Connected cars and the revolutionary road of the future

By Christophe Lepoivre

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Connected and autonomous cars have been in the works for years, but this futuristic technology is fast becoming a reality. It's not only in the technology-saturated environments of Silicon Valley, where you're likely to see the automated cars of internet giants like Google and Uber prowling the streets. Across South Africa and the broader continent which lies beyond, connected cars are rapidly becoming not just a possibility, but a reality.

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Some of this reality is thanks to simple consumer activity. Just last year, Elon Musk announced that Tesla cars will soon be available in South Africa. Tesla is, of course, widely regarded as the poster child for connected cars. Recent developments at Tesla include the announcement of ‘full’ autopilot, which gives any such equipped car the ability to drive entirely on its own. Reminiscent, some might say, of the 1980s TV show *Knight Rider* and his car KITT.

Blade Nzimande, former South African Minister of Transport, recently noted that while no self-driving cars were currently on South African roads, the government had plans to introduce them as soon as the necessary legislative framework had been created.

Connectivity is fundamental

But beyond the availability of the vehicles themselves – which are being proven 'on the road', as it were, in areas including North America, Europe and Eurasia – there is something fundamental to the ability for connected cars to successfully operate. That fundamental is connectivity. Without good mobile networks, provided by mobile network operators, the connected car simply cannot exist.

And this is where there is good news for many regions in Africa. Thanks to competitive markets and consumers' insatiable demand for connectivity, the penetration of high-speed mobile networks in multiple nations across the continent has rapidly outstripped terrestrial networks.

With 4G proven and in place, the next steps towards enabling connected and autonomous cars include increased coverage and upgrades to next-generation 5G, capable of handling far greater data throughput. And in addition to connectivity, security remains a key issue in both development and deployment, especially given the complexity of the autonomous car itself.

Digitising driving

Permanently connected cars already exist, and they are challenging every notion we have ever had about car ownership, safety and insurance. The revolution is not only impacting the technology behind how cars are built but traditional ownership models are being challenged as the autonomous vehicle takes centre stage in smart, connected cities.

After all, a connected, autonomous car could be out 'working', doing ride shares while you relax. It could arrive just in time to take you to work, then transport someone else in the opposite direction. It could be insured at different rates depending on whether it's in your garage or patrolling the streets with a passenger.

The digitisation of driving is the key driving force behind the connected car. Computers and sensors in car components, and on the roads themselves will assimilate sophisticated data changing everything from how we navigate and avoid traffic to how we find the nearest available parking spot. And central to the digitisation of driving is a system of machine-to-machine (M2M) communication which allows the car to communicate with the internet, other vehicles, the road and traffic markers, and more.

When Audi wanted to launch LTE services in its popular A3 model, a Gemalto solution called Cinterion quickly made it happen. This custom solution provides LTE speeds to support a suite of embedded voice and data services, allowing one passenger to search online for the best nearby restaurant while another passenger calls for a reservation.

Embedded M2M technology also identifies individual vehicles, encrypts communications and ensure secure global connectivity for smart vehicle systems including emergency call solutions, vehicle telematics, navigation and more.

The role of the IoT

The term IoT is often banded around, although adopting the technology regionally has presented challenges. Connected cars are not exempt, reliant as they are on high-speed internet connections for situational awareness. That awareness is greatly enhanced by traffic alerts, smart city grid information and a peer-to-peer understanding of other devices and vehicles around them; these feeds, in turn, rely heavily on IoT.

Artificial Intelligence on board the vehicles (or in the cloud) can make decisions about routes and speeds, sharing details of the car's location with other road users. All the features culminate in smarter, safer, self-driving cars that can trump their human counterparts.

Driver favourites such as Toyota and Lexus are already introducing these sorts of connected car capabilities to vehicles in the United States and other markets. Given the availability of the necessary networks practically everywhere in Africa and the rapid development of IoT infrastructure, it is just a matter of time before connected cars arrive locally. In fact, in 2017 already, it was estimated that South Africa has as many as 100,000 such vehicles on its roads.

The road to the future

In the near future, secure cloud-based service enablement and next-generation features such as secure ID-based ignition, integrated NFC and mobile-wallet applications will contribute even further to convenience for drivers and passengers alike.

Tesla vehicles come with software “autopilots”, Uber is piloting self-driving taxis with Volvo, Daimler and Embark have tested autonomous trucks, and the ability of a car to reverse park itself isn’t even a differentiating feature for luxury sedans anymore.

The benefits of adopting autonomous vehicles on a wide scale are plenty, from reducing transportation costs, carbon emissions and accidents, to saving hundreds of millions of hours wasted in conventional transportation.

So, when can you expect to step into an autonomous vehicle? Government effort, the continuous digital revolution is driven by the telecoms operators and an eagerness to evolve the automotive industry all means you could be driving on the revolutionary road to the future sooner than you think.

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