What did the Romans ever do for us?

All right, I'll grant you that the aqueduct and the sanitation are two things that the Romans have done...

And the roads...

(sharply) Well yes obviously the roads... the roads go without saying..

Future mobility pictures

- no queues
- no pedestrians
- no older cars
- no potholes
- no freight
- no parked deliveries
- no buses
- plenty of ev charge points
- always sunny


vision express
opticians
vision express
Bidvest
DAF
GV05 FBU
63 OXM
Robert Leech
Estate Agents
LEADERS

What are the solutions?

- Air quality
- Congestion
- Parking
- High car ownership but low occupancy
- Safety
- Resilience
- Noise

- **A mix of automotive and roads**

Connected, automated, shared, electrified?

- Can be all 4, or just one
- **Connected** – data to and from vehicles
  - Parking , potholes, queues, eCall
- **Electrified**
  - Does what it says on tin – or does it?
- **Shared Mobility**
  - Don’t own a vehicle
  - Car club to “mobility as a service”
  - A package of travel
- **Automated**
  - Can be level 1 (cruise control) to level 5 (Brain off, hands off)
  - Can be electrified , and shared, and connected

Connected vs autonomous…

- ***Connectedandautonomous* is not one word**

- **Connected vehicles are here**
  - Google , Waze, INRIX, TomTom,
  - Smarter parking
  - eCall
  - Mobile phone apps
  - Vehicle to vehicle coming in Golf Mk 9 etc
- **Autonomous**
  - Tesla etc on motorways and self parking
  - CAV only lanes
  - Mixed fleet city driving still a long way away
  - Level 5 – Brain off – is going further away

Connected vehicles offer short term benefits to drivers and cities / towns

Apple co-founder: 'I've really given up' on Level 5

VINCE BOND JR.

TWEET SHARE SHARE EMAIL

Wozniak: Vehicles can't think like us

There was a time when Apple co-founder Steve Wozniak was a believer in fully autonomous vehicles.

These robotic cruisers would read and react to the road like humans, he said, and wouldn't need a steering wheel. Wozniak hoped Apple, which had been rumored over the years to be working on a self-driving car project, would be the one to build it.

But he has since tempered his expectations. There is simply too much unpredictability on roads, he said, for a self-driving car to manage. For now, he believes the burgeoning technology is better used to give drivers a safety net for certain situations.

"I stepped way back [on] this idea of Level 5. I've really given up," Wozniak said during the J.D. Power Auto Revolution conference in Las Vegas last week.

"I don't even know if that will happen in my lifetime."

Self-driving cars: not just yet

Bold claims of imminent arrival are evaporating, so when will autonomy be a rea

From 2020 you will become a permanent back-seat driver' ran a typically breathless headline from 2015. The story, from The Observer, reflected the optimism that Silicon Valley geniuses were fast clearing the hurdles to self-driving.

That optimism has faded as both car and tech firms begin to acknowledge that training a computer to think faster and smarter than a human amid the myriad of driving situations we encounter daily is tough.

"Everybody talking about autonomous cars four years ago was saying they'd be here by now," Nick Rogers, head of engineering at Jaguar Land Rover said. "I think we can get 80% of the way there very, very quickly, but when the car's in charge, the only answer is zero accidents and that's going to be a challenge for a bit longer."

Ford put its hand up this year, too. "We overestimated the arrival of autonomous vehicles," CEO Jim Hackett said. Argo AI, the self-driving tech firm tasked with making Ford's vision a reality, dampened down expectations of Ford's self-driving car promised for 2021. CEO Bryan Salesky wrote in a blog last month that the car will operate in only a specific area of a city, won't be available for purchase and will have a governed top speed.

That puts this Ford car at the lower end of what's termed level four autonomy: you get to be that permanent back-seat driver, but in limited areas only. Even level three, where you can take your hands off the wheel but must be prepared to take control at a moment's notice, hasn't been given the regulatory green light in Europe as hoped, despite Audi offering the technology on its top-end models from 2017.

For car companies a bad case of FOMO (of missing out), caug result of excess expo Californian tech firm spread around via ar presentations by cor

"They've been toi in and day out that t 'dinosaurs', that they going to be 'disrupte Max Warburton, anal Bernstein Research, in an October report

Has the AV Hype Cycle burst?

Real world challenges

Real world problems …but connected solutions

- Previous traffic signal investment now not effective due to lack of tuning
  - 20-30% journey time savings using data from vehicles in York and Warrington
  - Benefits 35 times costs
- Emissions of engine, tyres, brakes and asphalt
  - 14% reduction in stops on the A45
- Roadworks and asset management
  - 5% reduction in scheme costs in Westminster -> £150M across UK
  - Survey costs reduced in Buckinghamshire, West Midlands, North Yorks…
- Smarter parking for cars and freight deliveries
  - Navigate to space in Harrogate, Coventry, **Cardiff,** Oxford, Milton Keynes
  - New policies for pricing to protect high street
- Data from eCall equipped vehicles on airbag deployment
  - 3000 a month in UK and rising
  - Data now being accessed for further use


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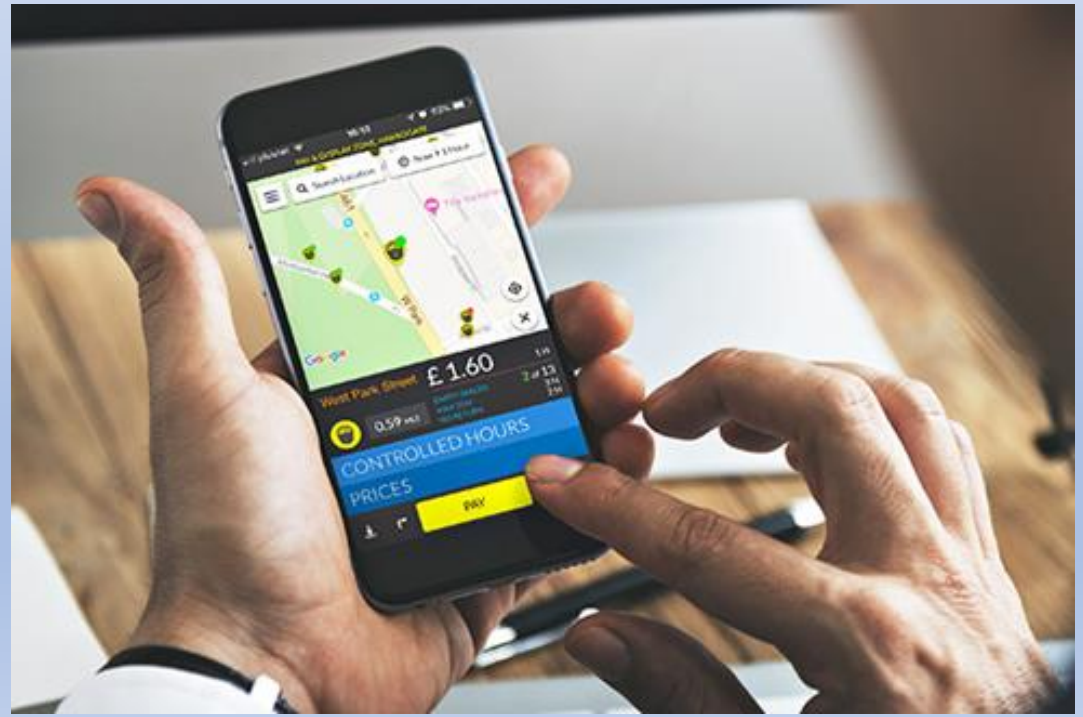
ELECTRIC BUSES FOR A CLEANER YORK
Free Parking
Frequent buses
Low Fares
PARK&RIDE
YORK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CONTROLLED HOURS
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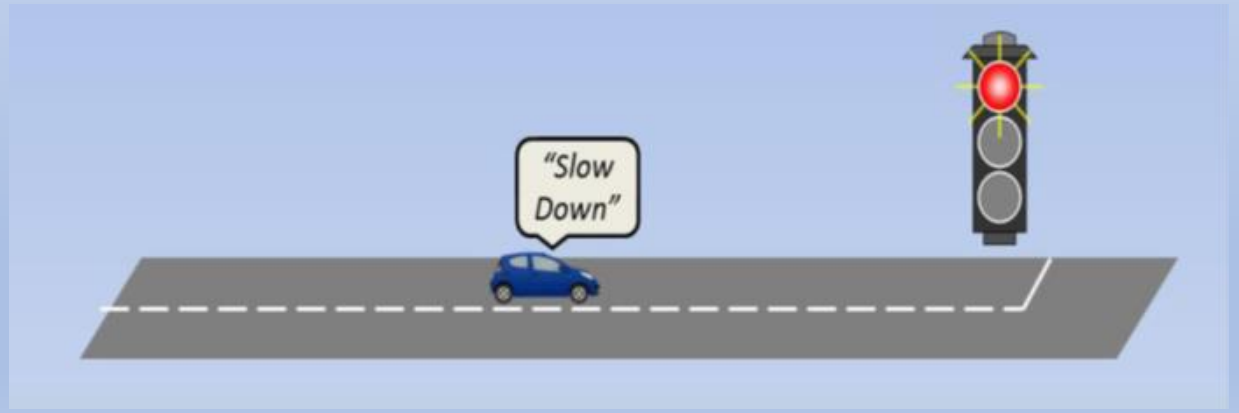
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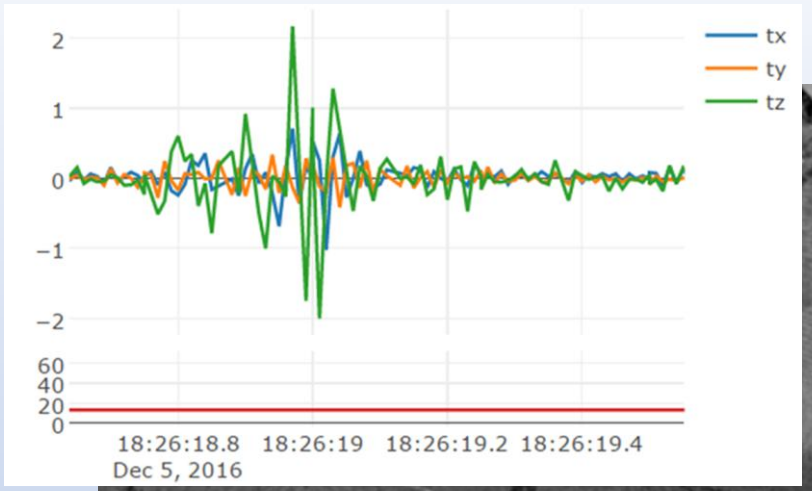
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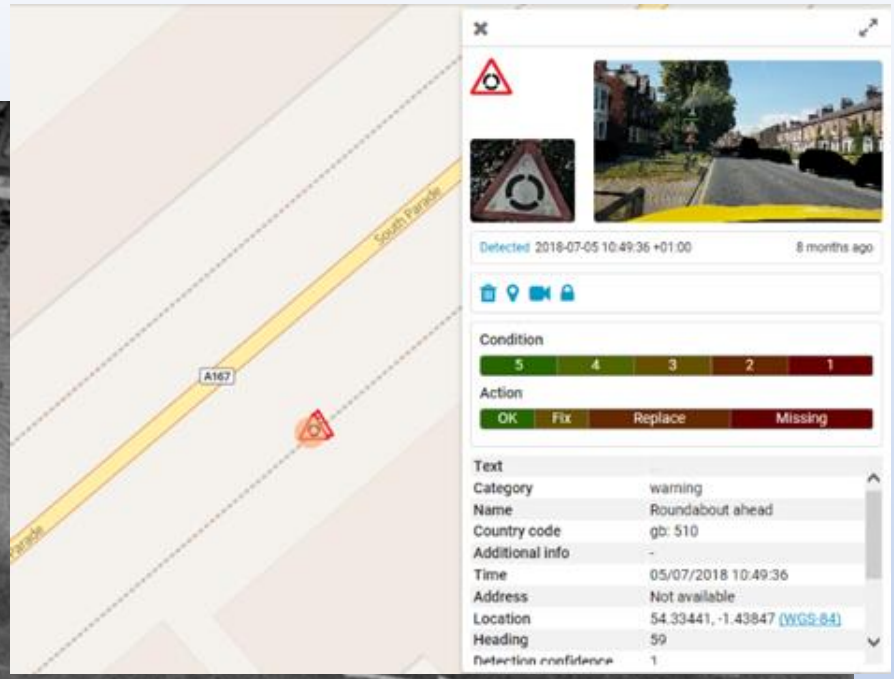
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Category warning
Name Roundabout ahead
Country code gb: 510
Additional info -
Time 05/07/2018 10:49:36
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Location 54.33441, -1.43847 (WGS-84)
Heading 59

Autonomous cars will replace traffic lights then?

- 7.9 years average vehicle age
- Pedestrians?
- 35,000 signal junctions in UK – maybe 2,000 a year updated?
- Can’t even afford to fix current estate, let alone install beacons
- Hype has overtaken the real world
- OEM’s data and phones and dongles and fleet management units
  - Phones can be in glovebox…
  - 25m vehicles with OBD2 ports
  - Pay as you go insurance

Challenges and opportunities

- The B word
  - Uncertainty in purchase, policy, …..
- Customer demand
  - Want wifi in cars
  - Do they want autonomous cruise control ?
- Connectivity on roads for comms
- Who pays for the roadside stuff?
- Mixed fleet is a real challenge

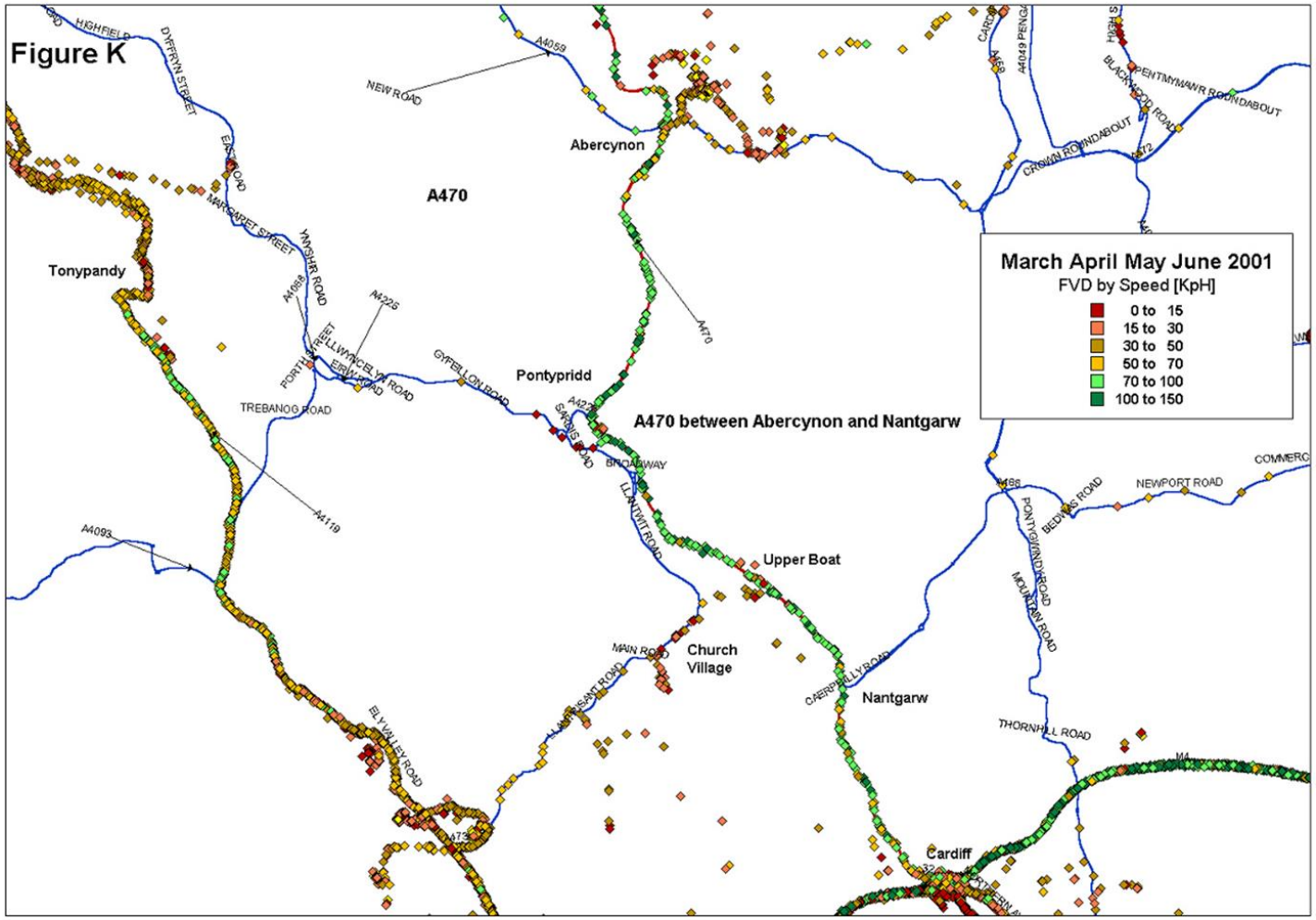
According to the RAC Foundation analysis, further 44,368 miles of road (18%) have only partial voice coverage meaning there are many areas where some but not all phones will receive a signal depending on the service provider they rely on.

Those local authority areas with the most miles of road with no voice coverage are:

- Highland (910 miles of road with no voice coverage)
- Powys (411 miles)
- Argyll & Bute (388 miles)
- Cumbria (296 miles)
- Dumfries & Galloway (266 miles)
- North Yorkshire (219 miles)
- Gwynedd (213 miles)

- If it works in Wales – M4 to mountains, tunnels, poor coverage, ….
- Think connected not autonomous as an opportunity

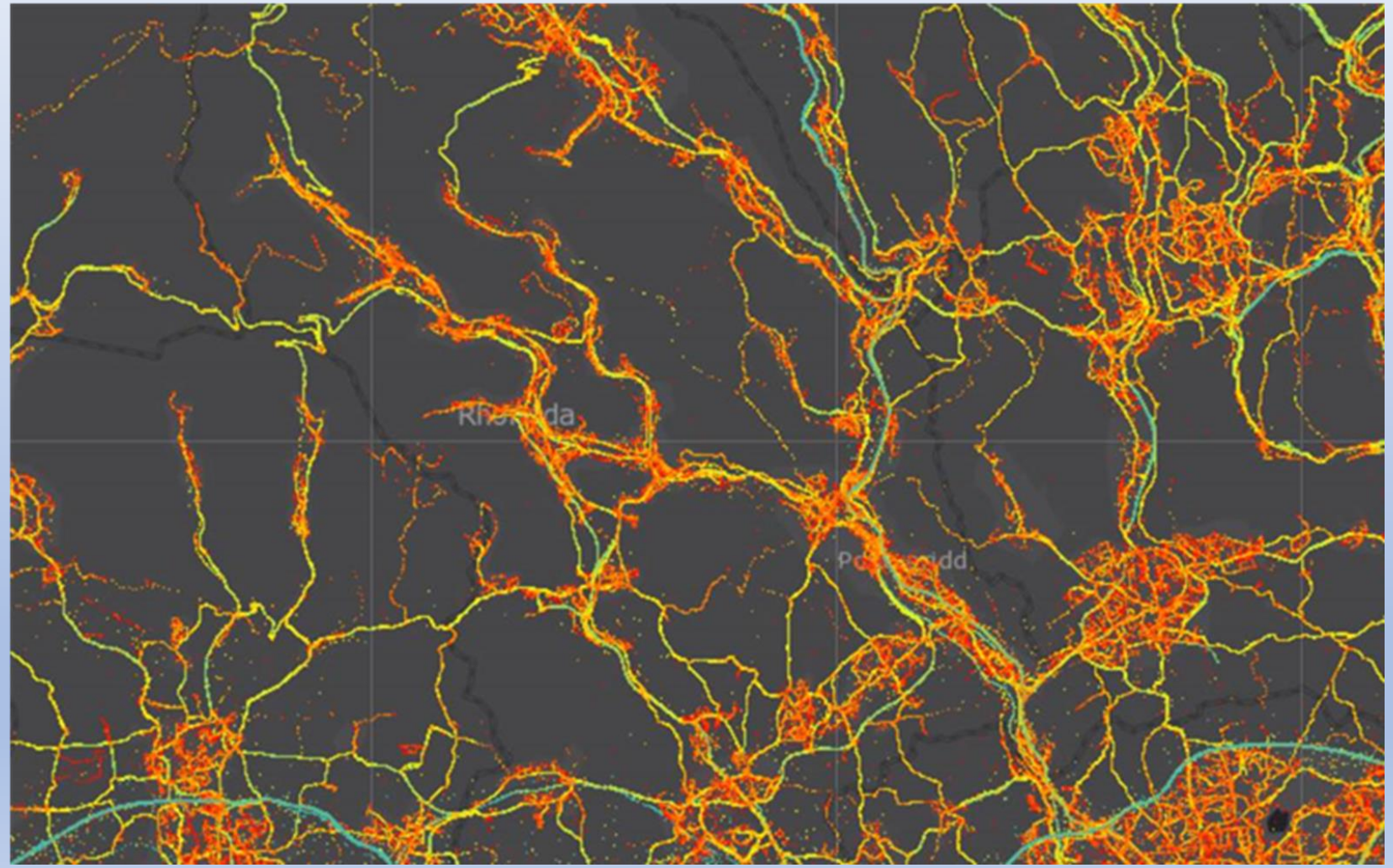
Wales has track(ing) record



2001 GPS tracking pilot

3 Months from one probe

Today – one day’s worth data



Starting to happen in Wales

BT installs 5G network in rural Wales to demonstrate driverless pod capabilities

By Jack Loughran

Published Friday, July 26, 2019

BT has installed one of the first permanent 5G networks in Europe at a showground in Llanelwedd, Wales as a demonstration of its capabilities.

The benefits of the new tech were highlighted by BT at the 100th Royal Welsh Agricultural Show, with visitors able to see 5G technology demonstrations including a connected driverless pod at the showground.

The vehicle has been touted as one of the first self-driving pods in the world to be connected to a live 5G network, with the vehicles designed to be used across a wide range of environments and industries.

The pods make use of 5G to stream data in real time, including 3D mapping models, video from the on-board safety cameras and 'infotainment' for passengers.

SMART PARKING

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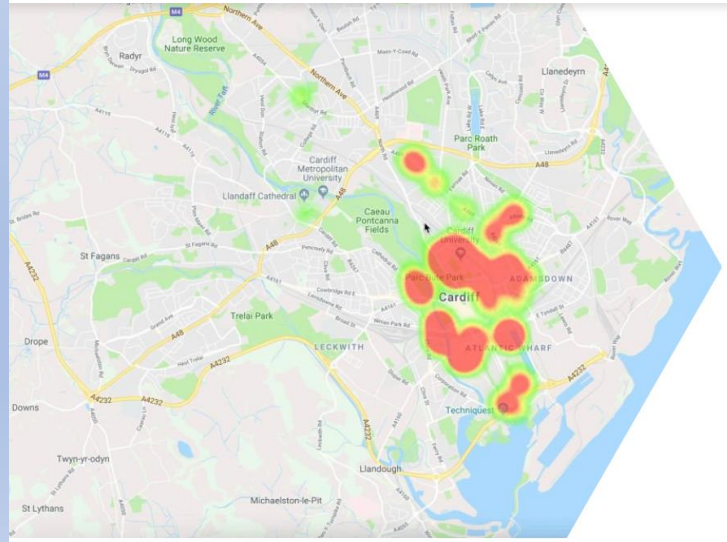

Cardiff Council in Wales faced a challenge around inner city congestion

Faced with increasing traffic congestion, Cardiff Council wanted a solution that would provide detailed data on the use of its parking resources, and contribute to reducing the time commuters to the city centre would spend on the roads.

Rising air pollution levels were a key factor, as was recognising the frustrations that motorists were facing on a daily basis, which led the Council to start looking into a solution that would allow people to plan their journey and easily find a central-city parking spot.

The Council was also keen to promote multi-modal forms of transport, whilst still ensuring commuters reached their destination with ease.

Smart Parking was able to provide a system that ticked all the boxes, and more.

Key messages for Wales

- Whatever vehicles look like and drive, shared or not, they will still need seats, trim , powerplants, transmissions, wheels, tyres, airbags, horns, switchgear….
- They will also need new sensors like LIDAR, cameras, communications, aerials, on board units, screens, processing, control units, batteries , chips, simcards….
- Brains are in short supply – give them challenges
  - There will be a need for diagnostics and maintenance, cyber security and big data
- There is an opportunity in connecting older vehicles too
  - And electrifying them and even automating them
- Make use of what is there
  - eCall data
- Welsh roads , towns and cities can be a showcase for connectivity
  - Not just tech but organisations need to connect
  - Solve real world problems for Wales


Ford