



Idea, Snapshot, Perspectives, and Lessons Learned for Autonomous Driving

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Robotaxis are no longer a vision of the future – they are real. It's time for the “European Way of Autonomous Mobility”.

Introduction

01

Autonomous driving is on the rise globally with the potential to improve traffic safety, sustainability, and efficiency. However, the progress seems to have stalled: Six years after the widely anticipated diffusion of autonomous vehicles, they still remain a rare sight in streetscapes.

While well over 100 autonomous vehicle (AV) pilot projects have been initiated in Europe (Connected Automated Driving Europe, 2026; Kelkar et al., 2026), they are currently only available to the public in select pilot regions. In response, the United Nations has launched global regulations with harmonized safety standards to incentivize the rapid, scaled, safe, and unified development of autonomous vehicle technologies and services (United Nations Economic Commission for Europe, 2026). The situation in the United States and China is markedly different: In March 2026, the U.S. robotaxi provider Waymo recorded over 500,000 paid rides per week across ten cities (Korosec, 2026). Chinese counterpart Pony.ai is on the verge of large-scale commercialization in its home market: In the metropolises of Guangzhou and Shenzhen, the company has reached per-vehicle break-even, i.e., revenue covers per-vehicle costs (Pony.ai, 2026). However, several European pilot projects have successfully demonstrated the capabilities of AVs and are gradually moving to AV services at a larger scale. As an example, MOIA, a ride-pooling provider that is part of the Volkswagen Group, has entered pre-series production of its AVs and has announced expansion plans from Hamburg to Berlin, Oslo, and Los Angeles (see page 12).

Now that robotaxi providers from the U.S. and China are entering European markets – intensifying competition – and local AV initiatives are gaining momentum, the question arises: what role will this new form of mobility play in Europe? This report provides a snapshot (as of summer 2026) of the state of robotaxis in Europe. It explores the purpose underlying the launch of robotaxis and examines **three key building blocks**:

- The robotaxi **offering**, including key initiatives, state-of-the-art technologies, and ecosystems
- The **conditions** necessary to operate robotaxi services
- The perception of robotaxis and usage intentions among (potential) **users**

Drawing on the perspectives of thought leaders, the report derives action recommendations for autonomous driving in Europe. It thereby paves an unambiguous path for the “European Way,” contributing to the rapid, widespread, and sustainable implementation of robotaxis.



Copyright: MOIA

Idea

02

TERMINOLOGY

01 Autonomous vehicle

Autonomous vehicles are capable of self-driving, without human intervention, relying solely on sensors and software-based processing. Depending on how many functions the vehicle can perform and in which traffic situations, it falls into one of six levels of automation defined by the Society of Automotive Engineers International (SAE International, 2021). Table 1 presents the six levels of automation and highlights how they differ from one another. Since the SAE levels are defined mainly by legal responsibility rather than technical capability, manufacturers often use informal labels like “L2+” or “L2++” for

Level 2 systems that offer more advanced features (e.g., hands-off driving) without crossing into the higher liability obligations of Level 3. At the lower levels of automation, the driver retains control of the vehicle at all times. The vehicle assists in specific situations, such as lane-keeping assistance on highways or adaptive cruise control in traffic jams. At higher levels of automation, by contrast, control lies primarily or exclusively with the vehicle, and humans take over driving tasks only if necessary. Thus, higher levels of automation allow human drivers to take their hands, eyes, or even their attention off the road, either temporarily or permanently. To date, most modern passenger cars operate primarily at Levels 1 and 2. First production models, such as the Mercedes S-Class (2023 model), have reached Level 3 and can fully take over driving tasks on the highway under certain conditions (Mercedes-Benz, 2024).

Level	0	01	02	03	04	05
	HANDS-ON / EYES-ON		HANDS-OFF / EYES-ON	HANDS-OFF / EYES-OFF		
	The human operates the vehicle.			The human does not operate the vehicle when the automated driving functions are active.		
What does the human in the driver's seat do?	The human controls the vehicle and constantly monitors the assistance systems.			When prompted by the system, the human must take over control.	These driving functions do not require the human to take over.	
What does the vehicle do?	Warning systems and brief support	Support while steering or braking/accelerating	Support while steering and braking/accelerating	The system drives only under certain conditions, e.g. on highways, in parking facilities, in traffic jams, or in specific zones.		The system drives under all conditions.
Examples	Automatic emergency braking Blind-spot assistant Passive lane-keeping warning system	Active lane-keeping assistant or Adaptive cruise control	Active lane-keeping assistant and Adaptive cruise control	Traffic jam assistant	Local self-driving taxis Pedals and steering wheel optional	Like Level 4, but available everywhere and at all times.

Table 1: Levels of automated driving (own illustration based on SAE International, 2021)

02 Robotaxi

A robotaxi is an autonomous passenger vehicle, usually operating at Level 4, i.e., fully self-driving within a pre-defined service area, the “Operational Design Domain” (ODD). Robotaxis transport one or more people on demand. Just like in a taxi, the travelers are therefore “simply” passengers.

03 Roboshuttle

Similar to robotaxis, roboshuttles are also highly automated vehicles used for passenger transport. These two types of autonomous vehicles are distinguished by their route selection: Robotaxis can travel any route within their ODD to transport passengers from their starting point to their preferred destination. In contrast, roboshuttles follow pre-determined routes with designated stops where they pick up and drop off passengers (also referred to as “PUDOs”).

Roboshuttles are therefore similar to today’s public transport services with fixed stops. Depending on the service design, roboshuttles can either be employed to transport passengers on demand like robotaxis (see ride-pooling use case) or – like public transit – to follow a fixed schedule.



Picture: Pexels

USE CASES

There are several potential use cases for robotaxis and roboshuttles, both private and commercial, including transporting individual passengers or shared rides with multiple passengers. Figure 1 illustrates five possible use cases, which are elaborated in the following sections. Given substantial cost estimates exceeding 200,000 U.S. dollars per vehicle (Riggs & Richardson, 2024), the focus is currently on commercial robotaxi fleets offering services similar to those of Uber, Lyft, or MOIA. As costs decline, it is conceivable that robotaxis are also purchased and used by private individuals in the future (see page 24).

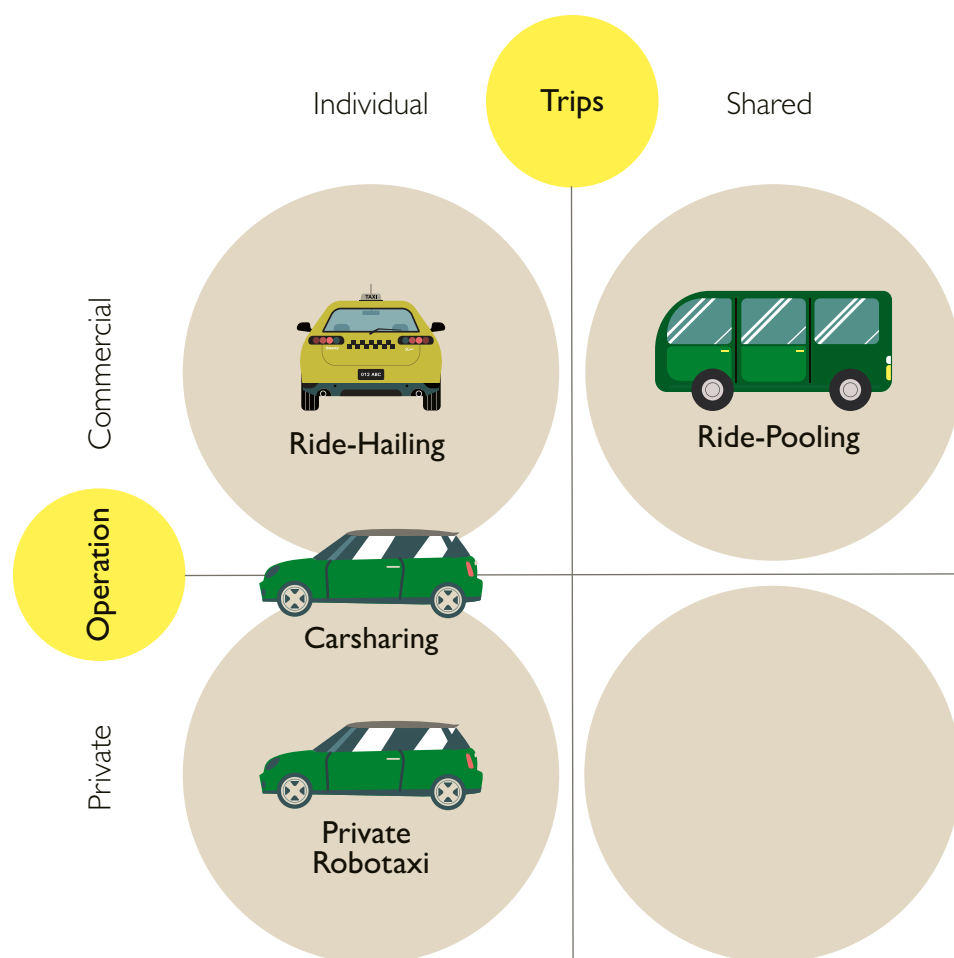


Figure 1: Use cases for robotaxis and roboshuttles (own illustration)

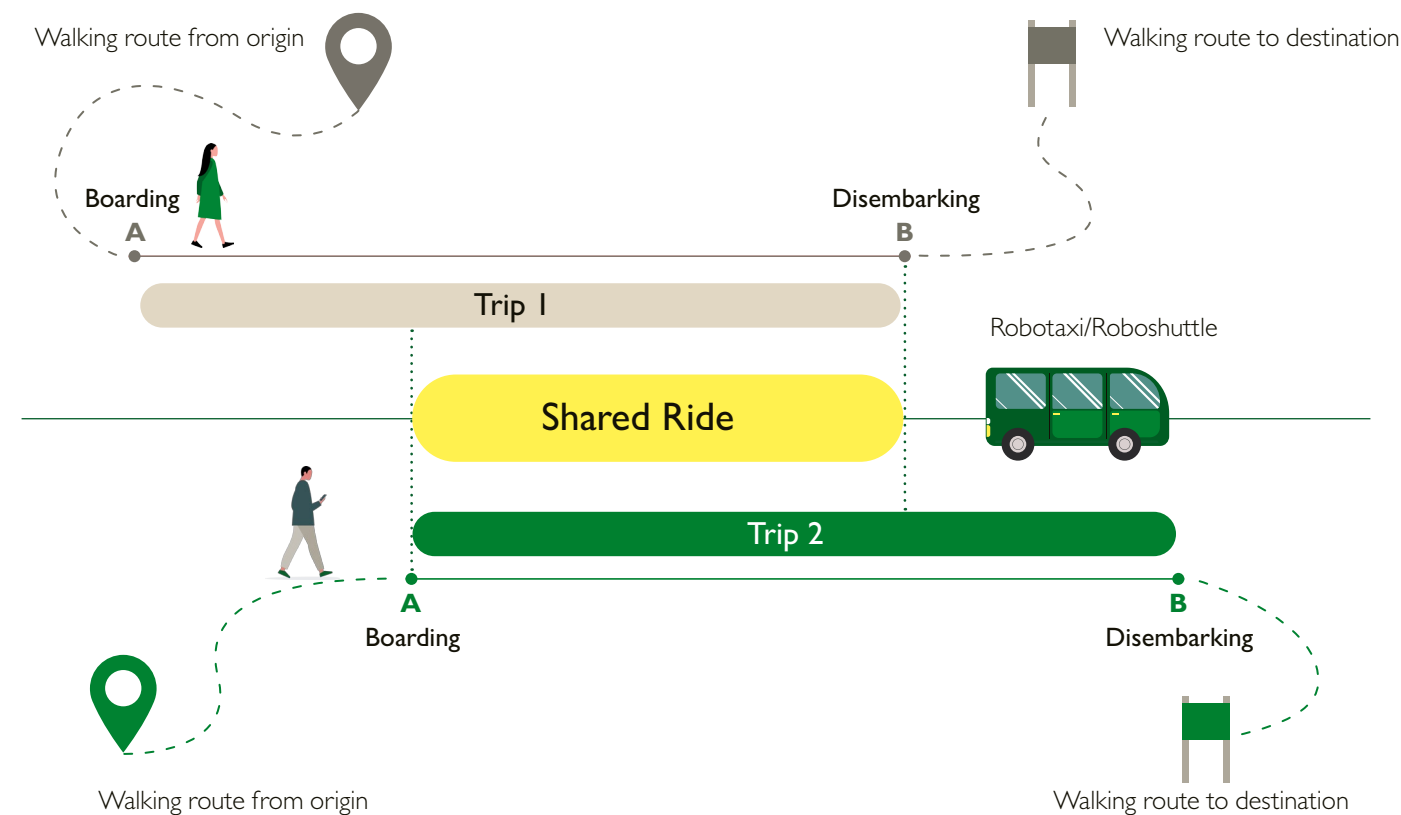


Figure 2: How ride-pooling works (own illustration based on MOIA, 2025)

01

Ride-Hailing

With ride-hailing services, people use a smartphone to order a robotaxi to pick them up and take them to their destination. During the ride, the vehicle is available only to the passenger who ordered the robotaxi (and any passengers traveling with them). This use case is similar to how taxis and non-automated ride-hailing services like Uber or Lyft operate today.

02

Ride-Pooling

As with ride-hailing, people order a commercial robotaxi or roboshuttle for ride-pooling. However, with ride-pooling, the robotaxi/roboshuttle is shared with other passengers who have booked the service at a similar time and are headed in a similar direction (see Figure 2). Multiple individual trips (rides) are thus handled by a single vehicle (i.e., they are pooled). Algorithms optimize the routes of robotaxis/roboshuttles to minimize wait times and detours. Depending on the ride-pooling service design, passengers may have to walk short distances to reach the pick-up location or their destination. This service combines features of public transit and taxi services.

03

Private Use / Carsharing

In addition to commercial use cases, there is potential for private ownership and use of robotaxis. Just as with today's cars, households could in the future purchase their own robotaxi for personal transport as needed. When the robotaxi is not being used by its owners, it could be made available to others on demand, generating additional income for its owners. This use case is most similar to carsharing, i.e., the shared use of one vehicle by different people at different times.



Picture: HOLON

VALUE PROPOSITION

Robotaxis could solve various mobility challenges. Depending on the specific traffic conditions in the cities or regions where robotaxis operate, different goals are pursued. While in megacities the focus is more on integrating existing modes of transportation, in rural areas, connectivity to major cities and urban areas is crucial.

01

Improve Traffic Safety

Self-driving vehicles free people from the task of driving. Instead, an AI-based system takes over control of the vehicle. It continuously learns and makes the “best” decisions in an instant. The hope is that this takeover will increase road safety, particularly by reducing accidents and traffic casualties. Even though comparing human-driven and self-driving vehicles is not entirely straightforward, Waymo’s analyses demonstrate that robotaxis are significantly safer than human-driven vehicles (see page 28). According to the reports, Waymo robotaxis cause up to 90% fewer collisions and over 80% fewer accidents resulting in personal injury compared to an average human driver on the same route (Waymo, 2026).

02

Increase Transport Efficiency

Robotaxis can “communicate” with infrastructure and other automated vehicles. This enables them to anticipate traffic light cycles, traffic jams, slow-moving traffic, or roadwork well in advance and adjust their route and speed accordingly. It allows the vehicles to avoid unnecessary braking or acceleration maneuvers and detours, thereby reducing energy consumption and improving traffic flow. However, robotaxis can not only anticipate traffic jams and navigate around them well in advance – they can also help prevent them: Thanks to smoother driving and precise responses to the maneuvers of other vehicles and road users, there are hardly any abrupt changes in speed, which often cause traffic jams. When robotaxis are shared, it is possible to combine trips, thereby reducing the number of private cars on the road and improving traffic conditions. At the same time, there is a risk that, if their route planning and decision-making

do not function optimally, robotaxis travel empty vehicle kilometers (also known as deadheading) just to reach passengers, which may increase traffic volume. How much more efficient traffic becomes depends on how many autonomous vehicles are on the road and how they integrate with existing transport systems – or, more specifically, how many human-driven vehicles they share the roads with.

03

Improve Public Transport Quality

If robotaxis or roboshuttles are used to supplement public transport, they can replace underutilized routes and improve access to outlying areas in both time and distance. A recent study by Deutsche Bahn shows that autonomous driving can reduce public transport wait times by up to 50% and significantly cut the number of transfers, the walking distance to stops, and travel time compared to driving a car (DB Regio, 2026). At the same time, it can cut operating costs by reducing staffing requirements. In regions facing driver shortages and cost cuts in the near future, supplementing public transport services with robotaxis or roboshuttles is likely to be particularly effective for maintaining service levels, if not for improving them.

04

Promote Social Participation

For people with limited mobility, robotaxis offer a great opportunity to improve their participation in society. For example, people without a driver’s license or private car, children and teenagers, seniors, and people with disabilities gain the ability to travel from one place to another spontaneously and, ideally, independently on their own terms. However, the potential of this opportunity also depends on the pricing and accessibility of the robotaxi service. In the U.S., the cost of autonomous ride-hailing currently ranges from about 5 to 10 U.S. dollars per kilometer (US\$/km). This means the costs are still substantially higher than those of a conventional taxi or ride-hailing service. With increasing scale, decreasing vehicle and operating costs, and higher utilization, significant cost

reductions are expected. For 2035, estimates range from 0.40 to 1.10 US\$/km for services in Europe and the U.S. (Deloitte, 2019; Hagenmaier et al., 2026; Kelkar et al., 2025). For China, lower costs in the range of 0.20–0.60 US\$/km are projected (Chang, Jeng, Delaney, & Keung, 2025; Hagenmaier et al., 2026). This is due to lower labor costs and more affordable hardware. Regarding accessibility, some unanswered questions remain, such as what happens when there is no driver present in the vehicle to assist passengers in getting in and out. ➡

“Autonomous driving will fundamentally transform public transport. Seamless integration of the vehicle, the autonomous driving system, the control center, and operational processes is crucial to success. The Hamburg Model Region and Hamburger Hochbahn see themselves as pioneers in paving the way for scaled-up real-world operations, strengthening Germany’s role as a leading market.”

**Robert Henrich, CEO,
Hamburger Hochbahn**

Enhance Urban Livability

In many cities, the focus is less on introducing a new mode of transportation and more on making efficient use of scarce space. In Europe in particular, most metropolitan areas already have very good mobility options with many connections to the surrounding suburbs. However, as more and more people are drawn to major cities, not only is living space becoming scarce, but so is the space needed for transportation infrastructure (Future Institute, 2019). As a result, traffic jams regularly occur on the congested access roads, and finding a parking spot can seem like a never-ending quest. The hope is for robotaxis to encourage more people to switch from their private cars to this more convenient alternative. This would lead to fewer cars in cities, and the overall demand for parking spaces is likely to decrease. In addition, robotaxis are typically battery-powered, so their increased use could reduce air

and noise pollution – especially since overall traffic volume is also likely to decrease. This would free up valuable urban space for repurposing, make streets safer and quieter, and improve air quality, thereby enhancing quality of life in cities.

While there is enormous pressure to design services that replace motorized individual transport and effectively supplement urban public transit, cities are home to a critical mass of potential users who make many short trips each day using various modes of transport.

At the same time, cities typically already offer a wide range of mobility options, and the added value of robotaxis is likely limited. This makes it all the more important to carefully design robotaxi services that serve as a meaningful supplement in the existing urban mobility landscape.

For commercial robotaxi providers, urban areas are particularly attractive from an economic point of view.

“Europe has the opportunity to shape the development of robotaxis through strong regulation, high safety standards and integration with public transport systems. The key question is not whether autonomous mobility will arrive, but how cities govern it to support climate targets, accessibility and urban livability. With the right governance, robotaxis can become part of a more human-centric and sustainable urban future.”

Anna König Jerlmyr, Former Mayor of Stockholm and CEO, Arwidssonstiftelsen

Picture: iamo



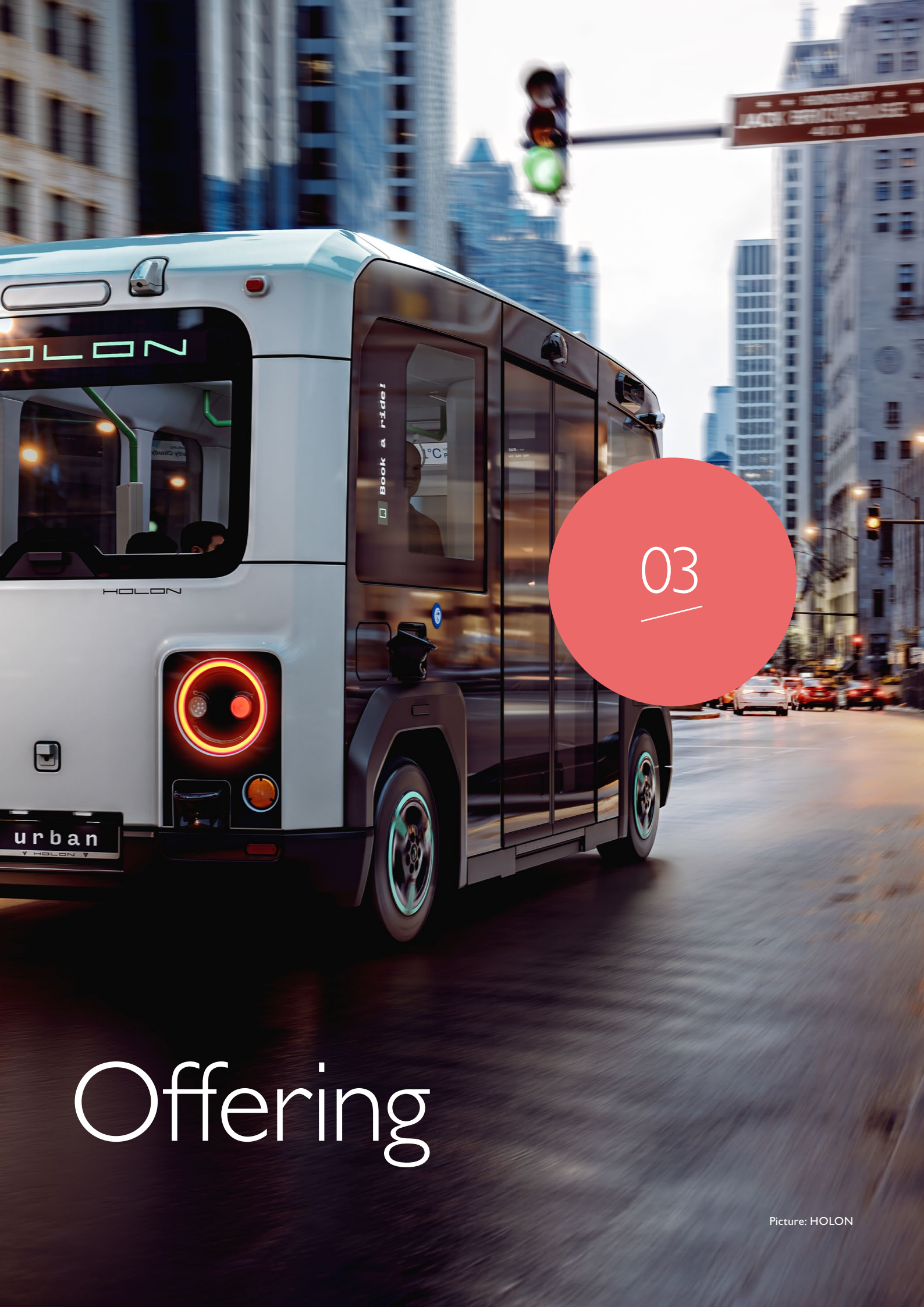
Improve Accessibility in Rural Areas

In rural areas, by contrast, robotaxis play a very different role from that in cities and metropolitan areas: they can help fill gaps in basic public transport services. Instead of waiting a long time for a bus or train, people in rural areas could order a robotaxi. This would reduce their dependence on private cars. There is also potential to completely replace underutilized public transit routes in rural areas with robotaxis, which would, in turn, improve cost and space efficiency for public transport.

Given the lack of existing mobility options, the added value of using robotaxis is likely greater in rural areas than in cities. Nevertheless, there have been only a few dedicated rural robotaxi initiatives so far. The reason for this is a conflict of interest between profitability for commercial providers and societal benefits: While urban areas have a critical mass of users and great potential for shared rides on short routes, the user base in rural areas is limited; trips are more likely to be



individual journeys, and the distances are longer on average. Even so, a robotaxi service in rural areas could provide greater value to the population than in cities, where numerous mobility options already exist. This suggests that robotaxis should be integrated into the subsidized public transport system in certain regions to improve service availability in outlying areas, despite a lack of economic viability.



Offering

Picture: HOLON

Ecosystem

Insiders are calling 2026 the year of the robotaxi expansion: By the end of this year, the number of robotaxis operating globally is expected to more than double, from about 8,000 (as of December 2025) to 18,000 vehicles (Bloomberg, 2026). To actually get vehicles on the road on this scale, it will take not only the vehicles themselves, sensors (hardware), and algorithms (software) necessary for autonomous driving, but also a multi-stakeholder ecosystem. So far, the various players have been offering their modes of transport as standalone products, and it is up

to customers to weigh the options against one another or coordinate them. At best, they are supported in this process by an app. In a world of autonomous mobility, however, the services of the individual providers must interlock and be integrated into a unified product offering. Only then will a robotaxi service be functional and accessible to the public. 🟢

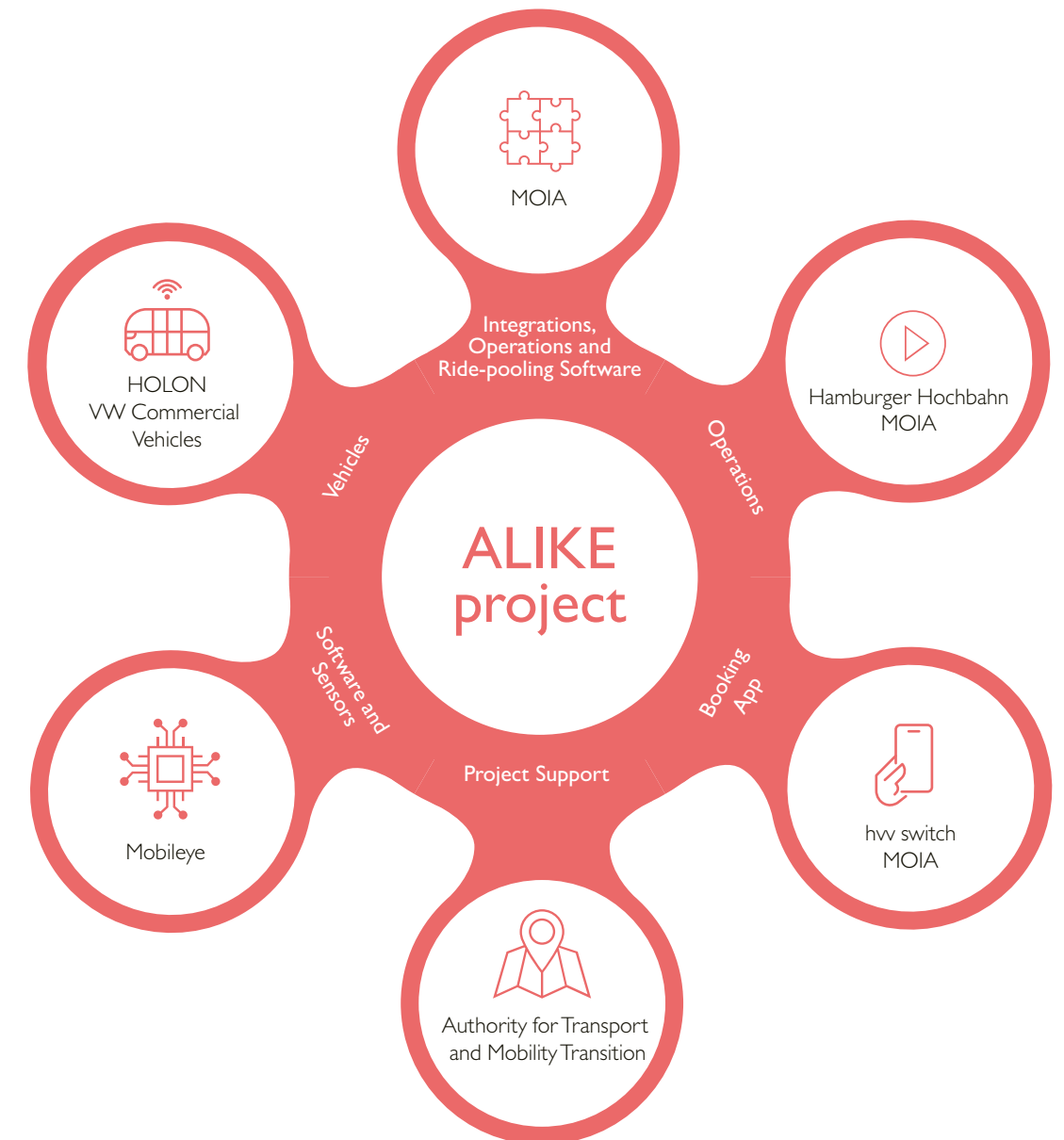


Figure 3: Ecosystem in the Hamburg ALIKE project (own illustration based on MOIA, 2025)

“With MOIA, we aim to establish Europe as the leading market for autonomous mobility. Autonomous vehicles are not an isolated technology, but rather a meaningful complement to the existing transport system. The European Way stands for safety and close cooperation between cities, operators, and other stakeholders. To achieve this, we need a clear EU framework and investment capacity across all areas of the value chain. In this way, autonomous driving contributes to the common good and improves mobility in cities and rural areas.”

Sascha Meyer, CEO, MOIA

Figure 3 illustrates the complex interplay among the necessary stakeholders, using the “ALIKE” project in Hamburg as an example. At the heart of the project is MOIA, a ride-pooling provider that is part of the Volkswagen Group. VW Commercial Vehicles and HOLON supply the vehicles to MOIA, after which the provider integrates Mobileye technology into the vehicles. Mobileye provides the software, hardware (System-on-Chip, control units), as well as the sensor stack required for autonomous driving (see page 28). The vehicles are operated by MOIA and Hamburger Hochbahn, whose core business has so far been the operation of city buses and the subway. Hamburger Hochbahn is integrating the self-driving vehicles into Hamburg’s public transport system. Hamburg’s Authority for Transport and Mobility Transition accompanies the project, has commissioned Hamburger Hochbahn, and provides the funding to offer these services. In the future, users will be able to book the driverless shuttles via the MOIA app and hvv switch. hvv switch is an app by the Hamburg Transport Association that integrates numerous public transport options (MOIA, 2025). Traditional

In the U.S. and China, robotaxi fleets are mostly operated by individual tech companies, whereas in Europe, public transport agencies often take on this role.

automakers or specialized shuttle providers supply the hardware. The majority of these vehicles are equipped with sensors and software from a handful of leading providers in the U.S. and China, including Apollo Go (Baidu), Mobileye, WeRide, Pony.ai, and Waymo. These companies are now scaling and expanding worldwide, with increasing presence in Europe as well. In some projects, there is also an integrator that combines the hardware and software and delivers the resulting robotaxis to an operator – in the “ALIKE” project in Hamburg, MOIA takes this role.

Selected Initiatives

Europe, the region with the most robotaxi initiatives, albeit relatively small ones, is home to several robotaxi pilot projects involving limited vehicle fleets, small service areas, and largely behind closed doors. However, the expansion plans of the robotaxi giants are likely to mark a major shift toward commercial services, e.g., Waymo has registered European corporate entities in Germany, France, the Netherlands, Spain, and the United Kingdom (Abreu Marques, 2026). European robotaxi providers are also making substantial progress: MOIA has reached pre-series production of its robotaxis and roboshuttles and has since

announced expansion plans for Berlin, Oslo, and Los Angeles (see page 14). Automakers Mercedes-Benz and Stellantis are investing in promising partnerships with robotaxi and tech companies to bring self-driving vehicles to Europe (see page 26). If these trends continue, several large-scale robotaxi services are likely to emerge in the second half of 2026 and in 2027. The following sections highlight selected ongoing robotaxi initiatives, with a focus on Europe. The map (Figure 4) provides an overview of the projects mentioned here. ➡

Picture: Verne



With the Autonomous Vehicles Approval and Operation Ordinance (AFGBV), which took effect in 2022, Germany has established a legal framework that enables the operation of Level 3 and Level 4 autonomous vehicles on public roads within approved ODDs (see page 33). Since then, numerous initiatives related to autonomous driving have been launched. To date, there are no commercial robotaxi services in Germany, and most initiatives are designed as pilot projects. However, the mere announcements by established ride-hailing provider Lyft – in partnership with Apollo Go (Baidu) – that they intend to expand into Germany are likely to lead to significant progress in the pilot projects (Lyft, 2025). And in June 2026, Waymo registered a German subsidiary, legally preparing for the launch of robotaxi operations in Germany (Lung, 2026).

Hamburg

Hamburg is one of Germany's most active locations for autonomous driving service development and pursues a gradual yet integrative approach. A key initiative is the "ahoi" project (vhh.mobility, 2026): It builds on the on-demand service "hvv hop," which has been operating since 2023 – primarily in the Harburg district – as a supplement to traditional scheduled bus service. The goal is to gradually integrate robotaxis into public transport operations by 2027 and to operate a fully functional, mixed on-demand fleet of up to 48 vehicles.

In addition, the "ALIKE" project is currently underway in Hamburg, involving MOIA, among others (see page 11). In July 2026, passenger test operations for the autonomous ride-pooling service were launched, making the service available to registered Hamburg residents (MOIA, 2026). MOIA is also planning to deploy self-driving vehicles outside of Hamburg. In the summer of 2025, MOIA unveiled its turnkey robotaxi/roboshuttle solution featuring the VW ID.Buzz AD, which is scheduled to enter series production in 2027 (see page 26). These vehicles will be deployed for the first time in Hamburg, Berlin, and Oslo (see below). MOIA has also entered into a long-term strategic partnership with Uber to put "several thousand" VW ID.Buzz AD on the road in the U.S. over the next ten years (MOIA, 2025).

Munich

Uber is planning a robotaxi trial in Munich's complex urban environment for 2026, in collaboration with technology partner Momena. As part of the project, the companies aim to investigate how to integrate Momena's AI-based control technology into the existing Uber platform. Munich is set to be the starting point for the trial due to its automotive ecosystem and openness to innovation (Uber Deutschland, 2025). In July 2026, Momena received a country-wide Level 4 testing approval from the Kraftfahrt-Bundesamt, which marks a significant milestone and allows the company to pilot its technology across multiple urban settings in Germany (Momena, 2026). However, the long-term goal is to scale up across Europe and beyond.

U.S. counterpart Waymo registered a German subsidiary in summer 2026 and began hiring test drivers in Munich and Berlin (Browning, 2026). In August 2026, the company announced the launch of a validation period in Munich, a phased approach that starts with high-definition

mapping of Munich's street networks and testing with trained safety drivers behind the wheel. The aim is to make the commercial autonomous ride-hailing service available to the public by the end of 2027 (Waymo, 2026).

In addition, Stadtwerke München (Munich's municipal utilities company) has been collaborating with partners from industry and research on the "MINGA" project since 2023 (Stadtwerke München, 2025). A key component of the project is the study of automated on-demand transport and ride-pooling concepts. The primary focus is on integrating autonomous vehicles into existing public transport systems. "MINGA" aims to lay the operational groundwork for sustainable autonomous mobility services in urban transport (Munich Transport Authority (MVG), 2026).



"Our pilot projects on autonomous driving already clearly demonstrate that this technology has real potential when put to use correctly, namely, as a complement to public transit, for a more efficient use of road space, and for a noticeable improvement in urban life. Now it's a matter of setting the right course: clear rules, open standards, and consistent integration into bus and rail systems. Hamburg is committed to vigorously advancing autonomous driving and establishing the framework necessary for the city to play a leading role in Germany."

Dr. Anjes Tjarks, Senator Ministry of Transport and Mobility Transition, Hamburg

Picture: Unsplash

“There are currently many assumptions circulating in the media about the technologies and operations of autonomous vehicles. It is a fallacy to treat these assumptions as universal truths. Rather, the U.S., the EU, and China represent three completely different markets, each requiring distinct strategies for the market launch of autonomous vehicles.”

Roy Uhlmann, CEO, MOTOR Ai

Darmstadt

Since 2024, Deutsche Bahn and the Rhine-Main Transport Association have been testing robotaxis in Darmstadt as part of the “KIRA” project, in collaboration with Mobileye. Since June 2025, the service has also been open to registered test users. After three months of operation, more than 1,000 users had already been approved for “KIRA”; the number has since grown to over 3,500 test users (KIRA, 2026). A unique feature of “KIRA” – compared to other German projects – is that it launched as part of the public transport system in rural areas, specifically in the municipalities of Langen and Egelsbach. As the project progressed, “KIRA” expanded its service area to include parts of the city of Darmstadt. A second expansion of operating hours and service areas followed in April 2026 to meet demand during the morning and evening rush hours (KIRA, 2026). The project aims to demonstrate how on-demand services can be integrated into existing transport structures from both organizational and operational perspectives (KIRA, 2026). The interim conclusion in March 2026: Passengers rate trips with “KIRA” as very safe (4.8 out of 5 points) and very comfortable (4.7 out of 5 points; KIRA, 2026).

Berlin

Berlin is following in Hamburg’s footsteps as a model region for autonomous driving. Since last year, the Berlin Transport Company (BVG) has been testing robotaxi services in the northwest of the city using five autonomous vehicles from VW/MOIA (BVG, 2026). The goal of the “NoWeL4” project is to supplement traditional public transport in order to enable flexible and customized mobility in Berlin. Test runs began at the end of 2025, though without passengers. Pilot operations with passengers are planned for 2026, during which a safety driver will ride along on board the vehicles, while the vehicles will also be monitored remotely. If the project is successful, the initiative could be scaled up to a five-digit fleet, which could result in the creation of Germany’s largest fleet of autonomous vehicles as part of the public transport system.

Berlin-based company MOTOR Ai takes a different approach to robotaxis, compared to competitors: Instead of driving millions of kilometers for training, the Level 4 system is designed to use active inference – an AI approach for analyzing traffic situations in real time and making logically traceable decisions (MOTOR

Ai, 2017). In the European regulatory environment, the interpretability of such AI decisions is not only an advantage but, according to the EU AI Act, a legal requirement for the approval of autonomous vehicles and could also be a decisive criterion for government agencies and insurance companies (Freeman, 2024; Proesser, 2025). MOTOR Ai retrofits conventional vehicles with its software, primarily targeting municipalities and focusing on use in public transport. Negotiations are already underway with several German cities; since last year, the startup has been authorized to test autonomous vehicles on public roads nationwide (MOTOR Ai, 2025). In Berlin, the company has been testing technology since April 2025 using a Mercedes-Benz EQV with a safety driver (Husmann, 2025).



Copyright: MOIA

Oslo is considered the European hub of autonomous driving. As early as 2019, the Norwegian capital tested self-driving shuttles, which covered a total of 34,972 kilometers autonomously (holo, 2021). Four years later, another pilot project called “Selvkjørings-piloten” followed, initiated by the local public transport company Ruter and holo, together with Mobileye as technology partner (Ruter, 2025). The goal is to test Mobileye AV development vehicles based on demand and gather experience in real-world operations before establishing a permanent autonomous ride-pooling service. The service area of 22 km² covers parts of the Grorud Valley, a suburban region in northeastern Oslo with approximately 140,000 residents. From February 2025, the public was able to participate in the pilot operations for one year (holo, 2025). Starting in the summer of 2026, service is set to resume after a brief hiatus with six new, larger vehicles – the VW ID.Buzz AD (Ruter, 2026).

“Ruter has been actively collaborating with partners and authorities to conduct extensive pilots, collect user and operational insight, and design for integration with public transport from day one. The integration of shared autonomous on-demand services into the public transport system is a pivotal component of the future of public transportation and crucial for achieving societal benefits. We should travel together when we can, and alone only when we must.”

Vibeke Harlem, Leader Radical Innovations, Ruter

“London is Europe’s reality check: pilot projects are not enough – scaling up is what matters.

London is Europe’s reality check for autonomous driving. The industry is counting on scaling up now also succeeding in Europe. In London, we can observe dynamic competition between players from China, the U.S. and Europe.”

Augustin Friedel, Associated Partner, MHP – A Porsche Company



In 2026, several initiatives are set to launch in London, spurred on by the British authorities’ fast-track process for robotaxi pilot projects (Centre for Connected & Autonomous Vehicles, 2025). The announcement that likely generated the most publicity came from Waymo: The U.S. robotaxi giant aims to create one of the first commercial robotaxi fleets in Europe (Waymo, 2025). The Nigerian mobility fintech company Moove is set to take over fleet operations. Waymo first plans to trial its robotaxis – which are already established in the home market – on the streets of London. Only after that – and only with regulatory approval – will regular commercial operations commence. At that point, Londoners will be able to book autonomous ride-hailing trips via an app.

British company Wayve is also planning a robotaxi service for London in 2026 in partnership with Uber (Bellan, 2025). For now, however, only a testing and pilot phase is planned. Wayve will provide the AI-based driving technology, while Uber will operate the service through its proprietary ride-hailing platform. Following a small-scale launch in London in June 2026, the plan is to expand to the Greater London area and beyond. Wayve also plans to introduce “super-vised autonomy software” for private vehicles starting in 2027 (see page 25).

Freenow (Lyft) and Baidu have commenced road testing in London in July 2026. For now, the sixth-generation robotaxis from Apollo Go (RT6) are operating with safety operators on board in the urban-to-suburban borough of Brent (Freenow, 2026).



In April 2025, the Chinese robotaxi provider Pony.ai received approval to test robotaxis on public roads in Luxembourg, where the company has also established its first research and testing center (Pony.ai, 2025). Pony.ai is conducting this trial in collaboration with Emile Weber, a locally leading mobility provider.

In addition, Pony.ai has announced two European partnerships: one with Stellantis and one with Bolt. Together with Stellantis, Pony.ai plans to test Level 4 autonomous driving based on the Peugeot e-Traveler (Stellantis, 2025). Following that, a gradual expansion to other European cities is planned. With Bolt, Pony.ai intends to test robotaxis and introduce them to various European countries as part of Bolt’s service offering (Bolt, 2025). Bolt and Stellantis, for their part, have also announced a partnership to roll out autonomous vehicles across Europe (Stellantis, 2025). The trial is set to begin in 2026 in unspecified European countries and is part of Bolt’s plan to offer approximately 100,000 autonomous vehicles on its platform by 2035.



In Switzerland, initiatives related to autonomous driving gained momentum last year. Subject to predefined conditions, it is possible to put Level 3 and Level 4 automated vehicles on the road since March 2025 (Swiss Federal Council, 2024). Over the course of the past year, two robotaxi pilot projects named “iamo” and “AmiGo” were announced and launched. Notably, both projects are deliberately set in more rural regions, where autonomous on-demand services have particularly great potential to supplement existing public transport (see page 9).

The “iamo” pilot project was launched in the Furttal region near Zurich. The initiative is sponsored by the Swiss Transit Lab, the Cantons of Zurich and Aargau, and SBB. The goal is to gain experience with automated vehicles as a supplement to public transport and to further develop the technology. So far,

the project has been using Nissan Ariya vehicles and integrating technology from WeRide, a leading Chinese robotaxi provider. Initially, two vehicles will be put into service; in a later phase, the fleet is expected to grow to four vehicles. There are also plans to expand the fleet with mini-buses. An important milestone was the approval granted by the Federal Roads Office (FEDRO) in November 2025, which allows for automated test drives on public roads in the Furttal region (Swiss Transit Lab, 2026). According to the project sponsors, the relatively rural Furttal valley – with its diverse settlement structure, its size, and the existing public transport network – was deliberately chosen because it is particularly well-suited for integration with autonomous mobility (iamo, 2026).

The Danish e-carsharing provider GreenMobility A/S and the California-based robotaxi company Tensor signed a non-binding memorandum of understanding at the end of 2025 (see page 25). According to the agreement, Tensor is to deliver up to 2,000 “robocars” to Denmark (Tensor, 2025). The vehicles are initially scheduled for deployment in Copenhagen. While the memorandum of understanding merely provides a framework for further negotiations, the scale of the planned fleet is nonetheless surprising when compared to other European initiatives.

In August 2026, GreenMobility also announced a strategic partnership with WeRide. The collaboration aims at deploying Level 4 autonomous shared mobility in Copenhagen and Aarhus and marks WeRide’s first Nordic market. The public launch is planned for the first half of 2027, subject to regulatory approvals (WeRide, 2026).



Picture: iamo

The approval of WeRide vehicles in the Canton of Zurich is likely to benefit another planned initiative: In February 2026, Uber announced its intention to launch robotaxis in Zurich, Madrid, and Hong Kong. In Zurich, the rollout is to be carried out in partnership with WeRide, the technology provider also used by the “iamo” pilot project, and Rydera, a local fleet operator. According to WeRide, public operations via the Uber app are expected later this year (WeRide, 2026).

Uber aims to have robotaxis operating in ten global markets.

The specific cities involved have not yet been disclosed (Lung, 2026).

A further pilot project called “AmiGo” was announced for 2025 by PostBus, one of Switzerland’s largest public transport fleet operators. The project is supported by the Federal Office of Transport (FOT) and the FEDRO, the Touring Club Switzerland (TCS), and several Cantons in eastern Switzerland. Starting in 2026, as part of the project, robotaxis are set to be deployed for test runs in eastern Switzerland, primarily in rural and peripheral regions where traditional public transport is limited. In June 2026, the pilot project secured a permit from the FEDRO and began hands-free testing with safety drivers (PostBus, 2026). Regular service is scheduled to begin no later than the

first quarter of 2027, with a planned fleet of about 25 vehicles. The vehicles will be supplied by Apollo Go (Baidu). The project has the potential to complement existing mobility options, particularly as a feeder service to train stations and public transport hubs. The pilot project received international media attention as it is Baidu/Apollo Go’s first robotaxi initiative in Europe (PostBus, 2025).

This year, Apollo Go plans to launch additional robotaxi initiatives in Europe. In partnership with Lyft, robotaxi services are set to be piloted in the United Kingdom – particularly in London (see page 18) – as well as in Germany (Lyft, 2025).

“Automated vehicles are on their way – now it’s a question of how we use them. SBB wants the public transport system as a whole to be at the heart of the matter right from the start. With clear rules and coordinated action, we are strengthening Switzerland as a hub for mobility: automated public transport can boost mobility in rural areas, in urban agglomerations, on short journeys and during off-peak hours. SBB is therefore contributing its expertise in mobility and, together with strong partners, ensures that new services are sustainable, user-centric and can be integrated nationwide.”

Véronique Stephan, Former Head of Passenger Transport Market, SBB (until April 2026)

“Baidu is now expanding into Europe because autonomous driving has, from a technological perspective, reached the threshold for industrial scaling, and European cities are under significant pressure to transform – towards safety, sustainability and efficiency. Switzerland was the logical entry point for [Baidu]: reliable from a regulatory perspective, technologically sophisticated and open to innovation-driven pilot schemes in public spaces.

With PostBus, [Baidu is] working with a partner that is deeply rooted in public transport to position robotaxis as a complement to existing systems. [The] partnership with Uber and Lyft in the United Kingdom enables [Baidu] to integrate into established platform ecosystems with an existing user base – technology meets market.”

Dr. Yong Gessner, Vice President, Head of Europe, Neolix



Picture: PostBus



There are also numerous robotaxi initiatives overseas. The most important developments – in China, the United States, and the Middle East – are briefly summarized below.

China

Three robotaxi providers dominate the market in China: Apollo Go, WeRide, and Pony.ai. All three tech companies operate robotaxi services not only in their home market of China but also internationally – in Europe, the Middle East, and, to some extent, Southeast Asia. Within China, these robotaxis can be found in the major metropolitan areas, including Beijing, Shanghai, Guangzhou, Wuhan, and Shenzhen. However, it is evident that driverless ride-hailing services are increasingly expanding into other regions as well, such as Suzhou and Hangzhou (Singh, 2025). Many of these projects are on the verge of becoming widely available and profitable. For example, Pony.ai recently reached a per-vehicle break-even point in Guangzhou and Shenzhen (Pony.ai, 2026). As fleets scale up, mass production of robotaxis is also becoming a key factor, which is why two out of three robotaxi providers have announced partnerships with vehicle manufacturers starting in 2026 (see page 26). Chinese automakers have also identified an opportunity in vehicle production: In late 2025, the electric-vehicle startup XPENG unveiled three of its own robotaxi models, which are scheduled to undergo testing as early as 2026 (XPENG, 2025).

United States

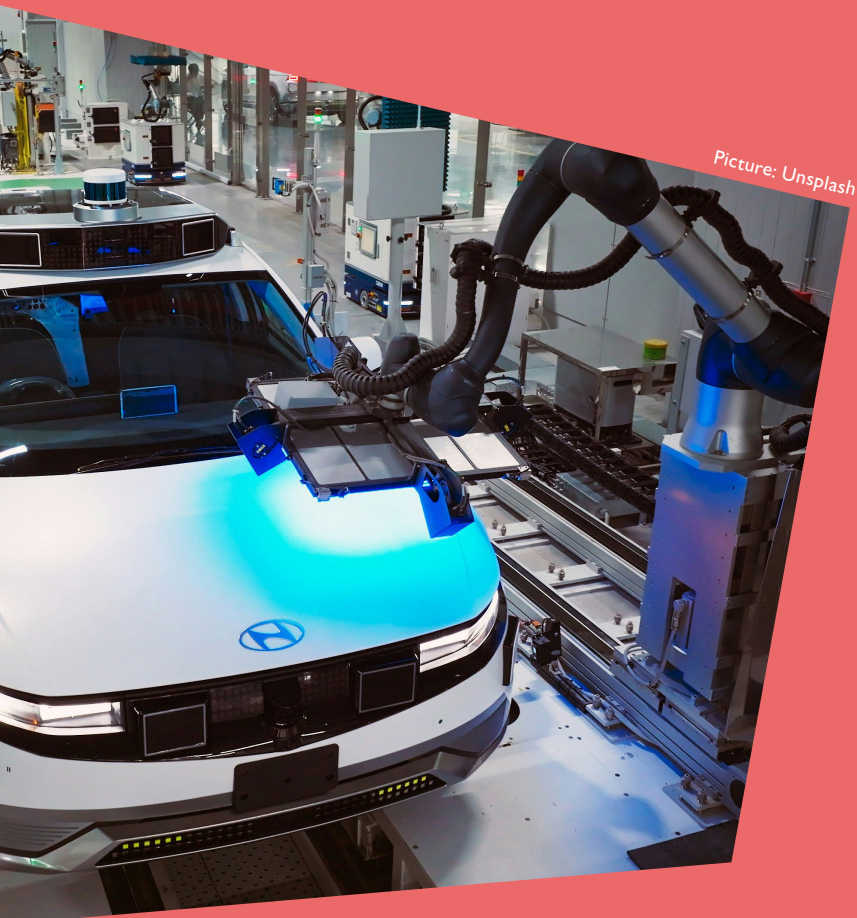
In the U.S., Waymo (part of Google's parent company Alphabet), Zoox (Amazon), and Tesla are among the leading robotaxi providers. Waymo and Zoox vehicles are in commercial operation in several U.S. cities, including San Francisco, Phoenix, Atlanta, Los Angeles, and Austin. In some cities, users can also book robotaxis directly through the Uber and Lyft platforms, which are themselves actively investing in robotaxis (see page 14–21). In ten cities, Waymo is already recording 500,000 paid robotaxi rides per week (Korosec, 2026). Mobileye announced the launch of a vertically integrated robotaxi ride-hailing business in a “major metropolitan U. S. market”, yet to be disclosed. A fleet of around 100 robotaxis is to be deployed in 2027, with plans to scale substantially to approximately 17,000 vehicles over the following five years (Mobileye, 2026). Robotaxis are now also being produced in the U.S. (see page 25).

Middle East

The United Arab Emirates are pursuing an ambitious mobility strategy: In Dubai, approximately 25% of all trips are expected to be autonomous by 2030, and in Abu Dhabi by 2040 (Abu Dhabi Mobility, n.d.; United Arab Emirates, 2024). Many Chinese robotaxi providers are seizing this opportunity: In September 2025, WeRide received its first permits for testing in Dubai. In partnership with Uber, commercial operations are set to begin in 2026 (WeRide, 2025). The partnership also includes Abu Dhabi and Riyadh, where at least 1,200 robotaxis are expected to hit the roads by 2027 (Uber Investor, 2026). Pony.ai and Apollo Go also plan to deploy robotaxis in the Middle East (Apollo Go, n.d.; Pony.ai, 2025), while Mercedes-Benz, together with Momenta and Lumo, is piloting a robotaxi service based on the S-Class in Abu Dhabi (Mercedes-Benz, 2025).

“China has moved autonomous driving beyond pilot projects and into everyday urban use, with robotaxi services already operating at scale in several major cities. This progress builds on the experience gained during the EV expansion, but more importantly on systemic strengths such as coordinated regulation, digital infrastructure, and strong consumer openness. Robotaxis therefore represent not just a technological milestone, but a strategic step in China's broader ambition to shape the future standards of autonomous mobility.”

Prof. Dr. Zheng Han, Professor for Innovation and Entrepreneurship, Tongji University



Outlook: Mass Production and Private Ownership

To operate the massive fleets of several thousand or even tens of thousands of robotaxis proposed, the necessary production capacity must be established – unless the goal is to rely on existing production models from traditional automakers rather than deploy specialized vehicles designed to carry more than five people. In addition, the installation of sensors and control software must be addressed. Only if robotaxis can be produced in large quantities, quickly, and cost-effectively will large-scale commercial robotaxi business models be profitable. With mass production, private ownership of robotaxis may also become a reality, which is why established automakers could then play a more significant role in the robotaxi market. Robotaxi and tech companies are increasingly announcing partnerships with established automakers to drive forward the mass production of these vehicles in various sizes.

China

Pony.ai plans to take a major step toward mass production in China together with Toyota and the GAC Toyota joint venture (Pony.ai, 2025). Based on the all-electric Toyota bZ4X, series production is reportedly already underway, with the goal of producing 1,000 robotaxis this year and gradually transitioning them into commercial operation (Automotive World, 2026). By the end of 2026, Pony.ai is expected to move closer to its goal of a fleet of 3,000 robotaxis (Pony.ai, 2025). In cooperation with Stellantis, Pony.ai also plans to launch robotaxis based on the Peugeot e-Traveller (see page 18). However, it is unclear whether the Stellantis partnership involved establishing (mass) production or is “merely” a pilot project involving just a few vehicles.

Pony.ai’s robotaxi competitor, WeRide, announced a partnership with Geely Farizon to produce 2,000 robotaxis by the end of 2026 (WeRide, 2026). This move is expected to grow the WeRide fleet to a total of over 2,600 robotaxis (WeRide, 2026).

United States

Earlier this year, the California-based company Tensor unveiled its “Robo-car”: a robotaxi focused on individualism, luxury, and privacy, featuring the world’s first fold-away steering wheel, which allows drivers to manually control the car (Townsend, 2026). It is said to be the world’s first robotaxi for private ownership and has already been tested on California roads (Tensor, 2026). Despite its focus on consumers, Tensor has signed a memorandum of understanding with GreenMobility AS to produce 2,000 robotaxis, presumably intended for commercial carsharing (see page 18).

Earlier this year, Uber, Lucid, and Nuro also unveiled a robotaxi concept (Nuro, 2026). The partners claim a special focus on luxury and the customizability of the vehicle experience, thereby setting themselves apart from other autonomous vehicle concepts. The robotaxi is currently being tested in San Francisco, where it is scheduled to launch in the second half of 2026. Following the final vehicle testing, production is also set to begin in the second half of the year at Lucid’s Arizona factory.

Like its Chinese counterparts, Waymo is also working to bring its robotaxis into mass production. By the end of 2026, Waymo plans to produce 2,000 additional autonomous vehicles based on the Jaguar I-PACE, in collaboration with Magna, at its own U.S. factory (Waymo, 2025). The same factory is also expected to be capable of building new robotaxis based on the Zeekr RT (Waymo, 2025). There is also currently discussion of a possible agreement between Waymo and Hyundai: According to rumors, as part of a partnership between the two companies starting in 2024, Hyundai is set to supply Waymo with 50,000 IONIQ 5s to serve as the basis for self-driving vehicles (Lambert, 2026). These vehicles would be significantly less expensive than the current Jaguar I-PACE and the planned Zeekr RT models.



Europe

Mercedes-Benz is currently working with various partners on a robotaxi ecosystem for private and commercial applications. In collaboration with Uber and NVIDIA, the company plans to use the new S-Class as the basis for developing robotaxi services in the Americas, Asia, Europe, and the Middle East (Mercedes-Benz, 2026). Together with Momena and Lumo, the manufacturer is testing a service with driverless vehicles in the Middle East (see page 22). Finally, Mercedes-Benz, along with Nissan, Stellantis, Uber, Microsoft, and NVIDIA, is participating in a US\$ 1.2 billion investment in British tech company Wayve to standardize and scale AI software for robotaxis (Wayve, 2026). Meanwhile, Wayve is establishing a testing and development center in Stuttgart to further develop the AI software for assisted and automated driving in collaboration with the vehicle manufacturers and suppliers based there (Wayve, 2025).

MOIA is also working on the industrial production of robotaxis equipped with Mobileye technology. In March 2026, pre-series production ID.Buzz AD began, marking – according to MOIA (2026) – the first industrial production of robotaxis in Europe. Series production is scheduled for 2027.

Croatia’s first production facility for hundreds of autonomous vehicles is currently being built in Zagreb (Verne, 2025). The company behind this project is Verne, which was founded by Mate Rimac (founder of the electric hypercar manufacturer Rimac Automobili) together with two colleagues. Verne develops complete urban robotaxi packages (Spasić, 2024); these autonomous vehicles have neither a steering wheel nor pedals. In addition to the vehicles themselves, Verne also plans to offer a customizable app with a ride-hailing platform, as well as specialized infrastructure hubs (“Motherships”) in cities where robotaxis will be maintained and prepared for service. This year, the first autonomous ride-hailing service launched in Zagreb with Uber and

Pony.ai. However, in this arrangement, Verne “only” handles the operational tasks of the fleet owner and service provider (Uber Investor, 2026). In April 2026, the partners announced the launch of Europe’s first commercial robotaxi service in Zagreb (Verne, 2026). According to the announcement, passengers have been able to book and pay for robotaxi rides via the Verne app since April 8 and will soon be able to do so via the Uber app as well. Following the deployment in Zagreb, the company plans to expand into additional European and non-European cities with a fleet of several thousand robotaxis (Uber Investor, 2026). According to Verne, the company has already initiated negotiations with eleven cities in Europe and the Middle East, and 30 additional cities are being considered (Verne, 2026).

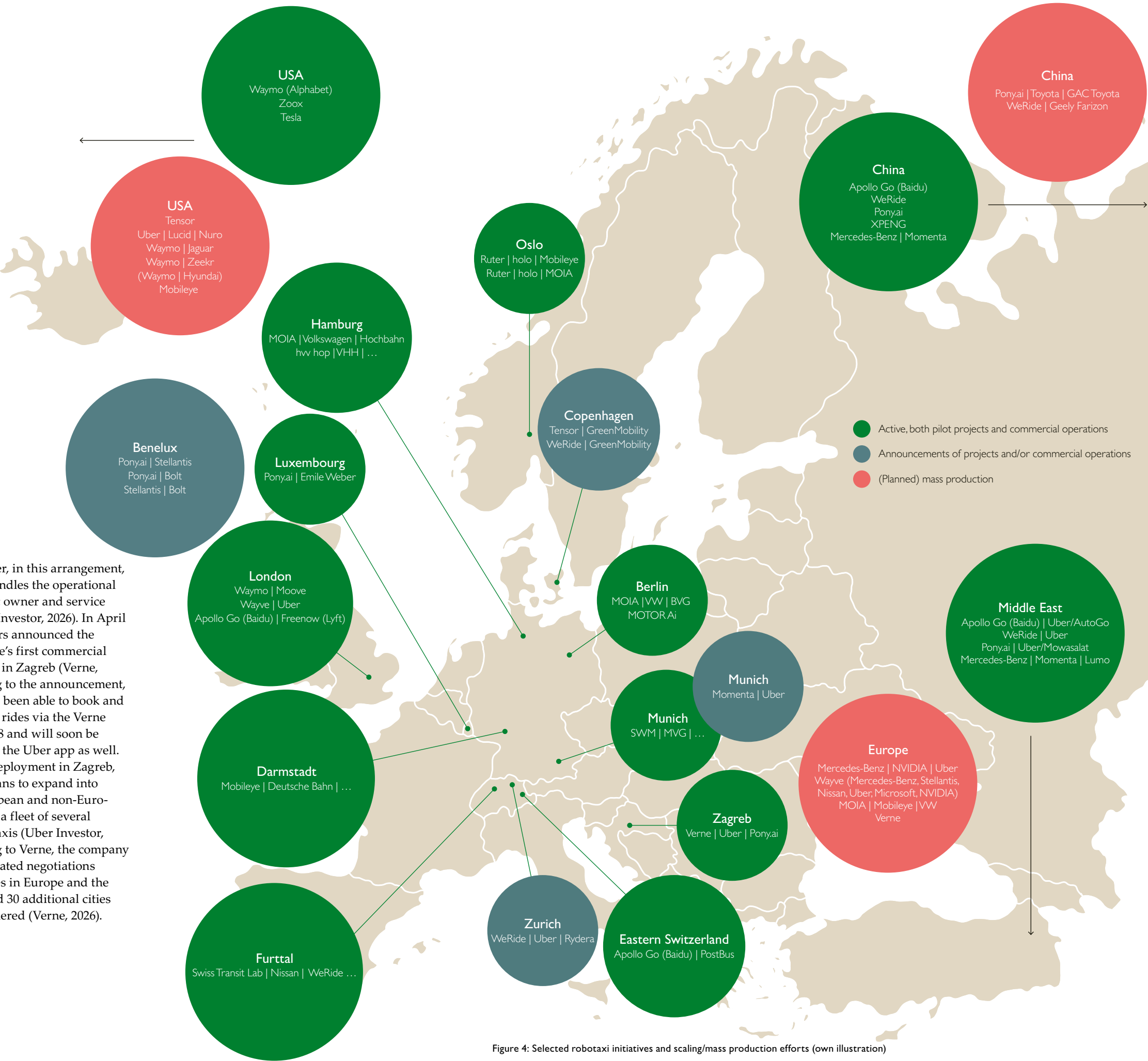


Figure 4: Selected robotaxi initiatives and scaling/mass production efforts (own illustration)

Technological State of the Art

For cars to become robotaxis, two core components are required: sensors to detect the surroundings and automotive-grade processors that enable data handling and decision-making. The exact combination of sensors and system architecture can vary by provider, including Waymo, Mobileye, WeRide, Pony.ai, Aurora Innovation, and Huawei. Similar to aircrafts, most systems deliberately rely on redundancy – that is, the combination of multiple and different types of sensors – so that vehicles can reliably perceive their surroundings even when faced with limitations. However, there are also other approaches that rely largely or exclusively on a single type of sensor. A well-known example of this is Tesla, which relies on camera-based environmental detection.

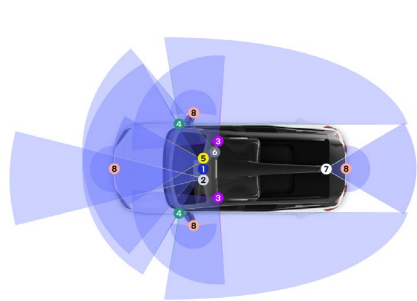


Figure 5: Mobileye camera sample configuration (Mobileye, 2026)

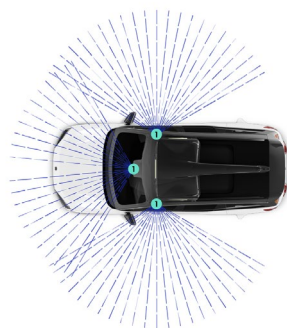


Figure 6: Mobileye LiDAR sample configuration (Mobileye, 2026)

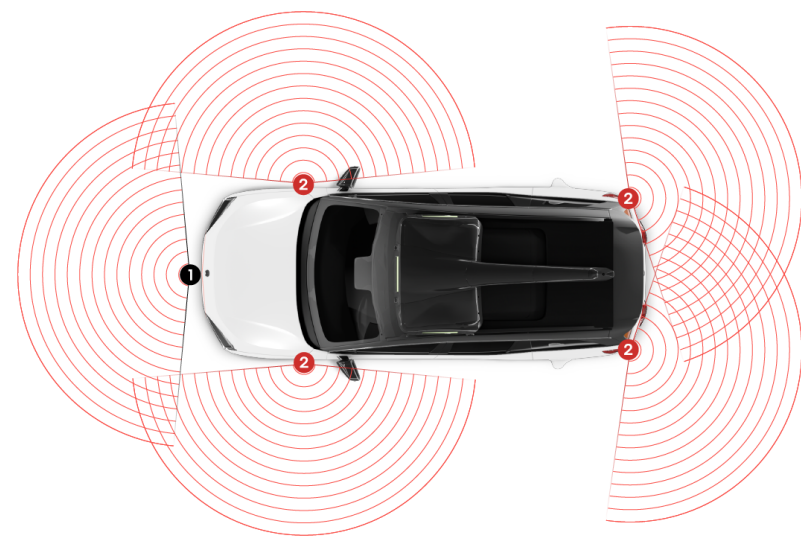


Figure 7: Mobileye radar sample configuration (Mobileye, 2026)

Mobileye is one of the leading providers of such self-driving systems. The company's approach is a good example of how sensors, AI, and decision-making logic work together. The environment is detected using three different layers of sensors:

- Cameras detect visual elements such as lane markings, traffic signs, or other road users (Figure 5).
- LiDAR uses laser pulses to generate a precise 3D image of the surroundings and enables the accurate determination of distances and obstacles (Figure 6).
- Radar reliably measures distances and speeds even under poor visibility conditions (Figure 7).

These sensors make up two independent sub-systems for perception: one based on cameras and one based on radar and LiDAR. These sub-systems create sensor redundancy. Mobileye's AV mapping system "REM" acts as an additional sub-system that provides accurate information on the driving environment, based on crowd-sourced data. The key is to integrate these sub-systems to enable highly reliable environmental perception, as shown in Figure 8.

Camera View



LiDAR/Radar View

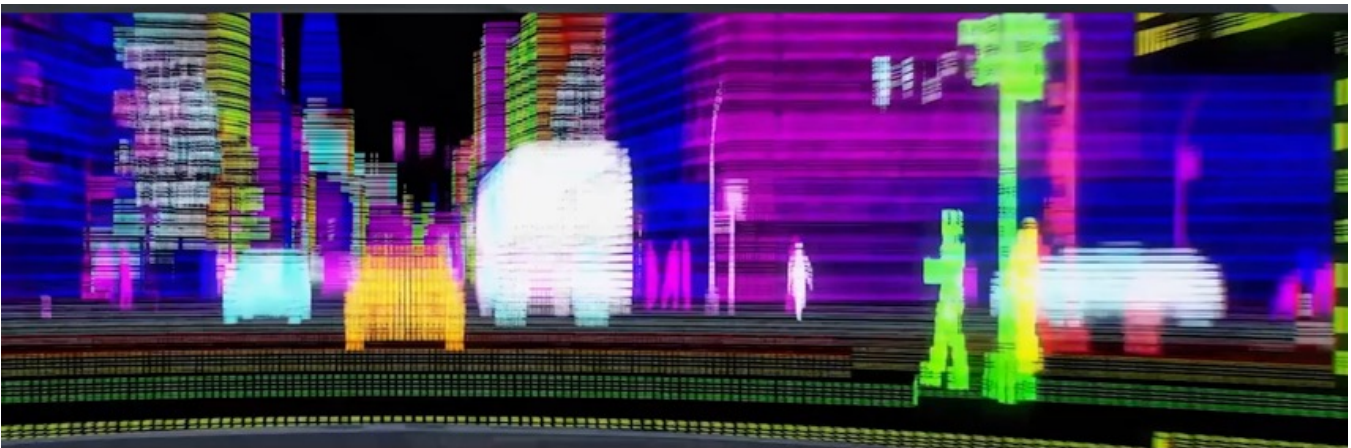


Figure 8: Combination of camera, LiDAR, and radar to perceive the environment (Mobileye, 2026)

Mobileye's "Compound AI" approach uses multiple specialized AI components that work together and cross-check one another, rather than relying on a single all-purpose model. This can improve robustness and safety by reducing the risk that one error or uncertain interpretation leads to an unsafe driving maneuver. They analyze the traffic situation in real time and determine how the vehicle should respond. A key element is the so-called "fast-slow" architecture: The "fast system" operates very quickly and reactively. It handles ongoing vehicle control and responds rapidly to sudden events in traffic. Simultaneously, the "Slow System" analyzes more complex traffic situations, for example, how the vehicle should behave at a manually controlled intersection after the traffic light system fails. The interaction between these systems is designed to enable the autonomous vehicle to react swiftly while accurately and safely assessing complex situations (Mobileye, 2026).

Although such systems may seem like a true innovation, they have already been tested on millions of kilometers under a wide variety of conditions as well as virtually simulated.

MOIA's robotaxis have been tested over thousands of kilometers in Austin, Munich, and Hamburg. In Oslo, vehicles are subjected to temperatures of -20 degrees Celsius, putting them through a rigorous endurance test (MOIA, 2025). Waymo's and Baidu/Apollo Go's robotaxis have each already covered over 300 million kilometers (Apollo Go, 2025; Campbell, 2025). These test kilometers and driverless operations are often decisive factors in choosing a particular provider, as they provide insight into the robustness of the system (hardware and software). So the question is no longer whether robotaxis are technically feasible, but rather how they can be scaled safely, quickly, and cost-effectively in various contexts. To this end, there is growing discussion of AI-based validation methods intended to eliminate the time-consuming and costly process of test-kilometer training and to enable intensive training even for rare traffic situations.

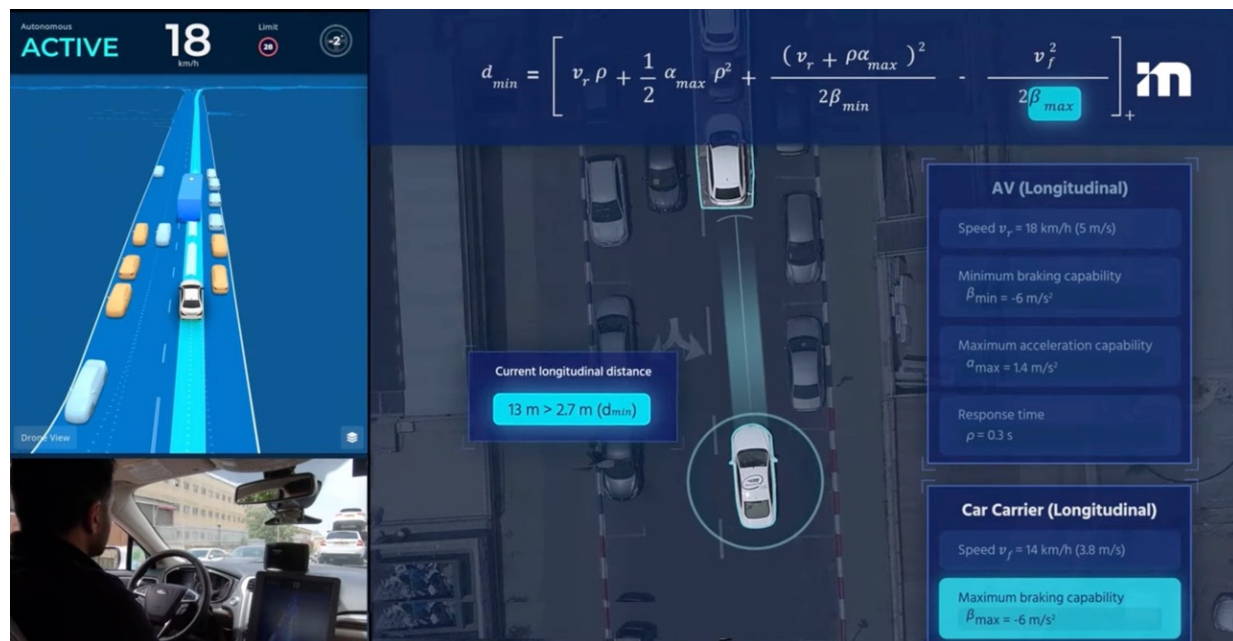


Figure 9: Responsibility-Sensitive Safety system with a mathematically defined safety framework (Mobileye, 2026)

Robotaxi Safety

In addition to the number of test kilometers driven, providers must also be evaluated based on the safety of their robotaxis. Waymo regularly publishes data and analyses from real-world fleet operations showing that, in various safety-related categories, including accidents resulting in injuries and airbag deployments, its robotaxis have lower accident rates than human drivers in the same service area (Waymo, 2026).

Nevertheless, a direct comparison with human drivers is only possible to a limited extent:

Autonomous vehicles and human drivers record incidents differently.

Robotaxis typically operate within clearly defined service areas, while human drivers encounter a much wider range of traffic situations. Furthermore, robotaxis must record every incident, no matter how major or minor. With human drivers, on the other hand, minor collisions are often not recorded at all, which further skews the accident rate for human drivers.

In addition to such real-world – though not entirely trivial – accident comparisons, there are therefore also safety approaches that rely more heavily on formal rules. With its “Responsibility-

Sensitive Safety” (RSS) concept, Mobileye is developing a mathematically defined safety framework that specifies the conditions under which driving behavior is considered safe, as shown in Figure 9 (Mobileye, 2026). The focus here is not on comparisons to human accident rates, but on compliance with formally defined safety limits.

Both approaches show that autonomous systems already achieve a high level of safety today. Nevertheless, robotaxis are not infallible, and accidents can occur in very rare cases. One such incident occurred earlier this year in Santa Monica, California, involving a Waymo vehicle and a child who ran into the street from behind parked cars (Koetsier, 2026). Waymo analyzed the robotaxi’s data, which reportedly show that an emergency braking maneuver from 27 to less than 9 km/h was initiated before the collision; according to Waymo, a human driver in the same scenario would have struck the child at approximately 22 km/h (Waymo, 2026). In California, robotaxi operators are required to report all incidents – whether involving a collision or not, and regardless of whether the vehicle is operating as part of a pilot project or in commercial service – to the authorities in detail (California Public Utilities Commission, 2024). Accordingly, the National Highway

Traffic Safety Administration (NHTSA) is investigating the incident (NHTSA, 2026). Both the authorities and the affected providers are working to resolve the matter quickly in order to improve robotaxi technology, prevent similar incidents in the future, and ensure high safety standards overall.

Incidents like this can hardly be ruled out with 100% certainty, but data from both safety approaches already show that robotaxis are significantly safer on the road than human drivers in similar situations. Accordingly, the focus of development is shifting from fundamental safety issues to safer integration into new contexts and transportation systems. Ultimately, what matters most is people’s trust in the technology; the high usage rate already demonstrates that transportation solutions based on self-driving vehicles enjoy broad acceptance and great potential.

Passenger Safety and Security

Even though robotaxis no longer need a driver, they are usually monitored remotely by so-called teleoperators at the technical control center. In the event of a technical malfunction or an emergency, the robotaxi can request assistance from them. However, teleoperators should by no means be thought of as remote drivers. Rather, they are available to assist in exceptional situations. Waymo uses the “phone a friend” metaphor to describe the interaction between a teleoperator and a robotaxi (Waymo, 2024). The number of robotaxis that a teleoperator monitors simultaneously varies by provider and region: In China, a maximum ratio of 1:3 was long mandated, while Pony.ai aimed to reach a ratio of 1:30 by the end of 2025. At Waymo, the ratio is said to have once been as high as about 1:40 (Templeton, 2026). Passengers can also contact teleoperators in an emergency using emergency buttons built into the robotaxi.

Another key safety concept is the so-called “Minimal Risk Condition”: This maneuver occurs when the vehicle cannot continue a trip as planned, for example due to technical problems, a collision, or changes in environmental conditions. In such cases, the vehicle reduces its speed in a controlled manner until it can come to a stop to minimize the risk to passengers and other road users (Waymo, 2021). Guidelines and video tutorials are also available for emergency response agencies, designed to standardize procedures for dealing with autonomous vehicles in the event of an incident (Waymo, 2026).

Data Security and Vehicle Integrity

To ensure the safety of passengers and other road users, robotaxis must record their surroundings with a high degree of accuracy and process the resulting data. As with any modern, connected technology, this raises questions regarding data security and vehicle integrity.

When it comes to data collection and storage, it is important to consider both exterior and interior monitoring of robotaxis.

Both types of recordings are primarily intended to ensure road safety and passenger safety. Nevertheless, there is a risk that this data could be leaked and misused. Robotaxi providers must address the resulting data protection requirements. In the Swiss iamo project, for example, user data is to be stored in a local data center within Europe (SRF, 2025), which means it would be subject to European data protection laws. In addition, according to the project’s sponsors, a comprehensive data protection and security strategy has been developed, and they intend to continuously implement measures to ensure data protection (iamo, 2026).

Similarly, connected vehicles carry the risk that third parties could manipulate them and thereby influence their driving behavior. The software, sensor systems, communication, and backend infrastructure all present potential vulnerabilities for hackers. Even ordinary modern passenger cars are susceptible to such attacks. This risk is addressed through high security standards already during the vehicle development phase (Zego, 2025). In addition, most providers manage their computing on-site, i.e., in the robotaxi, to prevent outside sources from interfering with the driving behavior. Technical supervision can only suggest new drivable paths, but the robotaxi ultimately determines whether this suggestion is safe. Finally, comprehensive risk management is required across the distributed ecosystem,

from the vehicles to the platforms and throughout the value chain (Chen, 2026). Robotaxis can also be tampered with mechanically. In California, for example, incidents of vandalism have occurred in which vehicles have been spray-painted, sensors have been covered with tape, or roads have been deliberately blocked with traffic cones (Talbot, 2025). Unintended disruptions also occur because users, for example, do not close vehicle doors properly or do not fasten their seat belts correctly, preventing the robotaxi from continuing its journey (Dnistran, 2025). Such incidents cannot be completely avoided. However, they become less frequent as monitoring by teleoperators becomes more sophisticated and as the legal framework for such incidents is defined more clearly. To address the issue of vehicle doors left open, Waymo is relying on the assistance of Door-Dash delivery drivers (Silberling, 2026). There are also technical concepts such as “Safety by Design,” which do not allow for remote control in the safety architecture of robotaxis. This ensures that even in the event of a successful hacker attack on a technical monitoring center or teleoperations center, no steering, braking, or acceleration commands can be sent to robotaxis.



04

Conditions

The divergent conditions currently in place for autonomous driving mean that different regions are at different stages of implementing robotaxis. Regulatory, political, and infrastructural conditions are particularly important for the deployment of robotaxis on public roads. The following section examines and compares these conditions to identify the factors that have a significant impact on the introduction and adoption of robotaxi services.

Regulatory Conditions

From a regulatory perspective, robotaxis operate at the intersection of several areas of law, in particular type approval law, national traffic law, and data and liability law (V. Hartmann, personal communication, Feb. 13, 2026). Regulatory approaches differ significantly: While Europe relies heavily on legally defined frameworks, other regions pursue more experimental or market-oriented approaches. Table 1 provides an overview of the various approaches. A common theme across all regions is liability: Who is responsible if an autonomous vehicle causes an accident – the vehicle owner, the manufacturer, or the operator?

In the EU, the Regulation on Vehicles' General Safety (EU 2019/2144) in particular provides the legal framework for the approval of automated vehicles. It defines technical requirements regarding, for example, cybersecurity, software updates, data recording, and safety monitoring. Under the European system, owner liability generally remains in effect: The vehicle owner is initially liable for damages resulting from the operation of the vehicle. In addition, manufacturer liability may apply if an accident is attributable to technical faults or product defects. However, the specific operation of vehicles on public roads remains regulated at the national level. (Connected Automated Driving Europe, 2023; European Commission, n.d.)

Under the AFGBV of June 24, 2022, Germany, as an example, permits the operation of Level 4 vehicles without a driver on board, but only within operating areas defined by the authorities. In addition, a technical supervisor must monitor operations remotely. Such operational areas already exist as part of pilot projects, for example in Hamburg with "ahoi," in the Rhine-Main region with "KIRA," or in Berlin with "NoWeL4" (see page 14). ➔

"One thing is certain: the EU, and Germany in particular, have the most systematically codified regulations. From the perspective of promoting innovation, however, some U.S. states are implementing more practical regulations – and the Chinese are pursuing a pilot-project-based 'grand strategy' in the field of autonomous driving. There is certainly a lot to be learnt in terms of speed and pragmatism. However, the EU's great advantage lies precisely in its reliable legal framework. Anything that is market-ready and safe in Europe is competitive on a global scale."

Dr. Volker Hartmann, CLO and CHRO at ARX Robotics GmbH, Munich and Of Counsel at Kanzlei reuschlaw, Berlin

Jurisdiction	Legal Basis	Key Points
Europe	Vehicle General Safety Regulation (EU 2019/2144)	Regulates the approval of automated vehicles and defines technical requirements (e.g., cybersecurity, software updates, data storage). Liability remains primarily with the vehicle owner; supplemented by manufacturer liability for technical defects. Operational deployment is regulated nationally. (Example: Germany permits Level 4 vehicles without a driver; but only in officially defined operating areas. Approval requires regulatory authorization as well as technical oversight that monitors and can intervene remotely.)
Switzerland	Ordinance on Automated Driving	National framework for the use of automated vehicles in road traffic (incl. driverless systems). Operation only on approved routes with oversight possible. Independent of EU regulation.
United Kingdom	Automated Vehicles Act 2024	Comprehensive legal basis for the use of self-driving vehicles, enabling centralized national approval and commercial application. Independent of the EU legal framework.
United States	Decentralized state-level regulation	Regulation at the state level; permits tests and commercial robotaxi services. Liability is heavily based on product liability law, making manufacturers responsible for technical defects.
China	Road Traffic Safety Law + Standards for road tests and demonstration applications of intelligent vehicles	Permits tests and demonstration operation of autonomous vehicles in state-approved test areas. Requires approval for operators and vehicles; authorities define safety and operating requirements. Liability continues to follow existing traffic laws, supplemented by manufacturer responsibility for technical defects.

Table 2: Overview and comparison of various regulatory frameworks for robotaxis (own illustration)

European countries that are not part of the EU are pursuing their own regulatory approaches. With the Automated Vehicles Act 2024, the United Kingdom has established a comprehensive legal framework for the use of self-driving vehicles (Department for Transport, 2025). Switzerland, too, has created a national framework through its Ordinance on Automated Driving, which has permitted various applications in road traffic since 2025 (FEDRO, 2026). Both countries can shape their regulations independently of EU-wide coordination processes, which may give them additional flexibility.

In the U.S., the regulation of autonomous vehicles is significantly more decentralized. Many legal decisions are made at the state level. States such as California, Florida, and Texas have created their own regulatory frameworks that permit testing and, in some cases, commercial robotaxi services. This decentralized approach enables companies to test and introduce new technologies relatively quickly. Liability is also an important issue in the U.S. In addition to traditional vehicle owner liability, product liability law is particularly relevant here. Manufacturers of autonomous systems can be held liable for technical faults or safety defects, which provides a significant

incentive to adhere to high safety standards. (Asche, Gumushian, & Worley, 2026; Jansma, 2016; National Conference of State Legislatures, 2020)

China takes a more federally directed approach. The legal framework consists of a combination of national laws, various relevant ministries, and the regulations governing local pilot programs. A key foundation is the “Road Traffic Safety Law,” supported by “Standards for the Conduct of Road Testing and Demonstration Applications of Intelligent and Connected Vehicles.” Many cities are initially testing autonomous vehicles in designated test zones before they can be deployed more widely in public transportation. With regard to liability, the existing rules of traffic liability generally continue to apply here. In addition to vehicle owners and operators, manufacturers or developers of autonomous systems may also be held liable, particularly if an accident is attributable to technical errors or product defects. (Glück & Wu, 2025; Zhang, 2025)

Policy Conditions

Policy is a key driver of robotaxi deployment: it can help shape regulatory and infrastructural frameworks conducive to the widespread adoption of these autonomous systems. In addition, it can provide financial support for promising projects, which is particularly valuable for initiatives that are not (yet) profitable. There are five building blocks available to policymakers to guide the expansion of autonomous driving, as illustrated in Figure 10. In addition to regulations, licensing, and operating guidelines, policymakers can support pilot projects and establish strategic guidelines (World Economic Forum, 2026). Above all, policymakers signal whether they support the expansion of robotaxis, thereby influencing whether robotaxi providers choose a particular location.

An example of strong political support for robotaxis is China’s Five-Year Plan. The government issues a plan that sets strategic priorities for the next five years. The 14th Five-Year Plan (2020–2025) promoted the expansion of electric mobility and “intelligent,” connected vehicles (Covington, 2021). In March 2026, the 15th Five-Year Plan (2026–2030) was approved, prioritizing the mass production of Level 3 and Level 4 autonomous vehicles, along with the development of humanoid robots and the achievement of significant advances in AI (Leung, 2026). In addition, the government is investing heavily in the expansion of these technologies, which has significantly accelerated the adoption of robotaxis.

Picture: Mobileye

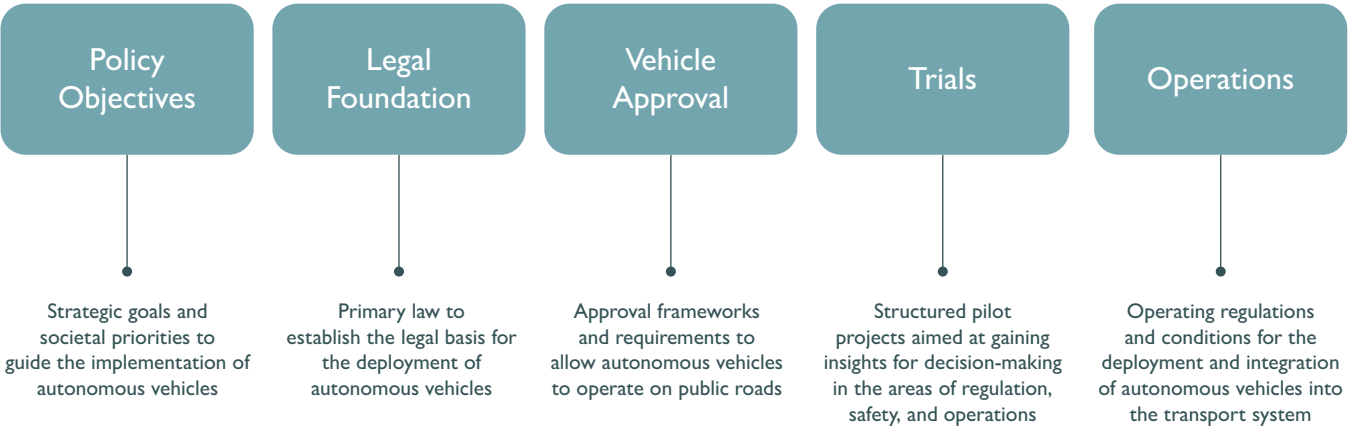
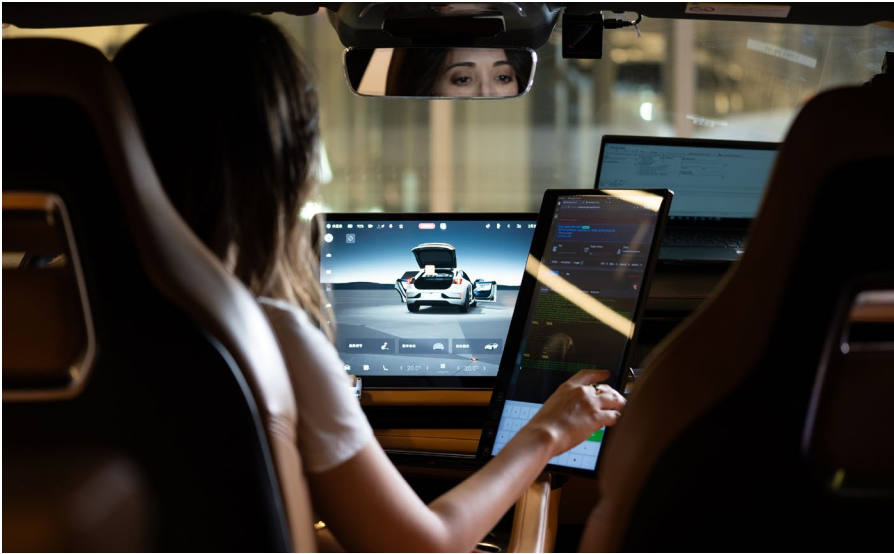


Figure 10: Policy building blocks for the implementation of autonomous vehicles (based on WEF, 2026)

The United Arab Emirates are pursuing dedicated mobility strategies based on two pillars: e-mobility and autonomous driving. In doing so, they are also establishing a clear strategic framework for robotaxis, the adoption of which is likewise being financially supported (see page 22).

In the U.S., strategies for self-driving vehicles are developed at the state level; in California, for example, there is the “Autonomous Vehicles Strategic Framework” from 2022. This strategic framework includes a concrete vision and guiding principles for autonomous driving (State of California, 2022). Now that experience has been gained through various robotaxi pilot programs in the U.S. and providers such as Zoox are working toward commercialization, authorities are beginning to harmonize safety standards and define nationwide minimum requirements. In March 2026, the NHTSA held the first “AV Safety Forum” with industry representatives to update the guidelines and safety standards for autonomous vehicles (U.S. Department of Transportation, 2026).

In the EU, member states, industry, and the Commission are collaborating through the “European Connected and Autonomous Vehicle Alliance” (ECAVA). The alliance held its first meeting in late 2025 to establish strategic priorities. Four areas are of particular interest: software-driven vehicles, automotive hardware, AI and data, and the further adoption of autonomous vehicles (European Commission, 2025). Under the umbrella of “Connected and Automated Mobility” (CAM), the EU also supports projects related to automated vehicles at various levels: by developing guidelines and roadmap strategies, introducing standards at the EU level, funding research and innovation projects, and drafting EU-level legislation as needed (European Commission, 2024). Within individual European countries, there are also efforts to support autonomous driving and expand robotaxi projects. In June 2026, 18 European member states signed a declaration to accelerate and enhance large-scale cross-border testing of autonomous vehicles, aimed at facilitating their deployment under a common framework across participating countries (European Commission, 2026; Katanich, 2026).

“Robotaxis have already become established in many cities in China and the U.S., as the regulatory authorities and ride-hailing and taxi companies are working together, in an iterative process, with the technology firms to roll them out. Technologically speaking, there are hardly any differences, but commercial and regulatory hurdles are far lower and more flexible – this is leading to rapid, widespread integration in what are now more than 20 major cities, with thousands of vehicles. To achieve this in Europe as well, there needs to be a willingness to tackle the driver shortage in the lucrative taxi market first, so that the investments made by vehicle manufacturers, technology firms and transport companies can be justified – public transport providers will then gain significantly cheaper access to automated vehicles.”

Dr. Andreas Reschka, Senior Director of Product, Systems, and Safety, Pony.ai



Picture: iamo

In Germany, both the federal and state governments have issued their own declarations of intent regarding autonomous driving. For example, the Federal Ministry of Digital and Transport has published the strategy paper (2024). The focus here is not only on the technical development of autonomous technologies (including robotaxis) but also on their systematic integration into transportation. The objectives are to strengthen Germany’s position as a hub for innovation in autonomous and connected driving, to transition autonomous mobility services into regular operation, to further develop the legal and policy framework, and to support research projects.

At the state level, there are memoranda of understanding to establish and expand model regions for autonomous mobility. Since December 2022, Hamburg has been a metropolitan model region for mobility. The “ALIKE” project on autonomous driving (see Section 3.2.1) is considered a key initiative of this model region in this context (Metropol-Modellregion Mobilität, n.d.). Just under four years later, Berlin also joined the Metropolitan Model Region for Mobility. The two federal states intend to collaborate on autonomous driving as part of the model region (Berlin, 2026). In Munich, too, representatives from politics, business, and research signed a memorandum of understanding on autonomous driving last year. The goal is to network and expand model regions for autonomous mobility and logistics. The goal is to implement innovations more quickly and consistently and to put autonomous systems into practice, particularly in public and freight transportation (Technical University of Munich, 2025).

“A European Way can be achieved precisely through high standards of safety, data, and environmental protection, combined with targeted support measures, thereby not only addressing the need to catch up, but also establishing a globally competitive, sustainable mobility model.”

Prof. Dr. Nikolaus Lang, Managing Director and Senior Partner, BCG



Infrastructural Conditions

Road and Transport Infrastructure

Robotaxis make use of existing road networks, provided these have recognizable and consistent lane markings, clear signage, and roads in good condition. They rely on their environment being clear and unambiguous; inconsistent lane markings, temporary traffic controls, or frequently changing construction zones can limit their wuse (International Transport Forum, 2023; Knie, Canzler, & Ruhrort, 2019; World Economic Forum, 2025). Whether a road is suitable for robotaxis depends primarily on the ODD, the predefined operational design domain. It describes the conditions under which an automated vehicle may be operated, such as specific road types, traffic conditions, and environmental conditions.

In urban areas, access to parking areas and stops (PUDOs) is also becoming increasingly important. For commercial fleets, it is necessary to organize boarding and alighting zones to ensure traffic flow and safety (DB Regio, 2026).



Digital Infrastructure and Connectivity

In addition to mapping the surroundings using sensors and software, a connected infrastructure could support and complement autonomous vehicle operations (Connected Automated Driving Europe, n.d.; Hammerschmidt, 2019). While this was long considered a promising direction, most self-driving system providers have since moved away from active investment in infrastructure connectivity, and the discussion below reflects this conceptual perspective rather than current industry direction.

One such concept is "Vehicle-to-Infrastructure" (V2I) communication: Vehicles could receive information from traffic lights, traffic control centers, or roadwork alerts. V2I systems could enable better integration of vehicles into existing traffic infrastructure (World Intellectual Property Organization, n.d.). Another factor is "vehicle-to-vehicle" (V2V) communication, which allows vehicles to exchange information with one another. This information may include current location, speed, or braking maneuvers. Cooperative systems such as these could enhance traffic safety and improve traffic flow, especially when many automated vehicles are operating in the same area. A special form of V2V communication is known as "platooning." In this process, several vehicles drive in close formation, one behind the other, with the lead vehicle setting the speed and driving behavior, and the following vehicles adapting to it. This approach may enable more efficient use of road space and offers energy savings, as vehicles follow very closely behind one another, thereby avoiding unnecessary braking or acceleration. (Martínez-Díaz, Al-Haddad, Soriguera, & Antoniou, 2021)

A robust digital infrastructure is essential for the operation and integration of connected transportation systems (European Climate, Infrastructure and Environment Executive Agency, 2025). While mobile network connections are crucial for AVs, many systems today are operational with minimal connection speeds on the road, since vehicles must remain safely operational regardless of connection quality. Higher connectivity requirements are concentrated around depots and maintenance sites, where they support uploading data from the vehicle to centralized data centers for tasks such as fleet monitoring and map updates.



Picture: HOLON

CHARGING
INFRA-
STRUCTURE

Operational, Energy, and Service Infrastructure

Off-road, it is essential to establish a robust infrastructure for charging and maintaining robotaxis. This includes charging infrastructure for fleets and service infrastructure.

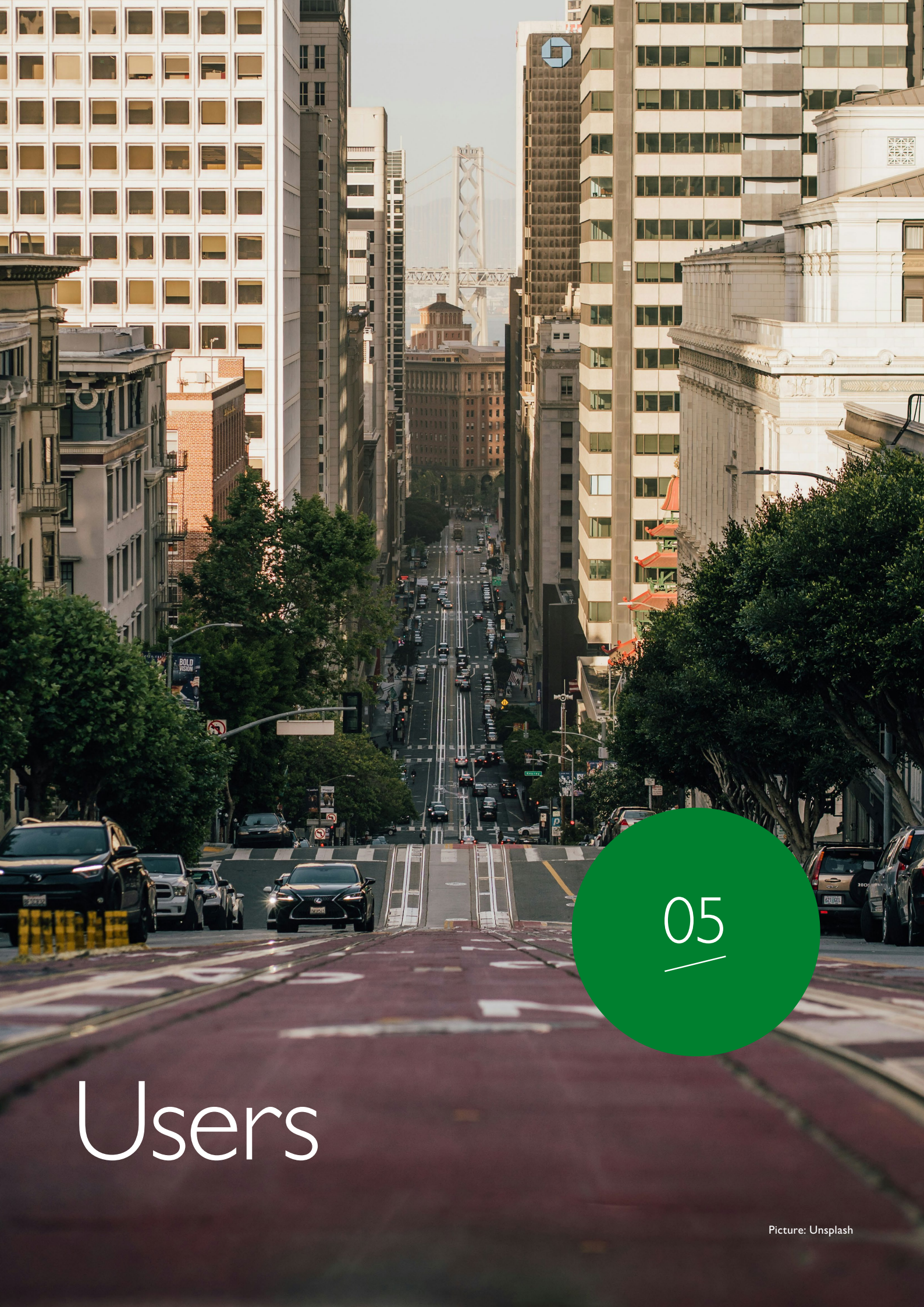
DEPOT,
MAINTENANCE,
AND SERVICE
INFRASTRUCTURE

Depot and service locations centralize key operational tasks, such as charging, technical inspections, and preparing vehicles for their next robotaxi assignment, in a single location. Robotaxis are also equipped with extensive sensor technology, such as camera, radar, and LiDAR systems (see page 28). Since these components are critical to the safety of autonomous driving, they must be regularly inspected, cleaned, and maintained. Robotaxis differ from private autonomous vehicles in this respect as well: due to their high daily mileage, maintenance intervals are much shorter. (Skogsmo & Beiker, 2025; Verne, n.d.)

For robotaxi fleets, a dense and high-performance charging infrastructure is a key component of operational planning. Unlike privately owned electric vehicles, which are generally used relatively infrequently and primarily during the day – and are therefore often charged overnight – robotaxis are in service almost continuously. This often results in very short charging windows that operators must integrate into their day-to-day operations.

The number, location, and charging capacity of charging stations affect how often and for how long – or over what distances – the vehicles can be used. The charging infrastructure should be available where many trips take place to avoid unnecessary detours. In cities, different types of charging stations are also needed: Fast-charging stations allow for short charging breaks between trips, while central depot locations can accommodate longer charging sessions as well as maintenance and service (Joint Research Centre, 2025). In practice, autonomous fleets are still often charged manually. This increases operating costs and represents a break in the automation process. As a result, there are an increasing number of automated charging solutions. Robot-assisted systems, such as those offered by Rocsys, are designed to automatically detect vehicles and connect them to the charging station (Youd, n.d.).

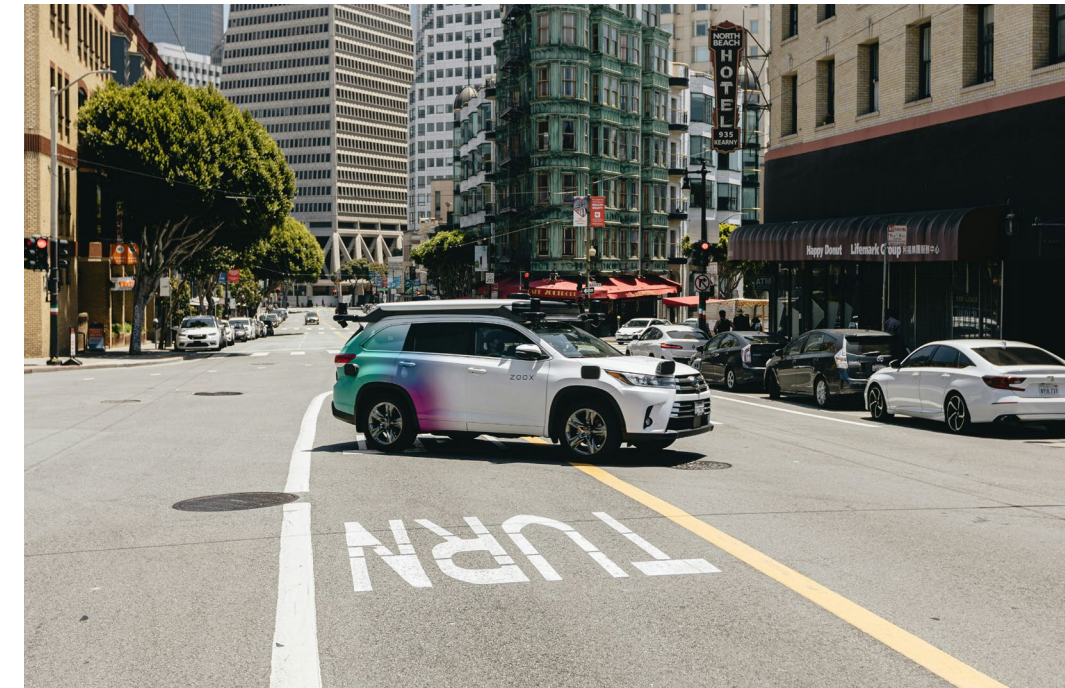
Another limiting factor is grid capacity. In many regions, power grids are not designed to provide high charging power for numerous robotaxis simultaneously. This can lead to bottlenecks, particularly at central charging hubs. A sufficiently sized and stable grid infrastructure is therefore a prerequisite for scaling up robotaxis (L-Charge, 2026).



Users

Picture: Unsplash

In addition to attractive conditions, developing use cases is crucial for the widespread adoption of robo-taxi services. The relatively large number of robotaxi options in the U.S. and China provides insights into usage patterns.



Picture: Unsplash

In San Francisco, you can book a ride-hailing trip with a Waymo or Zoox robotaxi. Compared to conventional, human-driven ride-hailing services from Uber and Lyft, a Waymo robotaxi costs about US\$ 9.50–11 more (O’Kane, 2025). Nevertheless, Waymo’s market share is growing, while those of Uber and Lyft are shrinking (Campbell, 2025). Observers see one possible reason for this in users’ preference for privacy afforded by a driverless robotaxi (O’Kane, 2025). This user perspective is valuable both for cities and municipalities and for providers and their business models.

Due to the lack of established robotaxi services in Europe, there is currently no European user perspective. Select pilot projects, such as those in Oslo and Darmstadt (see page 16 and 17), have tracked user perspectives – and continue to do so – albeit limited to their respective pilot contexts. Understanding (potential) users also beyond the pilot context is crucial for the successful establishment of robotaxi services.

Thus, in collaboration with Uranos, a Germany-wide survey (n=2,511) was conducted between February and March 2026 to answer the following questions:

User Acceptance

Who is already using robotaxis? Who plans to use them in the future? And under what conditions would users consider taking a shared ride (as part of a ride-pooling service)?

Micromilieus

In which target groups will robotaxis first gain a foothold?

User Perception

How are robotaxis perceived by potential users? What role will they play in the mobility mix from the users’ perspective?

User Acceptance

The survey began by asking who has already used robotaxis and who plans to use them in the future. Based on the responses, it is possible to estimate the market potential for robotaxis. In addition, the survey was intended to reveal what percentage of respondents is somewhat skeptical of robotaxis and why. Answers to these questions should be taken into account to ensure the acceptance and adoption of robotaxis.

The results show that while about two-thirds of respondents are familiar with the concept of robotaxis, only about half of them would consider using one in the future (see Figure 11). The other half stated that they had no interest in using a robotaxi. Only about two percent said they already use robotaxis. This comparatively low figure is likely due to the lack of established robotaxi services in Europe.

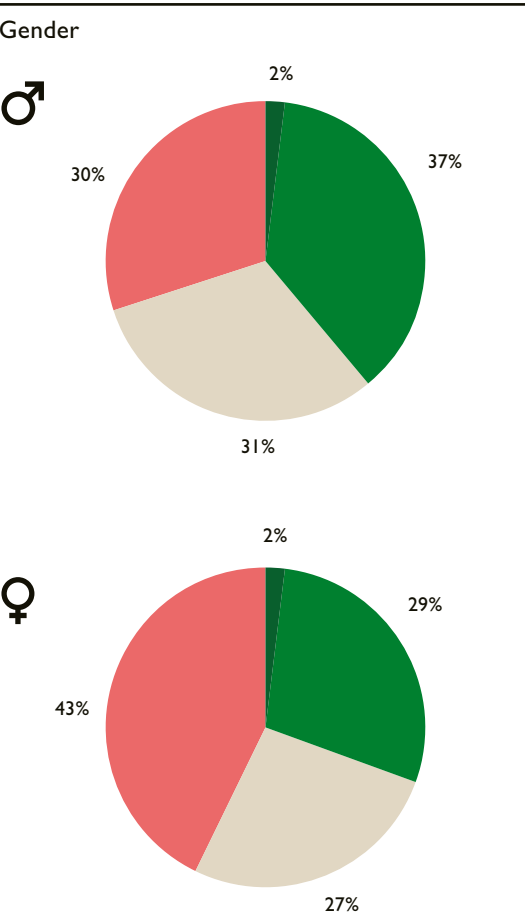
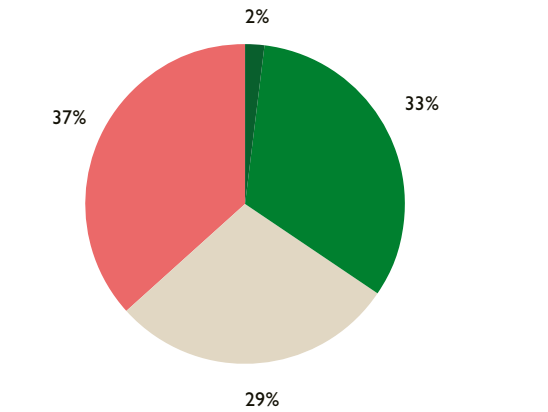


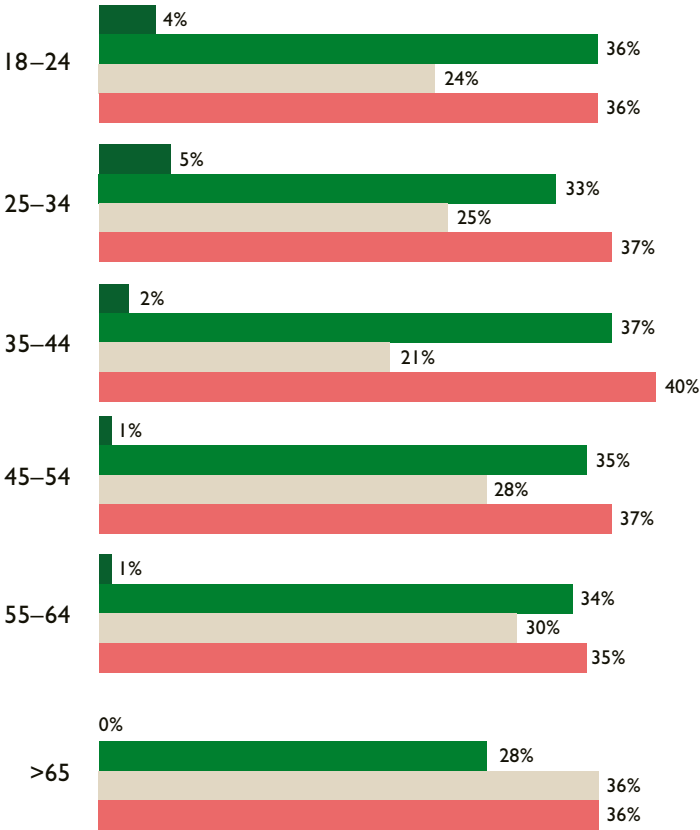
Figure 11: Demographic characteristics of the respondents (Institute for Mobility/Uranos, 2026)

■ I have used robotaxis before
■ I am familiar with robotaxis but have not used them yet
■ I am familiar with robotaxis but am not interested in using them
■ I don't know robotaxis

Demographics



Age



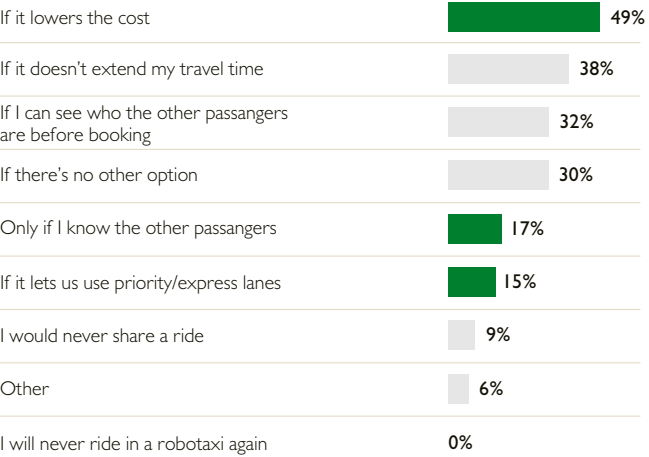
(Prospective) Robotaxi Users

The robotaxi user base was surveyed about their experiences and intentions regarding future use of robotaxis. About 30% reported positive experiences and said they would like to use a robotaxi again. The majority, however, found the rides to be average and would therefore “only maybe” use a robotaxi again (see Figure 12).

In addition to the intention to use a robotaxi, it is important for ride-pooling business models to understand the conditions under which users are willing to share a ride with other passengers. Evidently, cost is a crucial factor. Furthermore, it is important to respondents that sharing a ride does not result in any time loss and that they know in advance who they would be sharing the robotaxi with.

Reasons for sharing a robotaxi

Under what conditions would you be willing to share a robotaxi with other passengers?



Experience with robotaxis

Selection of one option

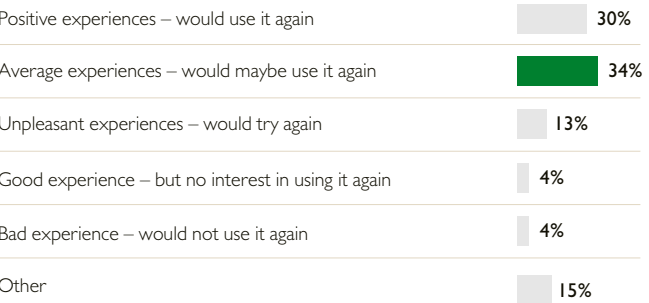


Figure 12: Reasons for sharing a robotaxi and experience with robotaxis (Institute for Mobility/Uranos, 2026)

People without Interest in Robotaxi Usage

Respondents who were not interested in using a robotaxi were asked why. The results show that the majority are satisfied with the status quo of their mobility and therefore simply have no need for a robotaxi (see Figure 13). However, a subjective sense of safety is also a decisive factor: 34% reported safety concerns about autonomous driving and are therefore not interested in robotaxis. In addition, people who are not interested in robotaxis expect the cost of a ride to be too high. These concerns reveal a gap between the actual and perceived safety of robotaxis.

Reasons for rejection

Please indicate why you have no interest in using robotaxis

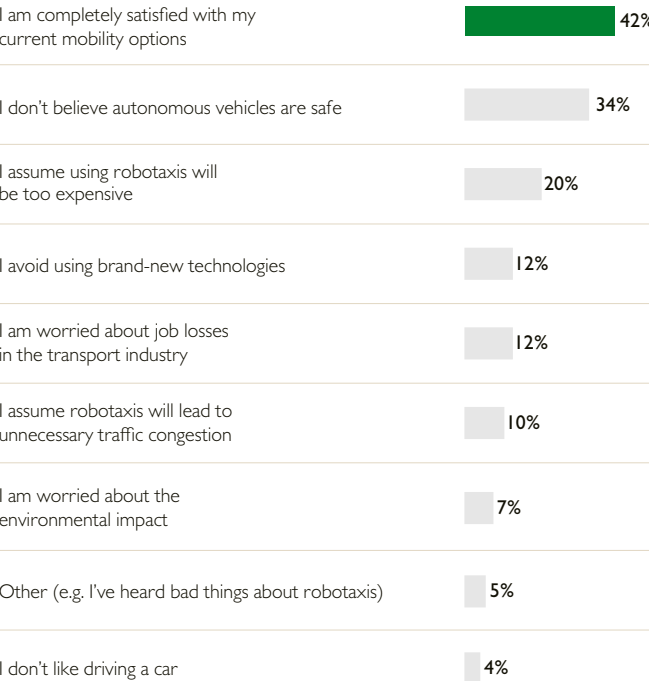


Figure 13: Reasons for rejection (Institute for Mobility/Uranos, 2026)

Micromilieus

A particularly interesting question for the adoption of robotaxis in Europe is who would use them. Based on the Uranos Micromilieus and the survey results, an analysis was conducted to determine which milieus – with their varying values, attitudes, and lifestyles – would be most likely to use robotaxis. The results show that even very different micromilieus are united by a high willingness to try out a robotaxi (see Figure 14). There are only a few common characteristics shared by all micromilieus with high levels of willingness: they tend to be progressive, are more likely to live in urban areas, are predominantly male, and have medium-to-high social status.



The most conservative prospective customers come from the micromilieu of **Wealthy Technocrats**. They are almost exclusively male, highly educated, and wealthy. What likely appeals to them most about robotaxis is the thrill of a self-driving vehicle, the individualism of a ride at the push of a button, and a comfortable mobility experience that allows them to catch up on their emails at their leisure.

Urban Performers also enjoy a high social and educational status, have considerable wealth, and are predominantly male. However, they are more open to innovation than the Wealthy Technocrats and are occasionally willing to share a ride in a robotaxi. They want to show off their style, remain curious, and are very interested in trying out new technologies. For them, strong robotaxi brands and a unique in-vehicle experience are likely essential.

Both **Self-determined Individualists** and **Techie Adventurers** seek status, design, and thrills in their mobility. Like the Urban Performers, they are also open to innovation, tend to be male, and seek out unique experiences. They value flexibility and multiple options. In robotaxis, they are likely to discover a new sense of freedom:

They can book a ride spontaneously and flexibly, which, thanks to self-driving technology, offers a new appeal compared to other mobility options – even without a fellow passenger, if they so choose. In their daily lives, members of both micro-communities use shuttle services like Uber or Lyft more frequently.

Among predominantly female micromilieus interested in robotaxis, a different picture emerges when it comes to their motivations: They are likely to choose robotaxis less for reasons of status or design, or out of enthusiasm for technology, and more because of a sense of social responsibility and a commitment to sustainability. The **Conscientious Bourgeoisie** tends to consist of middle-aged women who are committed to lifelong learning, have diverse interests, and remain open to new ideas, including those related to technology. Their mobility decisions are guided by a sense of responsibility, and they value social interaction. Accordingly, they are likely to find a shared robotaxi or ride-pooling experience particularly exciting. For them, sharing the ride is not a necessary evil but rather an opportunity to try something new and connect with others.

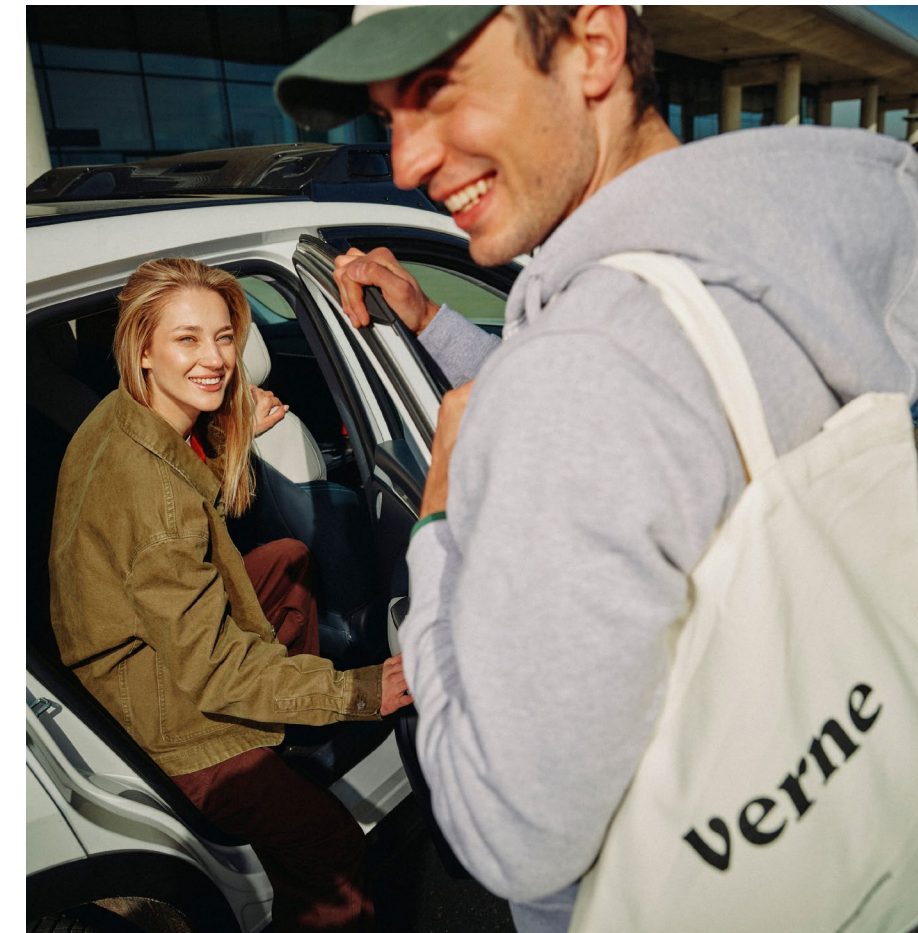
The younger **Mindful Creatives**, too, want to continually broaden their horizons and therefore embrace lifelong learning. Rather than socializing, sustainability is their top priority when it comes to both their mobility choices and their consumption habits. They might see autonomous ride-pooling with robotaxis as a sustainable alternative to private cars and conventional shuttle services – one that offers new experiences.

For **Urban Avantgarde** the sustainability aspect of robotaxis is likely to be very important as well. They are environmentally conscious and willing to actively advocate for economic, cultural, and environmental change. The shared service and the opportunity to travel “on demand” are likely to be yet another bonus for them: They can enjoy their freedom and flexibility and relax in a robotaxi without spending a lot of money or even having to buy their own car. Compared to the Mindful Creatives, the Urban Avantgarde is significantly more critical of consumerism and tends to have lower incomes. As a result, they prioritize affordability when it comes to their mobility.

Finally, there is the **Status-oriented Bourgeoisie**. This is a metropolitan micromilieu characterized by high income and a focus on quality. When they want to treat themselves to something special, they turn to exclusive, high-prestige products and services. Nevertheless, financial security remains important to them. Robotaxis could be just such a special treat for them – something they occasionally indulge in when they want to leave their car at home. For additional prestige, they are likely to prefer private rides over shared robotaxi rides.

It turns out that the motivations for trying out a robotaxi vary widely: On the one hand, early adopters are looking for unique experiences with a certain appeal under a strong brand. On the other hand, sustainability- and price-conscious target groups demand efficient and environmentally friendly services that are definitely shared. It remains to be seen whether thrill-seekers will become regular robotaxi users or whether, after one or a few rides, their desire for something new will be satisfied.

Picture: Verne

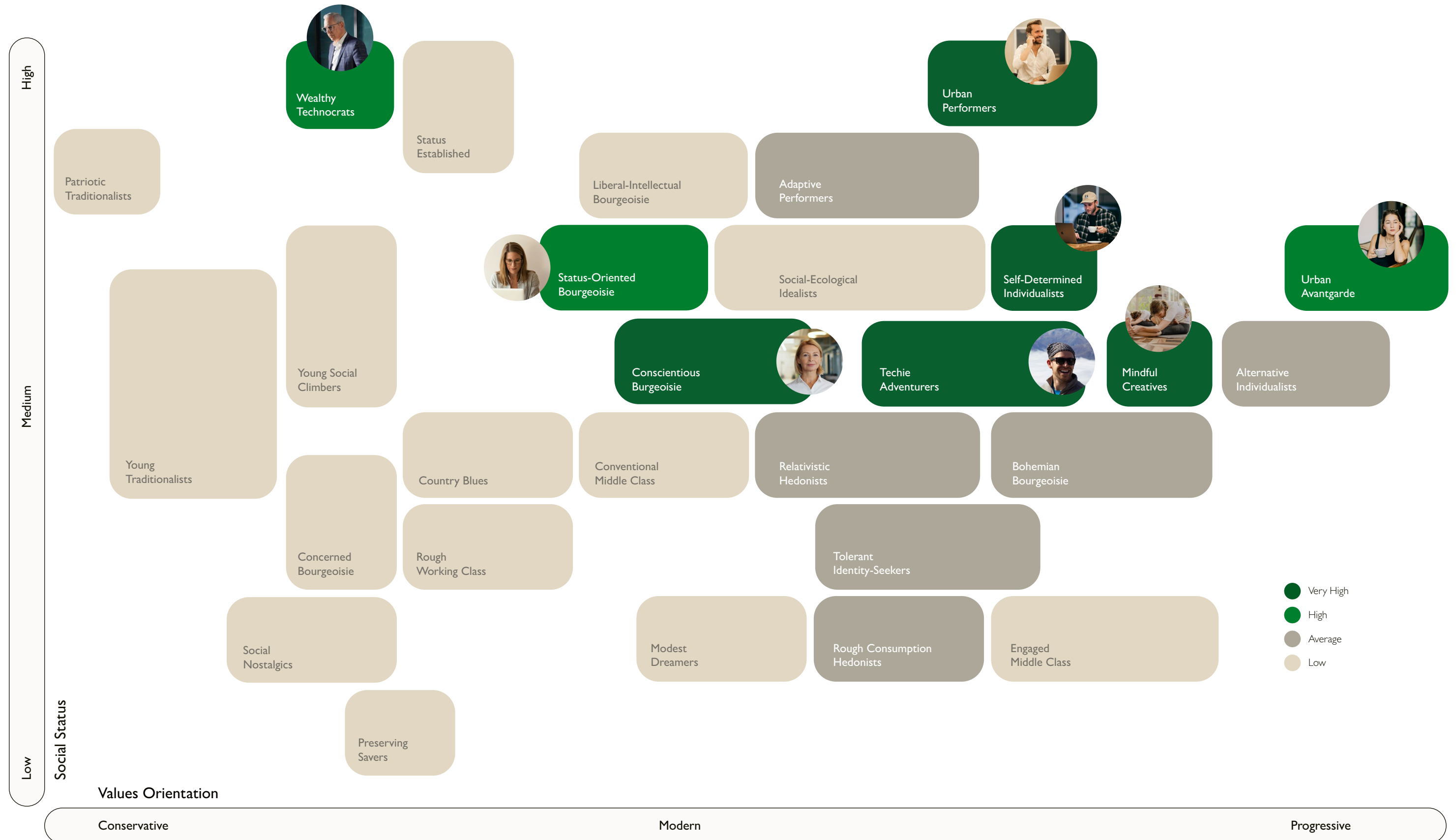


User Perception

Two questions are of central importance to the societal impact of robotaxis: Are robotaxis a supplement to existing modes of transportation, or do they cannibalize them? And: If robotaxis replace existing modes of transportation, which ones will they replace? Answers to these questions can only be found through real-world experience and are likely to depend on robotaxi availability, integration into existing services, and pricing. Nevertheless, people were asked how they assess the role of robotaxis in traffic volume. The results show that, from the users' perspective, robotaxis are primarily a supplement to existing modes of transportation. Despite their presumed role as a supplement, however, the majority of respondents assume that robotaxis will have no impact on traffic volume.

Willingness to use robotaxis

If there were robotaxis in my city, I would try them out



06

Recommendations for Action

The exploration of robotaxi value proposition, existing services and initiatives, the enablers and conditions, and usage intentions clearly shows that robotaxis are gaining momentum in Europe – but there is still ground to make up. The U.S. and China are still many steps ahead. Thanks to support from tech giants, the Middle East is catching up quickly. The major robotaxi providers are working to scale up their operations worldwide and could soon come to dominate the European market as well. From a European perspective, there is an urgent need for action to catch up with global competition and ensure that robotaxis are implemented “the European Way”: as a meaningful complement to existing mobility services, delivering the greatest possible benefit to society. This objective calls for action in five areas. ➊

01

Offering: Promote dialogue and cooperation between public authorities, public transit companies, and robotaxi providers

The European approach is characterized by close and well-coordinated cooperation between public authorities, operators, tech providers, and other relevant stakeholders. This is demonstrated by existing initiatives with strong public-private partnerships that are successful. Hamburg and Oslo serve as examples of best practices for this constructive cooperation: Instead of imposing rigid requirements on one another, insisting on them, and pushing for the implementation of their own business models, what is needed is an emergent ecosystem that, taken as a whole, delivers greater social benefits than the contributions of the individual players. This way of thinking and acting within a shared ecosystem is foreign to many transport companies and automakers, as they have always operated independently in the past.

02

Conditions: Harmonize Regulations to Ensure Safety and Enable Scaling

The legal framework for the “European Way” should establish high standards for safety, data protection, and the environment for autonomous vehicles. At the same time, to enable the rapid, widespread, and scaled-up deployment of self-driving vehicle fleets, national regulatory frameworks must be well coordinated and harmonized. Initiatives involving self-driving vehicles are underway in countries with clear, attractive legal frameworks that are as compatible with one another as possible. Fast and pragmatic approval processes for driverless vehicles are particularly important for catching up with China or the United States. The United Kingdom is leading the way: The particularly expedited process for commercial pilots of autonomous vehicles is considered a key factor behind the announcement of several promising initiatives in London in 2026, including those involving Waymo.

03

Conditions: Ensure Long-Term and Sustainable Political Commitment

Robotaxi and tech companies need a clear and unambiguous signal from policymakers that the expansion of autonomous vehicles is desired and supported. This includes targeted funding mechanisms and infrastructure investments, as well as a commitment to creating attractive conditions. Policymakers can and should play an active role in the governance of autonomous vehicles, thereby ensuring their deployment in line with the “European Way.” The political back-and-forth in Europe and the differing views at various levels cause investors to hesitate. Furthermore, funding to promote robotaxis in Europe should not be distributed across all member states. What is needed are a few large areas where robotaxis can be deployed in significant numbers. The era of numerous small-scale pilot projects should come to an end; instead, a few regions must be selected for actual operation.

04

Users: Ensure Seamless Integration into Existing Transport Systems

Unlike the approaches in the U.S. and China, the “European Way” is based on the idea that robotaxis are integrated into existing transportation systems as supplementary services to public transit – if not as part of public transit itself. Robotaxis can thus complement public transit, particularly for the first and last mile. An on-demand service that does not operate on a fixed route can significantly increase the efficiency of local public transport. In addition, customers are likely to appreciate this added flexibility, benefiting the entire transport system. It is important that this integration be designed with the user in mind: Can robotaxi services be seamlessly integrated as a complementary option? Numerous European initiatives are already taking this into account.

05

Users: Establish and Involve User-Centered Business Models

The user survey has shown that various micro-communities are interested in trying out a robotaxi. However, the motivations – ranging from the desire for a unique, exclusive experience to sustainability considerations and cost reduction – vary across target groups. For robotaxi providers, this means they must develop business models tailored to their target audience and centered on the user in order to ensure acceptance and adoption. It is crucial that people actually experience robotaxis: they need the opportunity to ride in them to truly assess the technology and overcome any reservations they may have. The more these services are used, and the more driving situations users experience with them, the greater their confidence that robotaxis can handle a wide variety of traffic situations. For this reason, autonomous vehicles should be made available to public transport operators in particular, so that they can provide users with real-world experiences and use cases.



Picture: Unsplash

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Imprint and Disclaimer

This report provides a snapshot of robotaxi deployment in Europe as of summer 2026. It is based on an earlier German version published in June 2026, with select updates made since. In a dynamic field that changes daily, the report makes no claim to completeness.

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