Automated Driving Vs. Autonomous Transport?

"OL Vallée à la Demande" on-demand autonomous shuttle service in Lyon, operated by Keolis

"52% of UK drivers wrongly believe they can buy a fully autonomous car today."

A **recent report from Thatcham Research** highlights that people believe that automation is more advanced than it is. However, this confusion masks a more fundamental issue around autonomous vehicles: **'what are they really for?'**

In 2019, Professor Glenn Lyons of the University of the West of England ran a series of workshops – **The Driverless Cars Emulsion**. People keen to realise the benefits of driverless cars were brought together with those who foresaw increased traffic and environmental impact if autonomous personal cars proliferate.

The events discussed **why autonomous vehicles are really being developed:** is it so that people can purchase their own automated car or is autonomy, in fact, much more useful when it is incorporated in shared vehicles?

One of the emergent elements was the recognition that:

"Thinking about how driverless cars might impact us gives a new opportunity to explore existing strengths and weakness of mobility and consider how these can be positively addressed."

Whilst much of the media around autonomous driving still assumes that driverless cars will be personal vehicles, in fact, most trials of autonomous vehicles are shared. Whether in Europe, where **autonomous buses** are being tested or in the US where **autonomous cars are being trialled as taxis**.

The use cases being tested across Europe focus on the most expensive part of the public transport network, the last mile. Where high passenger numbers and economies of scale are unlikely, the opportunities to bring down the costs per passenger are limited. Reducing the driver cost is one possible option – which is where autonomy comes in.

In Lyon, autonomous shuttles were set up to transport people from tram stops to a stadium development under construction. The development was expected to attract only a limited flow of passengers throughout the day whilst it was unfinished, hence the use of small vehicles to take people from the station to 'virtual stops' within the stadium. The shuttles were run as on-demand vehicles, booked and managed through the Padam Mobility DRT platform integrated with the autonomous driving software.

The Île-de-France area surrounding Paris is different from the highly connected central zone. The population is less dense, with people often living and/or working some distance from the rapid transit network. An autonomous shuttle was tested to connect an end-of-line station – Saint-Rémy-lès-Chevreuse – with a campus 2km away. Autonomous electric vehicles carried up to four people along an open road. The vehicle software had to obey road rules and take account of conditions and other road users. The vehicles were booked by app and managed by the Padam Mobility on-demand platform.

The trials focused on incorporating autonomous vehicles into passenger transport, and as such, the vehicles had to be able to interact with passengers. Padam Mobility platforms managed the passengers' interactions with the vehicle from booking a ride through to safely leaving the passenger at their destination. It helped passengers understand their trip – from showing passengers their vehicle travelling towards them, tracking its progress in real-time to providing and helping them validate their ticket.

Booking information from the Padam Mobility platform ensured that the vehicle arrived on time for each booking and opened the door for the passenger(s). The platform also confirmed when each person had boarded so that the vehicle could proceed. At the end of the journey, it determined where the person left the vehicle at the end of the booked trip.

In addition, the software optimises the vehicle route to serve all the trips requested, managing the pattern of picking up and setting down other travellers en route and optimising the use of the fleet.

These proof-of-concept trials were successful and the second iteration of trials is now underway in three new locations through the EU's ULTIMO programme.

Although small shuttle trials have been relatively rare in the UK, there is one notable project: a full-sized autonomous bus was tested in 2022. The service, operating over the Forth Road Bridge, will start carrying passengers in January 2023. Fitted with a ground-breaking sensor and control technology, these buses can run on pre-selected roads without the safety driver having to intervene or take control. The buses can carry up to 36 passengers over the 14 miles across the bridge, with a capacity for over 10,000 passengers a week.

The investment required to get autonomous vehicles in use is huge – the ULTIMO project alone has budgeted for €40 million (combing EU and Swiss resources) across three test sites for four years.

Perhaps the answer to the tension over the uses of autonomy lies in this. To justify the enormous investment these vehicles require, future returns on this investment can only be achieved through highly utilised vehicles rather than personal cars.

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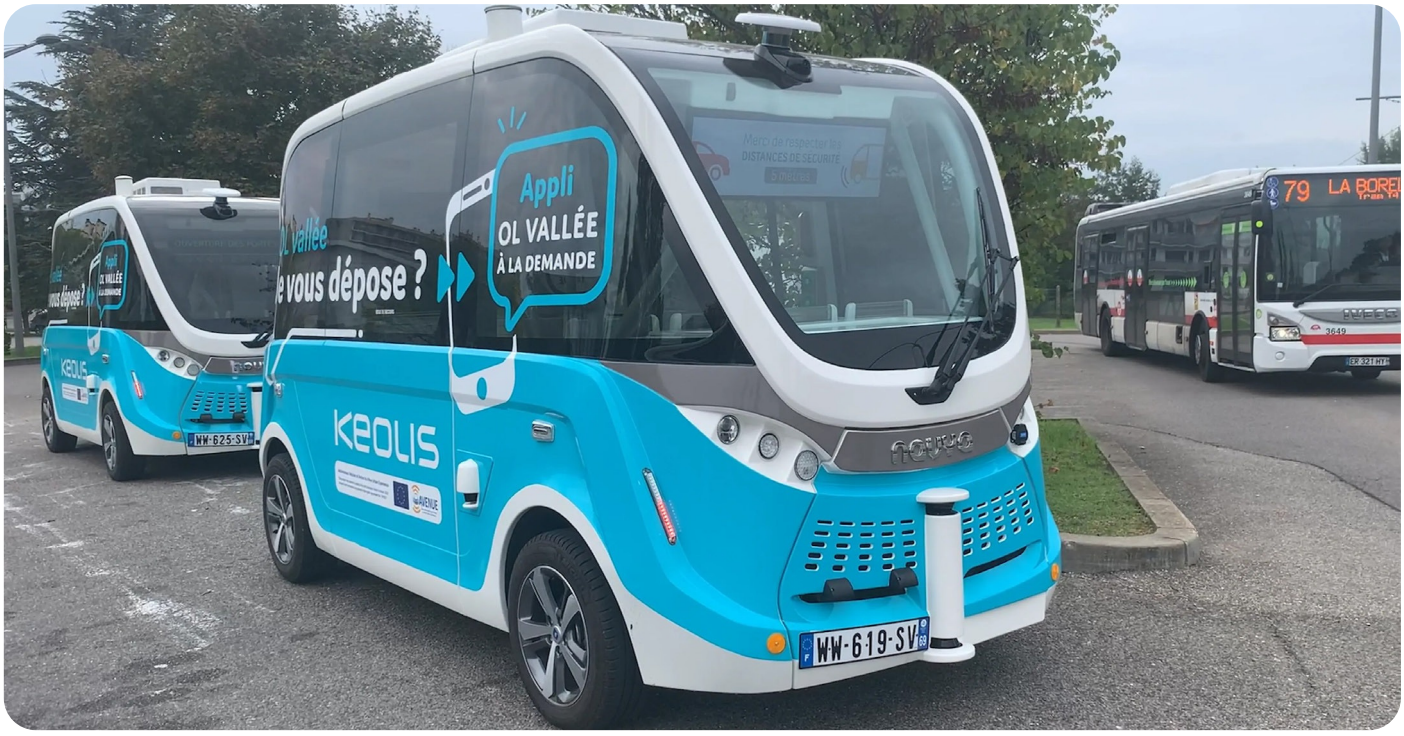
Pioneering Autonomous On-Demand Transport



Successfully tested in Lyon, Padam Mobility technologies integrate autonomous vehicles within the public transport fleet. Autonomous vehicles can help solve the last-mile challenge by reducing costs without reducing services.

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