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Will self-driving cars kill off the train? Autonomous vehicles will make railways obsolete - even if new high speed routes are built, expert claims

- **Randal O'Toole, of the libertarian Cato Institute in Washington DC, thinks commuters will choose autonomous cars over high-speed trains in 2030**
- **Technology is predicted to feature in lots of cars in the next 15 years and mean journeys could be used for working and watching films, for example**
- **He thinks such vehicles could be the death of the railways - even if billions of pounds are invested on faster lines across the world**
- **His prediction makes arguably plans for HS2 and HS3 unappealing in the UK**

By Sarah Griffiths
October 28, 2014

The widespread adoption of autonomous cars – which is predicted to happen within just 15 years – could lead to the death of railways, one expert claims.

The damning prediction comes at a time when governments around the world are planning on ploughing billions into high speed rail projects, such as HS2 in Britain.

One US expert thinks the investments could be made in vain, because the lure of self-driving cars, which could transport people in comfort to any location with minimal effort, will outweigh the appeal of high speed railway lines.

Futurologists predict that autonomous vehicles will be commonplace on roads in Europe and the US in just 15 years' time, as companies such as Google, BMW and Toyota work on self-driving technology.

A report by Lux Research predicts that the autonomous car market will be worth $87 billion by 2030, while the Institute of Electrical and Electronics Engineers (IEEE) in New York thinks self-driving vehicles will make up 75 per cent of vehicles on the road by 2040.

Randal O'Toole, a Senior Fellow of the libertarian Cato Institute in Washington DC, says that they will offer a compelling alternative to high speed rail links for distances of 200 miles (322km), rendering some high speed train lines obsolete, **Forbes** reported.

One of the lines that could potentially be affected is the High-Speed 2 (HS2). The line, which is in the planning stage, would run between London, Birmingham and Leeds and would cost £42.6billion ($68.6billion).

Britain is not the only country with high speed rail ambitions. There are also plans for a high speed rail link in Australia stretching from Brisbane to Melbourne, which could cost $114 billionAUD (£62.5billion).

Futurologists predict that autonomous vehicles will be commonplace on roads in Europe and the US in just 15 years' time, as companies such as Google, BMW and Toyota work on self-driving technology. Google's car is pictured. The expert thinks that the comfort of travelling in such as car will outweigh the speed of trains

...AS DAVID CAMERON BACKS HS3 RAIL LINK FOR NORTH OF ENGLAND

The Prime Minister has backed plans for a high speed HS3 rail link in the north of England, the **BBC** reported.

The government plans to put a strategy together looking at options and costs which is set to be released in March.

The route would connect Newcastle with Darlington, York and Leeds, with another branch running west-to east, from Liverpool via Wigan to Sheffield and to Leeds and Hull.

Mr Cameron said that improving connectivity and cutting journey times is 'crucial' to its long-term economic plan for the north of England.

The Indian government is said to be interested in building a high speed network, while the Central Japan Railway Company has been researching new high-speed rail systems based on magnetic levitation since the 1970s, with plans to build a new route connecting Tokyo with Nagoya in 2025.

In Britain, HS2 would be completed in around 2030 if it goes ahead, and would therefore be competing with autonomous cars, Mr O'Toole said.

While high speed trains could carry passengers at up to 250mph (402kph), they would still have to get to a station to begin their journey.

However, passengers in self-driving cars could enter their destination and be driven door-to-door, while working or watching films at around 100mph (161kph).

Mr O'Toole explained that in the travel industry, there is a general wisdom that there is a ‘sweet spot’ for distances, where high speed rail travel looks more compelling than flying and driving.

It says that trips shorter than 100 miles (161km) are best made by car and more than 600 miles (966km) by aeroplane, leaving distances in between, perfect for high speed rail.

But Mr O’Toole said: ‘I am dubious that such a sweet spot exists. Many people are willing to drive hundreds of miles in order to have the convenience of their car when they get to their destinations, while flying is practical enough for trips of 150 miles or so that airlines currently offer 30 flights a day between Portland and Seattle airports, which are 161 driving miles apart.’

‘Even if such a sweet spot exists today, self-driving cars will make it even less viable because they will change the way we look at travel time.

He claims that if passengers can get on with work or be entertained in their cars, they will be willing to spend more time in them.

‘That means the 100 miles that is supposedly the range in which cars have a competitive advantage will easily increase to 200 miles or more,’ he said.

Mr O'Toole believes that self-driving cars will transform the 21st century, just as cars changed the 20th century.

Self-driving vehicles as well as new taxi and car-sharing apps like Uber could lead to the death of less flexible and reliable modes of transportation, such as trains, he added.

However, trains may thrive for some time yet, because current autonomous cars are facing teething problems.

Google’s self-driving cars can’t currently cope in heavy rain or snow – or find their way around 99 per cent of the US.

According to **MIT Technology Review**, the current prototype cars are very reliant on maps to navigate and can’t react like a human driver, dodging potholes and other hazards.

Chris Urmson, director of the Google car team, said this is because the detection technology is not yet strong enough to separate certain objects from weather conditions.

While the cars’ cameras can spot a traffic light changing, they can be confused by strong sunlight.

Despite the cars being allowed on public roads, they need to prepare to set off in more detail than a human driver, because a precise map must be created of exactly where to go – and a car cannot deviate from its route.

An area has to be mapped multiple times by a sensor vehicle to record details such as driveways, in order to make the cars' routes - something that will probably have to change if self-driving cars are adopted all over the world.

HOW DOES GOOGLE'S AUTONOMOUS CAR WORK?

The prototype two-seater cars have buttons to autonomously begin and end the drive.

The car makes turns and reacts to vehicles and pedestrians based on computer programs that predict what others might do, and data from sensors including radar and cameras that read, in real-time, what other objects are actually doing.

The route might be set by typing a destination into a map or using spoken commands according to Chris Urmson, the leader of Google's self-driving car team.

The car will be powered by electricity and could go about 100miles (160km) before charging.

Its shape suggests a rounded-out Volkswagen Beetle - something that might move people around a corporate campus or congested downtown - with headlights and sensors arrayed to resemble a friendly face.

The front of the vehicle has a soft foam-like material where a traditional bumper would be and a more flexible windscreen, in a bid to be safer for pedestrians.

In these prototypes speed is restricted to 25mph (40kph) and the ability to self-drive will depend on specifically designed Google road maps tested on the company's current fleet of vehicles.

Ultimately the vehicles will be faster and will be able to use Google's extended maps service. Driving works by using GPS technology to locate the vehicle's exact position on an electronic map.

A combination of radar, lasers and cameras sitting on top of the roof give the car a 360-degree 'view', with sensors linked to computer software able to 'see' and identify people, cars, road signs and markings and traffic lights.