Britainthinks
Insight & Strategy

Direct Line Group

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Direct Line Group: The future of Autonomous Vehicles

Findings from a series of expert interviews

Contents

Executive Summary

1. There is consensus among the ten experts interviewed that the **technology** required to bring autonomous vehicles (AVs) to the roads of the UK is either here already or very close to completion. But several feel that a gap exists between this technology and a) the **infrastructure** and b) the **public buy-in** required to make the widespread use of AVs a reality.
2. Some experts attribute limited public understanding of AVs, and some concern about driverless technology, to the lack of a clear public-facing narrative. While the industry is seen to do great work in technological innovation, there is little sense of any industry leaders in the **public-facing** debate, and some feel that the void in the public narrative is being filled by negative news about safety risks and accidents.
3. Experts suggest that the industry must: take charge of and find a way to contextualise messaging about **safety and risk**, **find ways to bring AVs closer to and more tangible for the public**, and better understand what will motivate the public to try driverless technology. It has also been suggested that the media has a key role to play as a conduit between the industry and the public.
4. It is seen as imperative that the insurance industry is thinking deeply about the implications of AVs for **liability, risk and potential new threats** related to automation, such as cyber crime. However, most experts also feel that the insurance industry has a unique, credible and as yet unfulfilled role to play in communicating to the public on the complex issues of **risk and safety** specifically.
5. To have the greatest impact, experts believe that organisations such as Direct Line Group should not act alone but work to play a **convening role**, bringing together manufacturers, technology firms and policymakers to a) advance thinking in and planning for driverless technology, and b) help the public understand the benefit it brings.

Background to the research

Background

Autonomous Vehicles (AVs) are the future of the automotive industry and are a reality. Yet there is evidence to suggest that consumers are lagging far behind on this issue. Previous research commissioned by Direct Line Group (DLG) identified that, while some segments of the public are enthusiastic and excited about the prospect of driverless cars, others are sceptical and some deeply concerned about the prospect[1]. To date, the public-facing narrative around AVs has been largely negative and one of zero tolerance for any accidents or mistakes.

Objectives

BritainThinks has been working in partnership with Direct Line Group to understand how the automotive, technology and insurance industries can better make the case for Autonomous Vehicles (AVs) to the public.

The first stage in this process has been to understand the views of a select group of 'inner' and 'outer' circle experts on this issue, including their:

- Perceptions of the state of play in driverless technology and AVs worldwide and in the UK specifically, from an industry, policy and public acceptability perspective;
- Ideas for advancing the public-facing narrative around AVs in general and in relation to risk and safety specifically;
- Expectations of the role that the insurance industry should play in relation to AVs and the public-facing debate about them.

Methodology

BritainThinks conducted qualitative interviews with 10 experts with a perspective on AVs and driverless technology, including five 'inner circle' stakeholders working at the heart of the industry:

- Matthew Avery, Director of Insurance Research, Thatcham
- Stan Boland, CEO, FiveAI
- Sam Chapman, Chief Innovation Officer & Co-Founder, Floow
- Neil Sharpe, Director of Mobility Solutions, Bosch

[1] https://www.directlinegroup.com/media/dlg-driverless-research.aspx

- Paul Spence, Chief Technologist, McLaren

And five 'outer circle' stakeholders who commentate or have a particular policy perspective on this topic:

- Ian Austin MP, Vice-Chair, APPG on Electric and Automated Vehicles
- Lord Tim Clement-Jones, Chair, APPG on Artificial Intelligence
- Steve Fowler, Editor-in-Chief, Auto Express
- Laurenz Gerger, Policy Adviser, Motor, Association of British Insurers (ABI)
- Stephen Joseph, Transport Policy Adviser & Former CEO, Campaign for Better Transport

Each interview lasted 30-45 minutes. A full overview of interview questions is provided in the Appendix.

Section 1: The Technology

There is consensus among the ten experts interviewed that the technology required to bring autonomous vehicles (AVs) to the roads of the UK is either here already or very close to completion. But several feel that a gap exists between this technology and a) the infrastructure and b) the public buy-in required to make the widespread use of AVs a reality.

The perceived state of play in driverless technology

Across the experts interviewed, there was agreement that driverless technology has developed to the extent that AVs *could* soon become a widespread reality on the roads of the UK. Some, particularly those outside industry, took the view that regulation and policy in the UK has paved the way for this to happen, and that the Government has seen a major opportunity for the UK in connected and autonomous vehicles. However, there was far less consensus among these ten experts on how and when the rollout of autonomous vehicles is likely to unfold in reality.

"The government has spotted the opportunity to do something ahead of other European countries…the growth will become vertical, and the European market will grow at roughly the same pace as the US and China despite being late to the game."
Stan Boland, CEO, FiveAI

"What we've done [in the UK] is legislate quickly enough to allow for the development of driverless cars. The liability issues have by and large been cleared."
Tim Clement-Jones, Vice-Chair, APPG on Electric & Automated Vehicles

On the whole, 'inner circle' experts, particularly those working at the heart of technology and manufacturing, demonstrate greater confidence that AVs of Levels 4-5 will be seen on UK roads within the next 10 years. Others from outside the industry are often more sceptical, suggesting longer timescales or even that infrastructure and public acceptability issues in the UK will prevent AVs at Level 5 from ever arriving on UK roads.

Autonomous Driving Levels

- **Level 1: One part of the car is automated** *e.g. auto cruise control, lane-keep assist*
- **Level 2: Two+ parts of the car are automated** *e.g. self-parking features, lane-change mode* (*this is where we are now*)
- **Level 3: Car can self-drive for a limited time/circumstance** *but driver still needed on standby*
- **Level 4: Car can self-drive in many circumstances** *especially within metropolitan areas*
- **Level 5: Car is fully self-driving, anywhere**

"The ability to drive on any road at any time in any condition is…probably 10 years off."
Matthew Avery, Director of Insurance Research, Thatcham

"It depends on what level of technology we're talking about – if it's full Level 5 we may never get there."
Steve Fowler, Editor-in-Chief, Auto Express

"The technology is coming, it's just a question about where and when…the earliest we expect to see them is probably 2021."
Laurenz Gerger, Policy Adviser, Motor, ABI

Key challenges associated with the rollout of AVs in the UK

Navigating the UK's transport infrastructure

Inability of transport infrastructure to keep up with developments of technology is seen by several experts as a major challenge for the widespread introduction of AVs in the UK specifically, with Britain's narrow roads and congested cities a potential barrier. Furthermore, there is a perception among some experts that, to date, the technology has largely been developed to reflect the (very different) US context, and that testing in the UK has been small-scale and in relatively artificial circumstances. Despite this, there was optimism from some experts that AV development and testing in the UK *may* be quick to catch up because this has become an explicit government and regulatory priority.

"My view is that the vehicle will far outpace the ability of infrastructure to respond."
Neil Sharpe, Director of Mobility Solutions, Bosch

"Certain roads are much more complex to navigate…these are constrained networks based around medieval roads."
Sam Chapman, Chief Innovation Officer & Co-Founder, Floow

Interactions between autonomous and human-driven vehicles

Several experts believe that a key consideration for AVs will be that, unlike the gradual transition seen with electric cars, the introduction of AVs to UK roads may require a more drastic and sudden change. While a 'transition phase' might be helpful to allow the public to adapt to AVs, this is felt to bring significant difficulties. This would include AVs having to contend with human error, which limits their potential safety benefit. Some experts feel that a transition phase would also likely see a pace that is very slow at first, followed by exponential growth as the multiplication of AVs on the road facilitates their further growth. Infrastructure and regulation would need to find a way to keep up with this 'surge' in pace.

"Not achieving [full Level 5] also has a risk because if you only need to intervene every so often [as with Level 3/4], because the driver aids are so good, this could lead to overreliance & complacency."
Paul Spence, Chief Technologist, McLaren

"In some situations, an autonomous vehicle will act very different from a human driver – that doesn't feel natural to them and that's why they don't understand it."
Laurenz Gerger, Policy Adviser, Motor, ABI

Societal challenges

The introduction of AVs is also likely to bring about wider societal challenges. Some 'outer circle' experts were concerned about more rural areas being 'left behind' as AVs become more common in cities, potential negative impacts on employment in the automotive, transport and logistics sectors, and a fall in usage of public transport. A small number of experts felt that this latter impact could lead local governments to disincentivise the use of AVs to keep citizens using public transport.

"Communities in traditional industrial areas have not managed to adapt [to technological changes so far]. It's quite worrying to think about how they're going to adapt to a much bigger change and a much faster pace of change."
Anonymous

"You could have unemployment among people who drive professionally for a living, if you have autonomous vans, buses, coaches, lorries and taxis."
Stephen Joseph, Transport Policy Adviser & Former CEO, Campaign for Better Transport

Balancing challenges and opportunities

While AVs are not seen to be without their challenges, most experts were in agreement that driverless technology has the potential to bring about a number of hugely positive impacts for society, and that the benefits are likely to outweigh potential disadvantages. These impacts could include increased safety, more mobility options for the elderly, the chance for more people to move out of cities and a reduction in pollution. More broadly, there are perceived long term, large scale economic benefits that the shift to AVs will entail, with some likening it to a new industrial revolution. Some experts felt that freeing the UK from the 'shackles' of importing cars, parts, and fuel for instance, would greatly reduce dependency on such commodities.

"The shift towards people living in cities and mega-cities may come to an end. And there could be a greater level of mobility and independence to older people and disabled people."
Steve Fowler, Editor-in-Chief, Auto Express

Section 2: Public Understanding of Autonomous Vehicles

Some experts attribute limited public understanding of AVs, and some concern about driverless technology, to the lack of a clear public-facing narrative. While the industry is seen to do great work in technological innovation, there is little sense of any industry leaders in the public-facing debate, and some feel that the void in the public narrative is being filled by negative news about safety risks and accidents.

The perceived state of play in public understanding of driverless technology

Several of the experts interviewed expressed the view that there is a significant perception and understanding gap between the public and the industry when it comes to AVs. It is assumed that most members of the public still believe that AVs are much further away from becoming a reality than is actually the case, and that there is limited awareness of the fact that automation already exists in most vehicles to some extent.

"Lots of people think this is miles away. Space age fantasy stuff. A lot of people don't really understand it.''
Anonymous

"The average member of the public is not very aware…they think of it all as slightly pie in the sky."
Steve Fowler, Editor-in-Chief, Auto Express

For instance, some experts have raised the point that existing autonomous technology (such as park assist) is not framed to the public in a way that shows that autonomous technology is already a reality. Neither is everyday travel that already involves some level of automation, such as autopilot on planes or the Docklands Light Railway, necessarily viewed through the lens of 'driverless technology'.

"Automated technology has been around since the 1970s - since then it's mostly been about recreating existing technology."
Sam Chapman, Chief Innovation Officer & Co-Founder, Floow

"At this point nobody has talked to the public about this…people haven't been exposed...and they feel very different and possibly inferior."
Stephen Joseph, Transport Policy Adviser & Former CEO Campaign for Better Transport

"It's about educating people about the direction of technology – lane-keep assist, automatic emergency braking, cruise control."
Neil Sharpe, Director of Mobility Solutions, Bosch

The state of the public-facing debate

There is a perception among some experts that there has to date been little effort to engage the public on the issue of AVs, and that there are no clear spokespeople or organisations leading or controlling the narrative in relation to AVs and driverless technology. In the absence of a clear narrative, there is concern that bad news is filling the void, and it is assumed that the general public will have heard little about the development of AVs beyond fatal accidents.

Interventions made to date are welcome, but are perceived to be more focused on industry stakeholders rather than moving forward the public debate. Examples included communication by some insurers explaining the potential impacts of AVs on the insurance industry, and Volvo's positioning of its self-driving vehicles.

"You wouldn't necessarily expect a brand like Volvo to be a leader [in this], but they've said they will self-insure."
Steve Fowler, Editor-in-Chief, Auto Express

However, overall there is little sense that the public is hearing from the 'movers and shakers' at the forefront of these developments, and some experts expressed a desire to see organisations working in partnership to influence the debate in order to achieve greater impact. Technology firms, manufacturers and insurance companies were all perceived to have a role to play in communicating with the public, and partnerships across these sectors were generally welcomed.

"The industry isn't making the case for it – what people are doing is more on the publicity side…there needs to be more dialogue with the general public around what's coming, that's for sure."
Neil Sharpe, Director of Mobility Solutions, Bosch

"We're not talking very much [about it] in the UK. It's a bit peculiar given it's the technology that's nearest to market in a way."
Tim Clement-Jones, Chair, APPG on Artificial Intelligence

Section 3: Changing the Narrative

To change and take control of the public narrative, experts suggest that the industry must: take charge of and find a way to contextualise messaging about safety and risk, find ways to bring AVs closer to and more tangible for the public, and better understand what will motivate the public to try driverless technology. It has also been suggested that the media has a key role to play as a conduit between the industry and the public.

How to move forward the debate

Across the ten interviews, experts consistently pointed to five potential priority areas in changing the public-facing narrative around AVs:

- Contextualise the safety message;
- Bring the media on the journey;
- Bring AVs closer to the public;
- Explain AVs to the public;
- Understand what will motivate the public to use them.

Contextualise the safety message

Greater safety is felt to be one of the clearest benefits of AVs among the experts interviewed. However, communicating this safety benefit is felt to be challenging because this benefit is not immediate, i.e. safety will improve, but only in the long-run, after the 'transition phase' in which driverless and human-driven cars will need to interact with one another and in which safety could potentially be a problematic area for driverless technology (see page 7).

Furthermore, there is concern about how the public tends to conceptualise risk, and the way in which accidents are currently framed in the public discourse. People are currently believed to be thinking about incidents in terms of absolute numbers rather than percentages, meaning that there is a risk that any increase in numbers of fatalities will be judged disproportionately harshly. Preparing for this public response, contextualising incidents, and finding the best way to communicate around risk and safety to the public is felt to be key to public acceptability.

"There will be a backlash that will demand much higher levels of safety, and much lower levels of risk."

Stephen Joseph, Transport Policy Adviser & Former CEO, Campaign for Better Transport

Bring the media on the journey

The media is seen by some experts to have a major role to play in acting as a conduit between the expert, but currently often inward-facing, industry and the general public to help to change the narrative around AVs. For some experts interviewed, there is some sense of progress in this area already. It is believed that technology and motor journalists are increasingly seizing less on the negatives and are showing more openness towards new developments in AVs. Building on this openness and working with the media to help to 'break down' AVs to the public is felt to be necessary for the technology to be adopted.

"When AV first started, the first thing any reporter would do was try to jump in front of [the car]…Now actually they ask, 'Can you show me the safety system?"

Sam Chapman, Chief Innovation Officer & Co-Founder, Floow

Bring AVs closer to the public

Experts were keen to stress the need to bring the public *face to face* with AVs to make them feel real, rather than a myth. Securing, literally, 'bums on seats' was commonly mentioned as a way to improve the tangibility of AVs amongst the public. References were made to AVs currently being tested in artificial environments away from the public gaze which, as well as doing little to further public understanding, may serve to reinforce the 'otherness' of the technology.

"At the Gateway Project in Greenwich people were invited to sit in [automated vehicles] and drive around, to help them get a better picture of how safe they are."

Laurenz Gerger, Policy Adviser, Motor, ABI

"'The more opportunities we give the public to question the technology, the better."

Stan Boland, CEO, FiveAI

Explain AVs to the public

According to some experts, there is a need to explain and normalise AVs, rather than focusing on trying to 'sell' them to the public (figuratively and literally). Some experts have focused on the language used to describe AVs, suggesting that 'driverless' technology may be particularly unhelpful phraseology as it evokes a lack of control. Others have pointed to the more functional and tangible language which is used to position existing forms of autonomous technology, such as 'park assist technology'.

"They're probably doing the right thing now talking about assistance systems as the route into automation. It helps consumers into the transition phase."

Matthew Avery, Director of Insurance Research, Thatcham

Understand what will motivate the public

Some experts have mentioned spontaneously that further research is needed to find out what the biggest motivator or lever will be for the public when it comes to AVs, whether it proves to be cost, safety, ease or another factor.

"You really have to tell [the public] what the benefits are: the financial benefits, reducing pollution…the freedom in where you live and work. Show that there are people like you who have made that decision and are benefitting from it."
Steve Fowler, Editor-in-Chief, Auto Express

"Demonstrate the technology more and more, the jobs that are going to be created, the benefits that this will bring to communities."
Anonymous

"One of the major selling points is convenience…people can be more productive."
Laurenz Gerger, Policy Adviser, Motor, ABI

"They need to stress not only that [AVs] are safe, but also the wider societal benefit this will bring."
Neil Sharpe, Director of Mobility Solutions, Bosch

Learning from other debates

Experts were able to suggest some examples to emulate when communicating around new technologies such as AVs:

Examples to emulate:

- ✓ **Electric cars and drones:** some experts praised the gradual introduction of electric cars and drones in to day-to-day life, meaning that the public have been able to become accustomed to the new technology and believe that other people like them are using it.
- ✓ **Aeroplanes and lifts:** one expert made the observation that other forms of automated technology have often been introduced with a human 'driver' or 'controller' to reassure the public that these machines can still be 'controlled' in the case of system failure.

"When lifts were introduced, you would originally have had someone there to pull a lever, just for reassurance."
Sam Chapman, Chief Innovation Officer & Co-Founder, Floow

"With human fertilisation and embryology, they made the public a good and clear case, where GM foods failed to make the case for public benefit, and so ended up looking all about profit."

Tim Clement-Jones, Chair, APPG on Artificial Intelligence

Section 4: The Role of the Insurance Industry

It is seen as imperative that the insurance industry is thinking deeply about the implications of AVs for liability, risk and potential new threats related to automation, such as cyber crime. However, most experts also feel that the insurance industry has a unique, credible and as yet unfulfilled role to play in communicating to the public on the complex issues of risk and safety specifically.

Implications for the insurance industry

The development of AVs are seen to have huge implications for the insurance industry, and experts are in agreement that Direct Line Group (DLG) and other motor insurers should be working actively in this area. In particular, experts felt that the insurance industry should be focusing on:

- Liability, particularly in terms of who will be held at fault should an AV crash: for instance, would it be the human in the car, the programmer or the manufacturer?
- Insuring against potential new risks associated with autonomous technology, including cyber crime and terrorism.
- Opportunities to reduce costs for consumers and explore alternative pricing models, such as 'pay as you go' models, as AVs become more common and accidents less so. (However, some experts noted that costs may increase in the short-term given the relatively high cost of driverless vehicles.)

"Insurance will be nothing to do with the person but to do with the software – some are going to get that and become 'technically competent' – some won't get it and be gradually eroded.''

Stan Boland, CEO, FiveAI

Most of the experts consulted spontaneously discussed risk as the challenge for AVs which most requires further consideration, and agreed that it is likely that the level of risk that will be acceptable for AVs will be lower than for human-driven cars. It was agreed that the insurance industry has a particularly important and credible role to play in the public-facing conversation relating to risk and safety specifically (see page 11 for more detail on this specific challenge).

Some experts believe that there is more that insurers can be doing right now to communicate the benefits of AVs to the public, for example communicating (if true) that *"your premium can go down if you have park assist because it is safer".* Some feel that this could in turn help people to realise that they already have some level of automation in their vehicles.

To achieve impact in these areas, there is perceived to be a need for insurers to work closely with manufacturers to fully understand and prepare for the implications of AVs. There is limited awareness that this is already happening, though the experts who do know of DLG's work in this area (and specifically DLG's partnership working with manufacturers) tend to be very positive about it.

"There isn't any single voice you can carve out. The most positive messages are those that involve a range of interests and perspectives."
Laurenz Gerger, Policy Adviser, Motor, ABI

"They should be convening, consulting, pulling together…a step-by-step approach to looking say 15 years forward, engaging government, working out what the regulator's going to be for this industry."
Tim Clement-Jones, Chair, APPG on Artificial Intelligence

Conclusions

The introduction of AVs to the roads of the UK is certain to bring a fundamental change to how we think about and approach driving, yet existing research and interviews with leading experts suggest that the public remain far behind in their understanding of the technology. Even with the potential for the UK's infrastructure to cause delays in the rollout of AVs, experts feel that autonomous technology is likely to arrive, to some extent, far in advance of when the public might expect.

To avoid falling into the trap of other technologies which have far outstripped the public debate and fallen down at the hurdle of public acceptability, experts suggest that it is essential that the AV industry opens itself up and engages with the public in a way that it is not seen as having done so to date.

Concerted efforts are perceived to be needed in changing the narrative around AVs towards a more positive a story, to ensure that the narrative does not become a void filled by bad news stories of fatal crashes. Experts suggest that more could be done to promote the many benefits that AVs could bring, including increased safety and mobility options, as well as helping to tackle pollution.

The insurance industry is seen as having a vital role to play in this, as a trusted and credible voice on the issue of risk in particular. Most experts do not see being silent on this issue as an option, and urge those in the insurance industry to corral manufacturers to speak out and help to prepare the public for this seismic change in how we drive.

Appendix

Full list of research questions asked in expert interviews:

Section	Key discussion points and probes
Section 1: Introduction and context	• To ensure that we understand the wider context of your views, could you give me a short overview of your background and current role? ○ To what extent is artificial intelligence or the future of driverless technology an area of focus for you?

Section 2: Driverless technology and potential developments	• What three words spring to mind when you think about driverless cars?
	• Please could you give me a brief overview of what you see as the current state of play in driverless technology?
	  ○ What are the products or organisations that are leading the charge?
	  ○ Who do you look to as leaders in this area?
	
	• How do you think that driverless technology is likely to unfold worldwide in the coming years?
	  ○ And in the UK?
	  ○ What kinds of timescales do you think are most realistic based on the latest developments?
	  ▪ What could speed up this progress? And what could slow down it down?
	  ▪ What do you think the key milestones are going to be in introducing driverless tech?
	  ○ Optimistically, where do you think we will be by 2020?
	
	• What challenges can you see ahead in bringing driverless technology to the roads of the UK? *[Moderator to probe on each challenge in detail]*
	  ○ What solutions, if any, can you see to this challenge?
	  ○ Who if anyone is talking about these solutions?
	  ○ And what, if anything, is currently being done to explore these solutions?
	• What, if anything, are your key concerns about bringing driverless technology to the roads of the UK?
	
	• In your opinion, what overall impact will driverless cars have on wider society?
	  ○ What positive impacts might there be?

	○ And what might be the negative impacts? • How prepared, if at all, do you feel that society is for these impacts? ○ What could help societies to be more prepared? ▪ Who should lead on making sure this happens? And who else needs to be involved in this? • Thinking about the insurance sector, what do you see as the potential implications of the introduction of driverless cars?
Section 3: Communications challenge with the public	• Where do you think that the public is currently at when they think about driverless technology? ○ What do you think they might understand/not understand about it? ○ Would you say they are feeling more positive or negative towards it at the moment? Why? ○ Thinking about this, who should determine the level of risk that would be acceptable for driverless technology to take? ○ What factors will shape public perception of an acceptable level of risk? ○ How can the public be engaged on this issue to ensure they are bought in to the conversation? • How well is the industry currently making the case for driverless technology to the public? ○ What would happen if they are not able to make the case? • What are the opportunities to get the public on board? And what are the challenges? • What are they key facts/proof points the industry must get across to convince, reassure and overcome any key challenges (e.g. concerns about safety)? ○ Who should be delivering these? • Who, if anyone, is currently making the strongest case to the public for driverless technology? ○ What is the role of the tech sector/the automotive sector in this? ○ And what could be the role of insurance companies? • What are the closest parallels in terms of other technological innovations that the automotive industry could learn from when communicating around the development of driverless technology? ○ What is the gold standard for communicating around new technologies? ▪ What made this a success?

	▪ How easy would it be for the automotive industry to emulate this with driverless cars? • If you had to give one piece of advice to the insurance industry about communicating around driverless technology to the public, what would it be?