This supplementary evidence addresses two questions not asked in the House, to add some facts and thinking based on discussions with colleagues at ITS-UK.

HAVs will generate a wealth of data of potential benefit to many audiences. However, this raises potential concerns around privacy and data protection.

- Who will own this data?

Firstly, the answer depends on what we actually mean by “data”. There already is a wealth of data collected from vehicles and it is growing, although we in the roads sector could do far more to quickly exploit what we have now and reduce costs of roads operations and improve services.

If we regard “data” as raw sensor and vehicle outputs like “a vehicle is here” or “the road temperature is 1C” it is a different issue from “Andy Graham drove this vehicle ABC123 from his house to work at an illegal speed of 75mph”. It is what is done with the data to derive intelligence that is the issue, not the data per se.

The data that is already collected is by many organisations (INRIX, TomTom, Here, Google and many UK based fleet management companies, as well as mobile phone operators) is about vehicle or mobile phone movements – eg GPS points used to derive location and speed.

It is already collected from at least 2.5 million vehicles in the UK (sources INRIX and TomTom). These vehicles are typically those doing most miles (commercial fleets or high mileage private cars), so we calculate perhaps 20% of all vehicle miles are currently in the dataset.

The industry is increasingly adding data about the infrastructure condition (potholes, loss of traction, acceleration etc) that can help roads operators manage and plan assets better.

This location data is already collected and used anonymously with safeguards to protect the identity of users (eg random user references that change daily and by having the start and ends of a trip deleted). It is collected with the full permission of the data owner. Often the data owner – eg a satnav user – benefits directly from sharing their data as it improves route choice for their journeys.

This data – once processed - is also now being used to plan better new roads through surveys of where people travel using mobile phone data that is far more representative than traditional roadside interviews. It is used to monitor journey times instead of using roadside number plate cameras, inform on car park space availability and monitor weather. In projects funded by DfT, I am exploring with City Of York Council its use to improve existing traffic signal performance to reduce delays and reduce costs.
Many companies have already built businesses taking these millions of data points and providing services for both sat nav and roads operators using this. The market has seen an opportunity to add value and the UK leads in this area both technically in data science and with innovations in fleet management services. Hence, keeping data anonymous and used only for the purposes it is collected for is a strong theme in current services – these businesses cannot afford to lose data or have any privacy issues for their customers.

However, in the future, more and more detailed data will become available from vehicles. For example, a “CAM” message is a way of saying “I am here” many times per second both to other vehicles and roads infrastructure like signals. It has to be shared openly to work in this way, so is broadcast to anyone who will receive it. Using this approach, there are benefits to other road users and the driver, yet no “ownership” as such. Other vehicle to vehicle and road to vehicle messages can also be open to all.

But some other data, such as the road assets’ images, (for example an image of a new road sign implying a new speed limit) will not be made open by design but perhaps should be for the public good, although there are existing businesses that collect and process this. This is the area to focus on – data not required for safety that is not already open.

However, the use of data that shows I did 75 mph on the road and who I am is mine and should not be open.

Therefore, discussions around fully “open” data and drivers being able to turn off data from their vehicles have a risk. If for example safety messages are not freely shared as the user has turned them off, then the data the system needs is incomplete and potentially dangerous – that missing element turned off could be the data you need to know or send out to avoid a crash.

Hence, I see the data landscape as a mix of:

- Services using data with data owners’ permission to add value by turning masses of raw data into smaller volumes of intelligence (as now)
- Open data shared for the safety and good of road users and the public, as well as the driver. This could mirror the EU directive which requires service providers to share safety data collected for free but not the higher value journey time data
- Data owned by the vehicle maker to make their vehicles better that is of little use to anyone else.
- Data owned by the driver they can choose to others to use. Note that the value per user of the vehicle is unlikely to be high, so users “selling” individual data as some business models suggest is likely to be unsustainable. The content of this group needs more work as suggested below.

Hence if any “platform” for open data is developed or mandated, it needs to focus on newer data that is open by design and not try to challenge existing business models. Also allowing users to “turn off” their data must have sufficient safeguards – similar for example to those before turning off traction control.
• Has there been any research into public attitudes to the use and or retention of this data by Government agencies, automotive manufacturers or others?

There are various studies but many have suffered from the question being asked without the respondents having exposure to the benefits from the data being used to give something back (as affects many CAV surveys, the question is simple but the background complex).

One survey suggests 91% of people want to be able to switch connectivity off, but as shown above, users may not understand what this means in terms of risk. We must ask if they will have the same views when they cannot access services they want or there are extra costs? The answer “Sorry, we can’t fix your car remotely, as you turned it off.” from a dealer or recovery club may change behaviour. However, we do not know as this is a new area and we need to test real people with real opinions and behaviour.

It is also important to note that these same people may be more than happy to give their precise location and status on social media without it being any issue at all. However, this is a key area of automotive user trust and acceptance, so we need pilots and surveys to inform us via real UK users exposed to the services and benefits from them.

DfT did this with introducing sat nav in 1990s – it funded real user tests and feedback and then gave the private sector the evidence of what it needed in terms of policy and scoped the opportunity, but then left it to two UK companies to deliver. The cost was a few pence for every sat nav now in UK use.

Without this real user feedback collected by DfT with the help of the AA, RAC, Volvo, Bosch and Halfords, industry would not have been able to understand what customers wanted and DfT see where the policy issues were.

Therefore, the key to moving on from questions to delivery of benefits is to expose real UK users to the services, technology and benefits and understand their behaviour. We must aim to use data for as wide a range of services to users and roads operators as possible within this behaviour, to capture evidence of benefits for UK plc. Government has a key role in funding the risks and in collecting evidence of how drivers and users react to services, and sharing knowledge to support for example smaller local authorities.

The biggest challenge to autonomous vehicles remains the people using it, no the technology. By learning and sharing lessons with connected but human driven vehicles in the short term, we will inform the pathway to much more complex systems later with evidence of real UK benefits.

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