Autonomous vehicles and future placemaking

Connectivity between rural areas and urban centres would be transformed by autonomous vehicles says Nigel Bidwell



ABOVE:
Imagining future places - an AV zone ©Farrells





Nigel Bidwell is a partner in Farrells

In 2015, Google's on-road driverless cars in California clocked up their millionth mile and throughout Europe and China prototypes of these vehicles are being tested out in various scenarios. Together with the Engineers WSP Parsons Brinckerhoff, we at Farrells have recently carried out some research on placemaking and autonomous vehicles (AV). In my opinion, the widespread use of connected and autonomous vehicles creates an opportunity to reinvigorate our cities and town centres. Without doubt, the use of AVs will make cities and towns safer, greener and cleaner along with substantially increased liveability and enhanced placemaking.

An autonomous vehicle is capable of completing journeys safely and efficiently, without a driver. Importantly, AVs can move whilst empty, so can offer door-to-door journeys without needing a parking space at either end. A 'connected' vehicle is simply one that can connect devices in the car (for example, a smartphone) to external networks via the internet and with other vehicles around them.

In the UK, over 90 per cent of all road accidents are caused by driver error. The widespread use of AVs could reduce both the number and severity of road accidents, making road travel safer for pedestrians, cyclists and those inside the vehicles. However, it is worth pointing out that pedestrians and users of public spaces will have to get used to a new etiquette and most importantly that AVs will put people at the top of the user hierarchy, rather than vehicles.

I would urge local authorities and development corporations to begin to plan for AV zones now, particularly where there are plans for a growth area, housing zone, opportunity area, or garden city. Initially an AV zone would operate as a self-contained system within a defined area. This all sits well with the development areas already identified in planning documents across the country, where growth plans are of a relatively large scale and are expected to build out over the next ten to twenty years.

Another positive outcome is that new developments designated as a dedicated zone for shared AV could offer between 15 per cent and 20 per cent additional developable area compared with a typical central urban layout. This is primarily due to the removal of almost all parking spaces, but also because of road space simplification that will save space. This radical shift in urban design creates the opportunity to bring forward high quality, high density communities enhanced by open and green spaces. At the same time, the streets themselves become more functional and efficient thoroughfares. Street clutter can be virtually eliminated, as AVs will not need to gather information from the roadside. In a zone designed and built for AVs from the outset direction signs, speed limit signs and traffic lights will no longer be required. Visibility splays can be reduced and intersections can be simplified.

At typical densities, the introduction of AVs opens up the potential for hundreds of thousands of new homes in our existing city centres. Under a shared use model we would need far fewer AVs than cars in circulation to maintain today's car-based travel patterns. Recent research, repeated with similar >>>

RIGHT:
Transforming City Centres
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results around the world, suggests that cars are parked for 96 per cent of the time in the UK (80 per cent at home and 16 per cent elsewhere). With shared use, each AV would be in use for a far greater proportion of time than a typical car today. On this basis, even allowing for peaks in demand and growth, the efficiency benefits would be transformational.

Demand for mass movement along core routes between urban centres will remain, catering for peak commuter routes and inter-city trips. It is unlikely that sufficient efficiency or cost gains would be made by hundreds of individual AVs converging on particular routes. Instead, AVs will offer a door-to-door first or last mile travel option to and from mass transit interchanges. They will be able to fulfil journeys where there is no public transport equivalent, or where levels of demand do not support an economically viable service. This will cut waiting times for the travelling public and if this integration saves just ten minutes of waiting time for commuters each day, it is equivalent to reclaiming five working days per year.

Driverless and autonomous vehicles could be used to substantially improve road safety and efficiency on motorways and major routes. The Department for Transport is already taking the idea seriously and are considering changes needed to the Highway Code for driverless vehicles, and Highways England's first motorway trials for driverless cars will take place next year. A fully driverless motorway would allow much better utilisation of road space, reducing reaction times and smoothing flows across segments. This will also reduce energy consumption.

It's not just cities that can benefit, AV use in rural areas will increase access and mobility. The AV can help young people who do not drive or cannot afford a car be able to access a far greater range of jobs, both rural and urban. People of all ages will be able to maintain a level of mobility, irrespective of their ability to drive. Access to healthcare, schools, community centres and social activities would be much enhanced. Deliveries and logistics can be made at lower cost, opening up opportunities for rural businesses to serve a larger catchment - and for rural residents to access services from more businesses. There is no denying that connectivity between rural areas and urban centres would be transformed by AVs.

I believe that with the right planning autonomous vehicles will be a game changer. They have the potential to support a better quality of life, economic growth, health, safety and social connections. They offer convenient and affordable mobility to everyone, regardless of where they live, their age or ability to drive. They could also improve the way that our existing places and routes work, while offering new potential for more valuable land and additional homes and jobs. There is enormous potential for a new generation of living streets and communities, designed for vehicles, but most importantly putting people first.

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Next Generation Motorways ©Farrells.

