



**DEMONSTRATION
OF AN AUTONOMOUS SHUTTLE SERVICE
WITH NO ON-BOARD OPERATOR**



First time in Europe!

**France, a window
to the future of
European mobility**



Yvelines
Le Département





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Press Release

Les Mureaux, France, May 26, 2021

[AUTONOMOUS MOBILITY]

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The NAVETTY pilot project is autonomous shuttle service located on a site representative of a real urban area. Launched in May 2021, it will switch to a service with no on-board operator in 2022.



The EZ10 Navetty autonomous shuttles are made by EasyMile
©ArianeGroup



Aerial view of ArianeGroup Les Mureaux site
©Mairie des Mureaux / Philippe Graindorge

A three-year demonstration called NAVETTY is starting on the ArianeGroup industrial French site in Les Mureaux (78), west of Paris. The NAVETTY R&D project is supported by VEDECOM - R&D institute for energy transition in mobility-, ArianeGroup, Transdev Autonomous Transport Systems, EasyMile and the Yvelines County Council (CD78), which has strongly invested for make this project a success. The aim is to deploy a fully autonomous mobility service with no on-board operators, using electric and autonomous shuttles, on a site representative of an urban area. The service will be distantly supervised via a supervision software from a local OCC¹, relying on connected road infrastructure. This step is a key and unique milestone in Europe. It will validate the technology and business model, which are critical to allow for the future deployment of a large-scale service that will start on Seine valley public roads.

NAVETTY will rely on five R&D axes. The first is the main issue of the project: after Versailles Satory's open road experimentation with extended perception by autonomous shuttles including an on-board operator, the goal is to switch to a mode with no on-board operator and a distant supervision. The other four are: cybersecurity,

¹ OCC : Operations Control Center.

operational safety of the mobility system, smart and connected infrastructures and acceptability of the ecosystem.

For this large-scale demonstrator, the choice of the ArianeGroup site in Les Mureaux west of Paris, which covers an area of 227 acres, is ideal as it brings together all the complex elements of an urban area: road and pedestrian traffic, roundabouts, intersections and parking lots. This environment lends itself perfectly to preparing future transition to an urban scale. This autonomous shuttle service has also been designed to meet the needs of ArianeGroup to improve access to its facilities.

Distant supervision: a core technology for the switch to full autonomy

A new technology has been required to implement a mobility service of autonomous vehicles both with no on-board operator and offering the required service quality and safety levels. This technology is a software called *Autonomous Vehicles' Supervision* and is developed by Transdev Autonomous Transport Systems. It offers three main functions: fleet management, system monitoring and customer experience.

Within the OCC located on site, supervision operators from Transdev Ile-de-France will be present to supervise the service in real time.



Example of Transdev Autonomous Transport Systems Supervision workstation ©Jean-Brice Lemal



Example of a roundabout that the autonomous shuttles will be able to manage

Cybersecurity and the operational safety of the mobility system: prerequisites

Cybersecurity is a central focus for the research carried out in this project. The challenge is to guarantee the safety of the entire mobility system and prevent any malicious acts.

Indeed, current autonomous vehicles include on-board technologies dedicated to perception, supervision and trajectory decisions. These faculties are made possible by sensors, processing and computing units which must be totally secured for passenger transportation.

Autonomous management of roundabouts: a technical milestone

The connected and intelligent infrastructure, including roundabouts and crossroad management, is developed by VEDECOM. The project's aim is to improve the efficiency of the shuttles while crossing a roundabout. The infrastructure will be able to analyze the activity of vehicles and users while entering and exiting the roundabout. It will also be able to transmit authorizations to the shuttles, in order to allow better management of the crossing, with fluidity and safety: authorization or prohibition to enter, proposal of an optimal trajectory.

Acceptability of the ecosystem: a key issue to validate the model

Acceptability is a key issue to maximize the success of this unprecedented autonomous mobility service. This work package, carried out by VEDECOM, will consider the opinions of end users but also players in the ecosystem whose actions may have a direct or indirect impact on the service's progress.

Several use cases will be studied, from the ArianeGroup industrial site to train stations and the *Les Mureaux* Campus, within urban and suburban areas

In parallel to the R&D work, several use cases will be studied to prepare the deployment of autonomous shuttles in the Yvelines territory.

Use case 1: Fully autonomous shuttle service with no on-board operator, on an industrial site representative of an urban area.



The first use case is an autonomous shuttle transport service on the ArianeGroup site in Les Mureaux. This site specializes in project management and major civil and military space programs including the development Ariane 6.

The service will run for three years starting in 2021. The objective is to remove the on-board operator from 2022. This site's surface area (50 buildings spread over 227 acres) and attendance (2,700 people) are comparable to those of an urban district, making it an ideal place of demonstration.

Use case 2: "Last mile" autonomous shuttle service connecting a train station to an industrial site.

Another route will be studied and experimented during the project, for a limited time, in cooperation with the Public Transport Authority. This route will connect *Les Mureaux* train station to the ArianeGroup site, which is just over a mile from the station.

Use cases 3 and 4: Autonomous mobility services in urban and suburban areas.

Two other routes will be studied to assess the feasibility conditions for setting up an autonomous shuttle service in urban and suburban areas. Use case 3 will be between *Les Mureaux* campus and *Les Mureaux* train station. Use case 4 will be between *Clairières de Verneuil* train station and the ArianeGroup site. The *Les Mureaux* campus, a hotspot for innovation in the Greater Paris region, attracts significant flows of people between the public transportation stations and the ArianeGroup site. In addition, the flow between *Clairières de Verneuil* station and the ArianeGroup site is particularly dense at rush hour with most journeys currently made by car.



NAVETTY, a partnership project in the French Yvelines territory, west of Paris

Yvelines territory, west of Paris, is the leading County in France for the automotive industry. The department Council has supported the VEDECOM R&D institute since its creation, through funding of €20 million for its programs dedicated to innovative mobility (including low-carbon mobility, and autonomous vehicles). Yvelines is the institute's second public funder after the National Research Agency (ANR). With this demonstration, the Yvelines department confirms its support for the industrial redevelopment of the Grand Paris Seine & Oise area. It also strengthens its investment policy in mobility projects in the area (budget of €500 million dedicated to major public transportation projects including railways and road infrastructure). Beyond the technological aspect of the project, the Yvelines department also intends to support the blending of know-how between the space and automotive industries: ArianeGroup's expertise in complex systems together with mobility players such as VEDECOM, Transdev Autonomous Transport Systems and EasyMile. Numerous companies in aeronautics, technology and automotive are located in the territory. Eventually, the aim is to strengthen the links between all of them.

"The Yvelines is a region of innovation and the launch of this experiment reasserts our desire to develop innovative and sustainable mobility in the department. I am very glad of this new impulse between industry and research. Being at the service of the Yvelines people, the NAVETTY project will prepare for a revolution in their daily life", said Pierre Bedier, President of the Yvelines Council.



NAVETTY responds to **VEDECOM's** ambition to develop breakthrough technologies and a transversal vision of new uses, in cooperation with major industrial players and through concrete projects for the community. It devotes more than a third of its activity to R&D on autonomous and connected vehicles and another third to vehicle electrification. It has developed an interdisciplinary expertise in vehicle automation, as can be seen with a number of first scientific steps in France and in Europe, such as the first Level 4 autonomous vehicle demonstration in Europe on an open road (7 km) in Bordeaux in 2015, or the first demonstration of autonomous on-demand services with no driver, with customer interface and remote supervision, in the border area, in Strasbourg in 2017. As a result, it actively contributes to the French Strategy on Autonomous Vehicles. In November 2020, it launched, with its partners, the first global barometer on the acceptability of autonomous vehicles.

For Philippe Watteau, Chief Executive Officer, "this project supports a dual stake, both technological and social: accelerating the transition from applied research on electric and autonomous vehicles to operational implementation; provide real services to populations in remote areas where traditional transport costs are too high. VEDECOM will also fully play its

role there: a role of public/private federator, and a support role for the economic development of French industries."



Setting up of the NAVETTY project

The project, led by VEDECOM, is supported and financed by four partners through a consortium agreement between VEDECOM, ArianeGroup, Transdev Autonomous Transport Systems and EasyMile.

The Yvelines County is providing a major support of € 2.5 million to the project, making it the main funder.

ArianeGroup will host the experiment at *Les Mureaux* site, located in the Yvelines territory, to support the autonomous mobility research ecosystem, and to help answering mobility and carbon footprint issues. In addition to the first and last kilometres interconnection to train stations, the project should facilitate the smoothness of employee and visitor flows between buildings and reduce the use of individual vehicles on-site. The assessment of this pilot case will help studying a larger scale deployment at other ArianeGroup sites.

"Technological innovation and environmental responsibility are at the heart of ArianeGroup's space expertise. As the European leader in access to space, we contribute daily to improving life on Earth, and it is therefore both a source of pride and an evidence to make our site available for this experiment", explained Hugues Emont, director of the ArianeGroup Les Mureaux site.



Transdev Autonomous Transport Systems is an integrator of autonomous transport systems, including supervision, autonomous vehicles and connected infrastructure. Transdev Autonomous Transport Systems provides technological tools and engineering services to local operators and cities, for the day-to-day operation of large-scale autonomous mobility services. Thanks to Transdev Autonomous Transport Systems, Transdev is leader in the operation of autonomous mobility services, with more than 3.5 million people transported in shared autonomous vehicles around the world.

"This new project will allow us, together with our partners, to reach a significant new step in the development of autonomous mobility and the preparation of an efficient economic and social model. We are convinced of the central role of supervision to operate autonomous mobility services with no on-board operator, and we are proud to experience it soon on the ArianeGroup Les Mureaux site", said Patricia Villoslada, Executive Vice-President of Transdev Autonomous Transport Systems.



With globally recognized experience in autonomous mobility solutions, **EasyMile** provides the shuttles necessary for the implementation of the project and the associated services. Since the very first day, EasyMile has been working to develop safe and efficient solutions to deploy autonomous Level 4 vehicles. The majority of the more than 300 deployments made by EasyMile with its EZ10 shuttle have been carried out on open roads, but local regulations around the world require the presence of a security on-board operator. Therefore, EasyMile is particularly interested in testing and improving the deployment and management of a fully driverless autonomous shuttle in a complex environment representative of an urban area.

"My vision for autonomous vehicles is that autonomous public transport is coming soon. It will arrive long before driverless cars and taxis. The relative simplicity of a transit service makes it ideal for autonomous technology," says Gilbert Gagnaire, Founder and CEO of EasyMile. "Today, with this unique project, we are taking our technology to the next level. We will be able to experience a service with no on-board operator in a realistic environment, which paves the way to new mobility solutions for future, similar applications."





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About partners and supports

ABOUT VEDECOM

The VEDECOM Institute is a public-private partnership foundation for the Energy Transition (French ITE) dedicated to sustainable and innovative mobility, more environmentally-friendly, autonomous and with improved sharing. It is missioned by the French State to support technological innovation and French industry. Based on an unprecedented collaboration more than 50 players, it gathers academic establishments, local authorities and private actors involved in mobility evolution: automotive, transport and mobility, logistics, road infrastructure, telecommunications, energy, aeronautics and defence, digital services and simulation, insurance. This trusted third-party central role helps its members to accelerate together innovation and the deployment of new solutions. Threw three multidisciplinary R&D axes - electrification, connected and automated vehicle, new mobility and energy solutions – VEDECOM brings a systemic vision of the vehicle, its environment and the deployment of new solutions. Created in 2014 as part of the "Investing in the Future Programme". VEDECOM is contributing to the "Self-driving Vehicle Plan" that forms part of the New Industrial France project (NFI). VEDECOM has 500 publications and 80 theses to its credit, as well as 2,500 persons trained as part of its training programme. With an annual budget of €22, it has 180 employees. **For more information:** www.vedecom.fr

ABOUT ARIANEGROUP

ArianeGroup is lead contractor for Europe's Ariane 5 and Ariane 6 launchers, responsible for design and the entire production process, including marketing by its Arianespace subsidiary, as well as for the missiles of the French oceanic deterrent force. The joint venture, equally owned by Airbus and Safran, employs around 7,600 highly qualified staff in France and Germany. ArianeGroup develops and supplies innovative, competitive solutions for civil and military space launchers, with expertise in all aspects of state-of-the-art propulsion technologies. ArianeGroup and its subsidiaries enjoy a worldwide reputation as specialists in the field of space applications equipment and propulsion, and their expertise also benefits other industrial sectors. Group revenues in 2020 amounted to €2.7 billion.. **For more information :** www.ariane.group

ABOUT YVELINES COUNTY

The Yvelines county council is a local institution serving nearly 1.4 million inhabitants spread over 259 towns. It provides support for each and every Yvelinois throughout the different stages of life. Its main structuring projects are : social support, regional planning, mobility and education through middle schools. The Yvelines county council works to improve the daily lives of Yvelinois through its council meetings made up of 42 counselors and its 3 800 employees spread across the county. In 2019, the County has invested 420 million € (287 €/inhabitant). The main investments concern infrastructures and public transport, middle schools, solidarity and social actions, territorial attractiveness and urban development projects. **For more information:** www.yvelines.fr

ABOUT TRANSDEV

As an operator and global integrator of mobility, Transdev – The mobility company – gives people the freedom to move whenever and however they choose. Transdev is leader in the operation of autonomous mobility services with more than 3.5 million passengers transported worldwide. To achieve this, Transdev relies on Transdev Autonomous Transport Systems (ATS), a dedicated expert entity developing the necessary technological tools and engineering services for the daily operation of shared autonomous vehicle fleets, for public or private transportation services.

Transdev provides 11 million passenger trips everyday thanks to efficient, easy to use and environmentally-friendly transportation services that connect people and communities. Transdev's approach is rooted in long-term partnerships with businesses and public authorities, and in the relentless pursuit of the safest and most innovative mobility solutions. We are a team of people serving people, and mobility is what we do. Transdev is jointly held by Caisse des Dépôts Group (66%) and the RETHMANN Group (34%). In 2020, with 83,000 employees in 17 countries, the Group generated total revenues of 6.75 billion euros.

For more information: <http://www.transdev.com>

ABOUT EASYMILE

EasyMile provides software and complete solutions for driverless mobility and goods transportation. It partners with blue-chip manufacturers to autonomize their vehicles with award-winning technology built on safety-by-design, ready for deployment today, with clear client benefits. It's people mover solution, the EZ10, is the most-deployed driverless shuttle in the world connecting transport in both private and public locations. For material handling, TractEasy is a tow-truck solution optimizing supply chains at factories and industrial sites. Since 2014, the company has become known for quality delivery and real-world deployments. EasyMile's proven technology has already driven autonomous vehicles in 300+ locations in more than 30 countries. EasyMile benefits from investors who are also technical partners: Alstom, Continental and Bpifrance. This unprecedented combination not only provides solid funding but also a powerful technology roadmap. EasyMile benefits from investors who are also technical partners, Alstom and Continental. They are joined by financial shareholders Bpifrance, Searchlight Capital Partners, L.P., McWin and NextStage AM. This unprecedented combination not only provides solid funding but also a powerful technology roadmap. **For more information:** www.easymile.com

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Photo and video kit on request