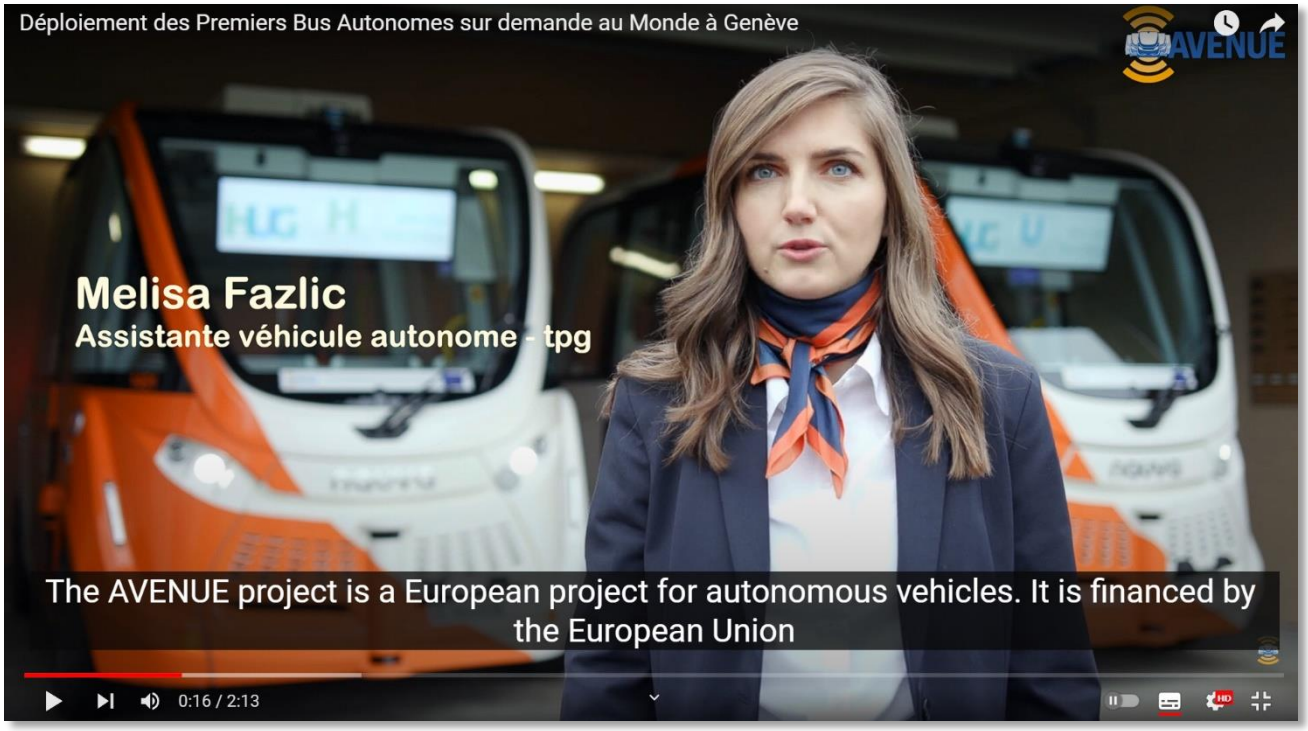


Figure 42: Extract from the Youtube AVENUE channel's video « Déploiement des Premiers Bus Autonomes sur demande au Monde à Genève » (by TPG)

2.7 Influencer contents

We invited some influencers on different AVENUE deployment sites to produce and diffuse some video contents presenting the project and underlining the advantages of the Autonomous Minibus model. Women and Men, these influencers are coming from very different backgrounds and are addressing to English, French, German and Hungarian languages speakers whose interests range from sustainable development to car styling and electric vehicles through science, lifestyle and high-tech. This allowed us to reach an extremely diverse audience.

Some macro-influencers, with a several million people audience, have allowed the AVENUE dedicated contents to almost reach 100’000 views per content. On the other hand, some micro-influencers did not allow us to reach such a large audience but have been selected for their specialization and the very high leverage they have on their audience, whose individuals also relay the information very strongly.

This operation was a great success, it promoted the project widely, expanded drastically its online visibility and introduced/familiarized more than 135'000 people to AM services and their benefits, encouraging trust and acceptance. Our analysis of the comments related to these influencers' contents showed that the opinions of those who attended one of the Youtubers’ video contents were significantly more favourable than those of the general population (see social impact assessment-D8.9 deliverable). Moreover, the fact that these contents generated a very large number of viewers' comments allowed us to answer them promptly and was therefore an excellent means of communication with the public. It also gave us the opportunity to highlights some links to the AVENUE website and various social media within the channels of these influencers (with a potential reach of 1,34 million people).

Channel	Title	Language	Release date	Followers	Comments	Views	likes
Dejlige Days	First autonomous shuttles on Danish streets	English	6 august 2020	1,05k	2	1396	43
Autogefuel	Where Autonomous Driving is already possible! Self-driving transport AVENUE in Geneva	English	1 august 2021	648k	25	32	185
Laurent Schmidt	Les véhicules autonomes SONT ENFIN LA !	French	27 august 2021	212k	577	27'851	1.7K
The choucroute garage	Un robot taxi en VRAI !	French	10 june 2022	77,5k	157	13'135	1,6K
Magyarósi Csaba	Kormány sincs benne: Ez a busz TÉNYLEG magát vezeti!	Hungarian	07 july 2022	375k	169	90'622	2,1k
Kaelbel	J'AI TESTÉ LES TRANSPORT EN COMMUNS DU FUTUR !	French	5 september 2022	11,4k	26	833	119
Valentin Möller	Traust du dich mit diesem Bus zu fahren?	German	15 september 2022	119k	12	1'504	124
Total	-	-	-	1,443mio	968	135'713	5871

Table 3: Influencers that promoted the AVENUE project, their content name and date of publication as well as the view count, the spoken language, the number of followers (potential reach) and number of comments.

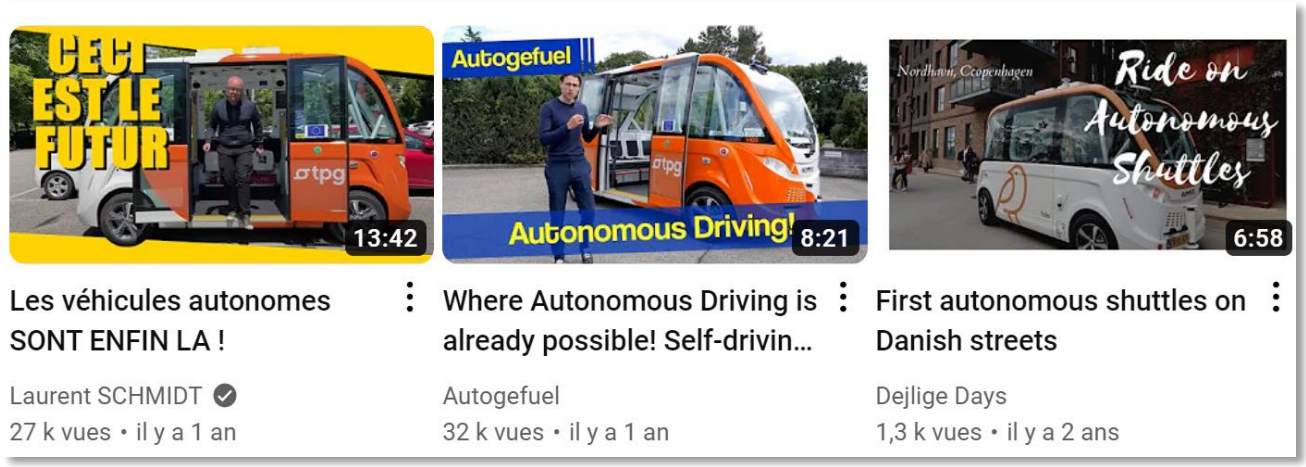


Figure 43: Extracted from the AVENUE Youtube influencers' video of Laurent Schmidt, Autogefuel, Dejlige Days

Figure 44: Extracted from the AVENUE Youtube influencers' video of Valentin Möller, Kaelbel, Magyarosi Csaba

Figure 45: Extracted from the Youtube influencers video of Choucroute garage

2.8 Public deliverables

All the AVENUE project's results are included in the different public deliverables composing the eleven WPs. They are publicly available on the AVENUE project website (https://h2020-avenue.eu/public-delivrables). Some of them are intended for a more informed/academic audience while others are much more accessible; a summary of these results, concise and understandable by all is also available in the result section of the website (they are classified according to whether they are of an economic, social or environmental nature).

2.9 Paper publication/TV and radio shows etc.

The AVENUE project was also featured in many publications in the print media and the scientific literature and has also been the subject of TV and radio shows. Several of the newspapers that promoted the project have a very large circulation (more than 500'000 daily units) and the TV and radio shows have been broadcasted on national prime time channels (RTL, France 3 region etc) which gave the project a massive visibility. These different media come from many European countries (Switzerland, France, Denmark, Sweden, Luxembourg etc.), which was very good in terms of diversification of our audience, which is an important point regarding our objectives. Some of the more local publications have also pushed the population to come and try the AM services set up on the different deployment sites.

Our TV/radio shows and paper media publications activities are available on the deliverable D10.6.

3 Tools and materials dissemination scope and conclusions

We estimate that the AVENUE dissemination tools and materials have reached millions of people, mainly through print media publications (newspapers, magazines) and TV and radio shows, but also through the Youtubers' video contents and all the other on- and off-line channels described in this deliverable. Indeed, this multiplicity of dissemination channels also highly contributed us to reach such a large and diverse audience.

However, it remains more difficult to estimate the exact impact of these dissemination materials and tools on the followers/viewers. Did they pay much attention to it? Did they relay the information a lot? Did it have an impact on their vision/opinion/acceptance? An overwhelming majority of the people reached by our communication tools and materials learned about the AVENUE project and the AM technology for the very first time, suggesting that they had a significant impact. We were also able to gauge the impact of the AVENUE Youtube influencers and determined, through the analysis of the comments linked to the content they produced for AVENUE and its comparison with the results of our general survey, that it was very substantial. We can also assume that the novelty of the project/subject means that numerous people who have been exposed to these different contents will be very inclined to talk about their findings around them.

In addition, the AVENUE project's dissemination tools and materials were not only used to inform about/promote the AVENUE project and the AM technology, but also to establish a dialogue with the general public, thus alleviating fears and increasing the perception of a need for such an innovative system but also the confidence and willingness to use these services.