How can we use tech to build a better transport system?

techUK is the trade association for the technology sector in the UK. Our over-1000 members, the majority of which are SMEs who are based around the United Kingdom.

They employ 1.1 million people across the UK, with a turnover of £329bn in 2023 and an estimated annual growth rate of 10%.

We have prepared this briefing to help Prospective Parliamentary Candidates understand key tech issues in the UK, what can be done to tackle these issues, and the benefits of doing so.

This briefing draws upon:

- Our [UK Tech Plan](#): How the next Government can use technology to build a better Britain
- The [Seven Tech Priorities](#) for the next Government and polling of 250 tech industry leaders in February 2023.
- Our response to the Transport Select Committee’s inquiry into the future of transport data.

More briefings, both from ourselves and techUK’s members, can be found on our online briefing hub.

The importance of our transport system and the role digital technology plays

- **A reliable and sustainable transport network is the backbone of a strong economy.** It is essential for improving productivity, connecting communities and spreading economic prosperity throughout the country. Access to education is also essential for any modern economy and here too transport provides the vital connections to schools, apprenticeships and further training opportunities.

- **Addressing the climate crisis is still our greatest challenge and surface transport (such as cars) remains the UK’s highest-emitting sector, contributing 23% of total UK emissions in 2022**, this is driven by combustion engine vehicles which are still by far the most popular mode of travel. In the year ending June 2023, there were 346 car driver trips per person in the UK, compared to just 17 trips per person by train or 16 trips per person by bike. At both the local and national level we should be encouraging people to move from private to public transport and this is where digital technology can play a key role.

- **Transport is fast becoming defined by digital technology as vehicles advance and infrastructure becomes more connected.** With the right technology and support, we

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can transform the way we move people and goods both locally and nationally. Making public transport more convenient and more accessible. Helping accelerate progress to towards net zero and supporting economic growth.

How is our transport system digitising?

The transport sector is rapidly embracing the benefits of digital technologies and data to deliver better services for passengers, customers and businesses. Operators, local transport authorities and local governments are all starting to realise the transformative benefits from digital technology, with the the main areas of transport innovation outlined below:

1. **‘Integrated’ transport**: a concept of combining different modes of transport to maximise ease and efficiency for the user in terms of time, cost, comfort, safety, accessibility and convenience. This may also be referred to as ‘Mobility as a Service’ (MaaS) which foresees a move away from car ownership towards a model where people purchase a journey by whichever mode is most efficient, usually presented through an app-based interface. This requires multiple operators and stakeholders to work together to aggregate real-time information on the status of different transport networks in order to recommend the best journey, followed by the option to book travel all in a single app.

2. **‘Smart’ and electronic ticketing**: refers digitising the way passengers buy tickets through mobile technologies including QR codes, mobile pay-as-you-go and digital rail season tickets\(^4\). These solutions empower passengers to know they are getting the best price, while also facilitating payments for multiple transport legs in a single transaction.

3. **Active and shared transport**: refers to alternatives to car ownership through shared services such as e-bike and e-scooter rental schemes, car-clubs provided through technology platforms, as well as conventional cycling and walking. This notion is closely tied to MaaS due to the shared ambition to reduce overall car demand to make cities more sustainable and improving health and quality of life outcomes.

4. **Connected and automated mobility**: the application of technologies such as Artificial Intelligence and Machine Learning to enable vehicles, aircraft or vessels to travel without a human driver (also referred to as ‘self-driving’). These vehicles are often connected via the internet in order to transmit and react to information in real time. Connected and automated mobility (CAM) can be used within both passenger and commercial transport (i.e. freight and logistics) and presents significant benefits in terms of safety, efficiency and sustainability. CAM use-cases may be applied within public transport, services integrated into MaaS offerings, provided within private personal vehicles or within industrial settings such as construction, mining and airport operations.

What steps could the next Government take to accelerate digitisation and build a better transport system?

\(^4\) https://www.thetrainline.com/information/digital-tickets
Despite this exciting progress, we are still in the early stages of transforming the transport sector. Transport is rightly a highly regulated and licenced sector with high levels of public sector ownership so public policy is instrumental in helping to create a system that is capable of meeting modern demands. Below we have set out a number of changes that are required to accelerate progress:

1. **Set out an integrated ‘vision’ for the transport system:** the UK lacks an overarching ‘vision’ and set of strategic objectives for its transport system. This means that while there are no shortage of innovation strategies and policies at the mode level (e.g. the Plan for Rail\(^5\), the Plan for Drivers\(^6\)) they fail to ladder-up to a set of overarching priorities for what we want from our transport system overall. This lack of holistic vision drains market confidence and slows down the pace of innovation. An example is the delayed mandate for phasing out combustion engine vehicle sales, the lack of strategy on deploying EV charging infrastructure and scaling back HS2. To instil confidence and clarity, the next government should prioritise working with the sector to define this vision in its first year in power. The Transport Select Committee launched an inquiry into this topic in late 2023\(^7\) providing an evidence-base for how this can be achieved. This vision, supported by a visible pipeline of projects and priorities, will restore private sector confidence in the transport sector and ensure it modernises at the pace required to deliver for modern Britain.

2. **Create a structure that supports delivery:** government, and specifically the Department for Transport (DfT), needs to align its structure with this new integrated vision. This is due to the fact the current funding and policy structures means rail and road teams work in isolation, compete for finite funding and do not collaborate as effectively as possible. This siloed approach is also at odds with wider environmental goals such as reducing car usage, while also building unnecessary complexity into the sector. The DfT should be structured by outcome in line with an overarching vision (i.e. Net Zero and Decarbonisation, Passenger Experience etc) and made up of cross-functional teams from across transport’s modalities to deliver on these goals.

3. **Lead the way on transport data:** Unlocking and opening up data from transport operators can email improve journeys, reduce traffic, enable innovative new business models and drive down costs. However, the transport data landscape is complex due to a wide variety of different data standards, systems and digital maturity levels across modes, operators and authorities. Innovations such as integrated transport and MaaS rely on the exchange of high quality open data to aggregate real time information for passengers. The DfT’s Data Strategy\(^8\) sets-out the benefits of an ‘open [data] by default’ culture in the transport sector and at the mode level, there have also been pockets of success through initiatives like the Rail Data Marketplace. However, the next government has an opportunity to go much further by spearheading a cross-modal programmes similar to the ‘NHS Data for Research & Development Programme’\(^9\) that seeks to develop common standards and improve interoperability by bringing together all relevant players.

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\(^6\) [https://www.gov.uk/government/publications/plan-for-drivers](https://www.gov.uk/government/publications/plan-for-drivers)

\(^7\) [https://committees.parliament.uk/work/7794/strategic-transport-objectives/](https://committees.parliament.uk/work/7794/strategic-transport-objectives/)


4. **Take a pro-innovation regulatory approach**: novel forms of transport such as CAM and e-mobility require regulatory reform to deliver benefits for communities. The Automated Vehicles Act is a stand-out example of setting the legislative foundation for CAM and Automated Vehicles to deliver significant benefits for the transport system and society at large. It is critical that the next government looks at other areas where reform will unlock new opportunities such as implementing a long-term regulatory framework for e-mobility and setting a vision for emerging technology adoption including AI and Quantum.

5. **Focus on adoption, not just innovation**: the DfT has been successful in co-ordinating a wide range of innovation and R&D projects such as Transport Research Innovation Grants (TRIG), ‘First of a Kind’ demonstrators and accelerator programmes. These have been effective at proving the effectiveness of technology but this in general does not result in widespread adoption due to cost, procurement, skills and cultural barriers at the deployment stage. This means the UK is slow to modernise its transport system, leaving us with outdated systems and processes that do not lead to a positive customer experience such as poor WiFi provision on trains and disrupted services due to signal failures. The next government should develop a strategy to overcome adoption challenges through taking an ‘applied innovation’ approach, setting challenges to the supply chain and de-risking investment for the DfT’s Arm’s Length Bodies, executive agencies and local authorities through extended funding and continuous support.

**How can I learn more?**

If you would like to know more about the importance of getting our incentives for innovation right, you can read our UK Tech Plan and Seven Tech Priorities.

techUK can also arrange a call with yourself and our policy managers so we can brief you on this topic in more detail. If this would be of benefit to you, please contact Archie.Breare@techUK.org and Alice.Campbell@techUK.org.

techUK is also able to arrange a meeting between yourself and a member company of ours who has premises in your constituency if possible. This would provide you with a photo opportunity and allow you to discuss the importance of this issue further with a company operating in your constituency.

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