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Mobility Minds Blog

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How Robotaxis Will Revolutionize Mobility in Germany

A Look at Shared Autonomous Vehicles: Challenges and Opportunities for the Future of Transport

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Imagine stepping into a vehicle, entering your destination, and sitting back in comfort – the car sets off autonomously, with no driver required. What sounded like science fiction just a few years ago is already a lived reality in some parts of the world. In the USA and China, so-called Shared Autonomous Vehicles (SAVs) have become a familiar sight in cities, while Germany and Europe are only at the beginning of this development. But what is the current state of robotaxis and shared autonomous vehicles really like? What hurdles remain, and what opportunities do SAVs offer for the future of public mobility? In the PwC study The Evolution of Shared Autonomous Vehicles, led by Hartmut Guethner, an in-depth examination of the topic is presented, with a particular focus on the ecosystem and its key players. The research was carried out as part of the “PwC Lab for Smart Mobility” at the Mobility Institute of the University of St. Gallen and aims to highlight what needs to happen now in Germany for the mobility transition to succeed – greener, safer, and more cost-effective than ever before.

What Are Shared Autonomous Vehicles?

Shared Autonomous Vehicles, or SAVs for short, are self-driving vehicles used collectively by multiple users. Unlike private autonomous vehicles, SAVs are centered around the idea of community: they are intended to offer flexible, environmentally friendly, and efficient mobility solutions, especially in urban areas and for public transport. SAVs can take various forms, from robotaxis to autonomous minibuses (robo-shuttles) operating on scheduled routes.

International Comparison: The USA and China as Pioneers

While Germany is still experimenting with small pilot projects focused on specific regions, SAVs are already part of everyday life in the USA and China. The American provider Waymo, for example, operates a commercial robotaxi service in five US cities, carrying out more than 250,000 rides per week – and the numbers are rising rapidly. In China, Apollo Go has completed over eleven million autonomous robotaxi journeys since its market launch in September 2020 up to mid-2025. These impressive figures demonstrate that the race for technology is in full swing – and that Europe risks falling behind.

In Germany, by contrast, fleets remain much smaller: pilot projects in cities such as Hamburg or Frankfurt typically involve fewer than 20 vehicles. What is missing is large-scale deployment and widespread adoption, as seen in the USA and China. Yet the potential is enormous – as the study shows.

Why Germany Has Fallen Behind

So why is it that Germany and many European countries have only made tentative progress in introducing SAVs? We see several obstacles that must be overcome quickly. These include, above all, the technological lag in developing autonomous systems, the lack of unified standards and norms, and insufficient cooperation between public and private stakeholders. There are also uncertainties regarding legal and regulatory frameworks, which hamper investment and innovation. Interviews with industry experts from Europe, Asia, and North America confirm: without clear political guidelines and targeted investment, it will be difficult to compete internationally. Especially concerning safety, data protection, and liability issues, a harmonized European framework is urgently needed.

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Opportunities for Germany and Europe

Despite all the challenges, there is reason for optimism: Shared Autonomous Vehicles offer the Sreduce CO? emissions, and enable greater participation for people with limited mobility. The potential of Shared Autonomous Vehicles for safety, climate protection, and more inclusive mobility is enormous. Now is the time to realize it – with capital, regulatory clarity, and robust cooperation models. For this, Europe must move beyond the pilot project phase. The technology has been tested and is ready for regular operation. What is needed are major public tenders to scale up European technology and platforms.

It's worth it for users too: in the long term, SAVs will be cheaper than vehicles with drivers. This is not only due to savings on personnel costs, but also because SAVs can be deployed more flexibly and vehicle utilization Sincreases. Especially in public transport, autonomous vehicles could help to lower costs and expand services – for example, in rural areas where bus lines are now barely viable.

Four Models for a Successful SAV Ecosystem

To enable the breakthrough of Shared Autonomous Vehicles, functional business and operational models are needed. In the study, four possible implementation models for an SAV ecosystem were developed. These range from purely public solutions to privately operated fleets, as well as hybrid models where municipalities and companies share responsibility. Depending on regional circumstances and target groups, different models may be appropriate. For the two main application scenarios – SAVs in public transport and robotaxis – a detailed financing model has also been developed.

Find out more about the application models and specific recommendations for policymakers and industry in the study: **www.pwc.de/SAV**

And here is **part 1 of the study**, which focuses on the demand side and potential user groups.

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