

## Submission to the Transport Select Committee Inquiry on the Future of Transport Data - Intelligent Transport Systems UK

### 1.1 Introduction

- 1.2 Intelligent Transport Systems UK (ITS UK) is the national industry association for transport technology providers and the voice of the transport technology industry. We provide a national platform to support the roll out of technology for a cleaner, safer and more effective transport network, both at home and abroad.
- 1.3 ITS UK has 150+ members, from both the private and public sector, and covering all sizes and disciplines. Members work in many different areas, including using data to support better transport services, such as through Mobility as a Service (MaaS), traffic management and enforcement, integrated transport, connected and autonomous vehicles, public transport services, smart ticketing and much more.
- 1.4 The ITS UK sector is conservatively estimated to be valued at £1.5 billion in economic growth, with a potential to generate £15 billion for the UK in further economic benefits.<sup>1</sup> More information on ITS UK and the intelligent transport sector can be found at [www.its-uk.org](http://www.its-uk.org)
- 1.5 We welcome the opportunity to respond to this inquiry on the use of data in transport, as a key issue for the sector. We have not sought to answer each question individually, but have instead set out our evidence based around key recommendations we believe would support the greater use of data across transport. We would be happy to supplement the submission below with any oral evidence required by the Committee.

### Key Recommendations

1. Central Government should work to set out a standard base level of data competency across transport authorities, from local to national levels.
2. Government has a unique role in bringing together cities that own mobility data, but may be hesitant to share it, and suppliers who are able to use it, but are concerned about commerciality and competitiveness. Government should speed up moves to bring the parties together for cooperative, shared, innovative solutions that bring benefit to all, through projects like the NPP, digitalisation of TROs, BODS and Rail Data Marketplace.
3. Government should create a 'data fund' for local authorities to fund operational expenditure for transport data services, and consider new funding models for local authority data services in the future.
4. Transport authorities should develop a Data Strategy for the use of data in transport, considering key issues like security, ownership, discrimination and privacy. This should be guided by a national framework to ensure the right balance between giving businesses uniformity from one authority to another and giving local authorities enough flexibility in approach.
5. Government should continue to fund the Future Transport Zones after 2024/25 and look to expand them to additional regions.

<sup>1</sup> Based on an estimation of ITS UK members, extrapolated to the wider sector.

### 3. The Vision of Data in Transport

- 3.1 Transport is being revolutionised by digitalisation. The process of converting information about an object or situation from a physical measurement to a digital format, and then using that information to make more effective decisions, is increasingly taking place across all parts of our transport system. Digital infrastructure is being used in more and more applications, including traffic signs, telecommunications, maps, traffic management systems, timetables and traveller information services, to name a few.
- 3.2 Innovations in telecoms are giving us fast and affordable connectivity and precise location referencing; data from vehicles, other sensors and network operations are allowing real-time information and multimodal mobility opportunities that can be accessed from a range of mobile devices. Today's "digital generation" companies and users are learning how to integrate and use this data and, increasingly, are moving the focus from collecting, storing and owning it, to processing and using it for the betterment of travellers. The digitalisation of transport is neither theoretical nor futuristic - it is happening today and accelerating across more and more of the network.
- 3.3 What can data achieve? Fundamentally, data is an enabler of better understanding, managing and operating our transport system. Currently, across the UK, the use of transport data to effectively inform and guide decisions varies from one transport or local authority to another, based on a number of factors, including infrastructure, funding, capabilities and political support. Many authorities are increasingly utilising historic data to deliver better planning decisions, but there are also many that rely on traditional, non-technological solutions in their planning or delivery of transport services.
- 3.4 The potential use cases for data are almost unlimited. Some key benefits include:
- **Reducing cost:** Through the use of digital twins, connected vehicle data, sensors, cameras and other equipment, transport authorities can monitor the state of their assets continuously. This allows authorities to see degrading conditions and provide predictive maintenance before an asset needs to be taken out of service entirely, avoiding costly works and disruption. Remote monitoring is also reducing the need for workers to be exposed to dangerous conditions, such as on the road and rail networks.
  - **Maximising capacity and efficiency:** Both real time and historic data is providing transport planners and operators with even greater knowledge about how their transport systems are being used, including changing trends in travel and how their customers act in a period of disruption. This knowledge can help support timetable planning, allow for informed decisions around capacity improvements and help transport authorities' direct people to alternative routes during when needed.
  - **Greater integration and seamless journeys:** Data is providing a more holistic view of how the transport network functions, including the integration between different modes. Transport data provides the building blocks for Mobility as a

Service (MaaS), which can improve the user experience of the transport network through more seamless, end-to-end journeys on the network. Data is also pivotal in establishing more tailored transport offers, such as demand responsive transport (DRT).

- **Improving safety:** There are many ways in which data is helping to keep the travelling public safe. For example, by analysing harsh braking incidents from connected vehicle data, transport authorities could see where accidents are more likely to occur in future, thereby intervening before an accident happens. There are also applications for collisions, poor weather, breakdowns, understanding crime hotspots around stations and many other applications, all of which can improve safety across the network.
- **Providing a more tailored and equitable approach:** By understanding user behaviours better, transport authorities can better tailor their services to the many different communities around the UK who use transport services differently. Data can deliver more tailored approaches to road user charging schemes, for example, by providing information on peak traffic periods in a city centre. It could help with the implementation of more pay-as-you-drive or pay-as-you-go smart ticketing too.
- **Reducing carbon and air pollution:** Data services can help encourage the uptake of public or active transport options thereby helping to reduce pollution. New analytics can inform the travelling public of how much carbon a journey could produce and how to minimise their footprint.
- **Efficient planning and asset utilisation:** Data can allow the more effective use of assets such as allowing operators to optimise routing and deliveries in more efficient and safer ways. This means greater alignment between demand and supply for transport services, both for travellers and freight. For example, data can allow more flexible use of the kerbside, ensuring deliveries can be made in a timely, efficient and effective way.

3.5 Looking to the future, data and technology will continue to change our transport network in ways we can't predict or foresee. The aim of Government should be to ensure the data it holds as a customer and supplier (either itself or through its Arms-Length-Bodies) is available through openly accessible APIs, thereby creating the environment where new data products and services can flourish. Government can support the sector to do more with data too through standards, regulation, guidance and funding.

3.6 In the medium term, this will require creating a more standard level of competency in data analytics amongst all transport providers. This requires having staff with the necessary skills throughout different transport authorities, from local through to national, with the public sector having the confidence to act as informed clients when procuring new data services. It will also mean investing in the enablers of better data services, such as the mobile network, with investment in 5G as the 3G network is turned off. It will also require investment in skills across the transport industry.

3.7 In the longer term, the vision for Government should be of an environment where both transport authorities and transport users have real-time information on the state of

the network, in a joined up and holistic way, and where all decisions are based on up-to-date, clear and understandable information. For the private sector, there should be clear routes to market for them to use APIs to develop many new and different services to benefit all who use and run the transport system.

**Recommendation 1: Central Government should work to set out a standard base level of data competency across transport authorities, from local to national levels.**

#### 4. Enablers for the greater use of transport data

- 4.1 There are a number of enabling factors that will allow greater use of data across the transport network. We look at a number in turn, highlighting that this is by no means an exhaustive list.
- 4.2 **Open, closed and shared data:** How data is made available can be based on a spectrum from open to closed. Fully open data is accessible to all, has an open licence and can be used in many different applications. On the other side of the spectrum, closed data provides access only for the organisation that holds it, with contracts and policies around its use. In the middle of the spectrum, there are a number of different types of accessibility, from sharing limited data with the public, such as service updates, to giving chosen organisations access on a case-by-case basis.
- 4.3 Often there is uncertainty about how best to develop, deploy and operate digital infrastructure. Cities can own a great deal of mobility data but hesitate to share it with transport suppliers because of concerns about privacy, safety and liability. Similarly suppliers are concerned about maintaining commercial security and competitiveness. We need to speed up moves to bring the parties together for cooperative, shared, innovative solutions that bring benefit to the entire value chain.
- 4.4 The UK Government is right to take an ‘open by default’ approach to data, with the recommendation that transport authorities treat data as open unless it can’t be shared for commercial, privacy or ethical reasons. The more data that is open and accessible, the more the private sector can find novel applications to improve the UK’s transport experience. A good example is with Transport for London’s open data policy, which provides a unified API for London’s transport system. This open approach enables the private sector to provide a number of applications to better inform travellers about their journey.<sup>2</sup>
- 4.5 There will be times where data needs to be closed or shared only with certain organisations. For example, where a commercial agreement is signed between a client and a contractor data relating to a contract that is commercially sensitive or where mobile phone network data is used for people movement data analysis, it would be right that only the metadata is used, and that actor level (i.e. each individual user) information would remain closed.

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<sup>2</sup> [TfL Open Data Users](#), Accessed August 2023

- 4.6 In some cases, it may not just be making the data open that enables new transport services, but also ensuring it is on one, accessible platform. An example is of the Bus Open Data Service (BODS)<sup>3</sup>, which provides timetables, bus location, and fares data for local bus services across England. The API provided by BODS has enabled a number of applications to inform bus users of service frequency, disruption etc.
- 4.7 There is more the Government can do to support creating a common platform for open data, particularly through the digitalisation of Traffic Regulation Orders (TROs) and the National Parking Platform. Government's role in bringing operators, data providers and local government together means it has a unique opportunity to develop these platforms, working with the ITS industry.
- 4.8 Additional support should be given to speeding these projects up and investigating new areas where a common transport data platform would provide benefits, as they'd not only provide better transport services for the travelling public, but would also give UK businesses a competitive advantage when approaching new markets overseas.

**Recommendation 2:** Government has a unique role in bringing together cities that own mobility data, but may be hesitant to share it, and suppliers who are able to use it, but are concerned about commerciality and competitiveness. Government should speed up moves to bring the parties together for cooperative, shared, innovative solutions that bring benefit to all, through projects like the NPP, digitalisation of TROs, BODS and Rail Data Marketplace.

- 4.9 Where practical, Government should also look at incorporating historic data into these initiatives, which would add to the value of these data sources and may have additional applications and uses.
- 4.10 **Funding:** Local and transport authorities, as key purchasers and users of transport data, will be essential in creating a more data-led transport network. Large transport authorities, such as regional and subnational bodies often have the capabilities to invest in their data infrastructure, but this is not often the case for local authorities.
- 4.11 Because Government mostly funds capital expenditure, local authorities are encouraged to buy data on an ad hoc basis for individual projects instead of building strategic data capabilities, with a well-considered and city-scale understanding of transport. If we want to see local authorities take a more strategic approach, they will require funding for operational expenditure, to provide the capabilities to keep data services running. This expenditure would likely have a significant return on investment, as data services would reduce costs in other areas, such as by reducing the need for human monitoring of infrastructure assets.
- 4.12 In the long term, this requires a change to funding models for local authorities, recognising the increasing need for recurring spend as part of building an intelligent future driven by data, systems and technology. In the short term, the Government

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<sup>3</sup> [Bus Open Data Service](#), TfL, Accessed August 2023

should set aside a fund, as it has done for road maintenance and potholes, to support operational expenditure of data systems and the upskilling of the local authority workforce.

**Recommendation 3: Government should create a ‘data fund’ for local authorities to fund operational expenditure for transport data services, and consider new funding models for local authority data services in the future.**

- 4.13 In some circumstances, the use of data is limited by the question of who pays for a collectively-beneficial service, such as with connected vehicle services. Connected vehicle services, such as dashcams, black-box insurance products, smartphone apps, satnavs and the emergency SOS eCall system, could all provide data through the mobile network for factors like road condition, traffic conditions and driver behaviour.
- 4.14 The RAC Foundation reports ‘Driven by Information’ and ‘Driven by Information Revisited’ written by an ITS UK member sets out the ways in which the UK could make more of connected vehicle data, including through the creation of larger scale demonstrators, public funding where there is not the means to secure private backing, and support for projects like the digitalisation of TROs and the National Parking Platform, in order that private sector applications of this open data can develop.<sup>4</sup>
- 4.15 **Infrastructure:** Digital infrastructure is a key enabler of data use, particularly the use of real-time analytics to inform decision making. Digital infrastructure and the mobile network will allow the greater use of the ‘internet of things’ where physical infrastructure is able to send and receive data. Geographically, there is a risk that transport data is developed more in the cities than in rural communities due to the cellular network availability. Government should look to ensure that the UK does not develop a two-tier approach to transport data, with use only in urban environments, perhaps by ensuring support for transport data projects through the Rural Mobility Fund.
- 4.16 Data will always need a way of being collected, whether it’s through smart, IoT infrastructure, in-vehicle devices, or ticket barriers. The Government will need to maintain - and in some cases, accelerate - investment in areas like smart, pay-as-you-go ticketing, sensors, kerbside management, drone and automated machine monitoring, to ensure transport providers can securely access the data they require to develop and deliver safe and efficient services.
- 4.17 **Scaling up services:** The UK has a strong record of funding projects through Innovate UK, Catapult and wider RTO competitions, but scaling up these projects from pilots can be difficult. Support is required at the later Technical Readiness Levels (TRLs) to help companies commercialise their products and services.
- 4.18 A focus is also needed to coordinate learnings from these funded projects and ensure the IP is developed on products and services within the UK and not sold overseas.

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<sup>4</sup> [Driven by Information](#) & [Driven by Information Revisited](#), RAC Foundation, Accessed August 2023

- 4.19 **Skills:** Transport operators will increasingly require staff who have data analytics and coding skills. These roles are in high demand across the economy, and the public sector will often find itself competing with the private sector for appropriately skilled workforce.
- 4.20 Critically, transport operators do not need all the skills required to run data services - in many cases it will be more economical and effective to secure external expertise to advise in areas like AI and machine learning. However, teams at transport authorities will need to become more 'informed clients', with a basic level of understanding in order to procure services effectively.
- 4.21 This will require upskilling across and throughout the workforce - data should not be seen as the domain of one department or team. Civil engineers, land use and transport planners, logistics experts and other careers will need to be able to analyse and understand data analytics to inform their decision making.

## 5 Risks to be managed and remediated

- 5.2 There are risks from the greater use of transport data, including around privacy, security and intellectual property. These will be important to manage as increasingly, how transport operators and providers use their data will directly link to levels of public support and trust. This is important not only for individual authorities and companies, but also the reputation of the sector as a whole.
- 5.3 **Privacy:** With privacy there are clear EU standards through GDPR on how organisations should gather, maintain and use data from customers. Transport operators will increasingly need to consider how their data is being used and the anonymisation of individual data, but there is often a balance between personal privacy and delivering greater public or societal benefits.
- 5.4 For example, the tracking of an individual vehicle may lead to a more effective and efficient network management, or could improve safety on the road, but it would also be seen by many as too great a breach of privacy. There needs to be greater conversation across all levels of Government as to what the right approach to take is, given it is not just transport, but many sectors across the economy, that face this dilemma. There is a risk that different approaches to data privacy or not setting out a clear approach across all sectors will lead to growing scepticism, concern and distrust from the public.
- 5.5 **Security:** The Government's updated Risk Register highlights cybersecurity on the transport network as a key risk, citing two examples, including how in 2021, Northern Rail shut down its new self-service ticket machines following a suspected ransomware cyber-attack, and in 2022, the Port of London experienced a distributed denial-of-service attack, which temporarily took down its website.<sup>5</sup>

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<sup>5</sup> [National Risk Register](#), HM Government, Accessed August 2023

- 5.6 It is important that transport providers recognise that no system will ever be made ‘completely’ safe, but that measures can be taken by cybersecurity companies to reduce the risk of data leaks or malware attacks. Critically, transport authorities should also have plans in place should a cyberattack happen, so that they can react quickly during such an incident. Government is already supporting local authorities to understand these risks, through DSIT’s Secure Connected Places: Cyber Security Playbook<sup>6</sup> and should continue to support local authorities through training, guidance and advice.
- 5.7 Consideration particularly needs to be given by cybersecurity professionals of the risk of hostile foreign actors seeking to destabilise the UK economy through cyber-attacks. These events are likely to increase in future, requiring greater consideration of cybersecurity at all levels of government.
- 5.8 Some transport operators use third party data, which can ensure that privacy and cyber threats are managed more efficiently and effectively by a third party. This can be a sensible approach to take, but does mean the supplier of that data needs to be accredited and trusted by authorities.
- 5.9 Transport operators need to also consider the physical security of their roadside equipment and central servers too, as a bad actor accessing an operator’s servers could pose as much as a risk as an effective cyberattack.
- 5.10 **Intellectual Property:** Different organisations will take different approaches to who owns the data and how much they share openly. The question around ownership is often critical, with transport authorities often wishing to own their data in order to not be ‘locked in’ to one provider or service. However, if transport authorities are holding onto data that is not being used, there can often be a missed opportunity - and a ‘public service’ case to be made - to open this up to develop insights for other applications. It is therefore important that public and private sector work together as partners and are open about their roles and responsibilities when procuring data services.
- 5.11 All these challenges listed above can be tackled if an organisation considers thoughtfully how it is using the data it has or uses. Transport authorities should therefore have a clear data strategy, taking learning from the Government’s guidance<sup>7</sup>, and ensuring that they have clear policies in place in areas like security and ownership.
- 5.12 **Avoiding discrimination and bias:** One unintended consequence from greater machine learning and AI is the exacerbation of discrimination and bias. Transport providers will need to consider how their data is collated and ensure it is processed in the right way in order that it does not discriminate or perpetuate inequalities. For example, data may show that a particular transport route is used infrequently by travellers with disabilities. This doesn’t mean however that the route should not be accessible, which

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<sup>6</sup> [Secure Connected Places Cyber Security Playbook](#), DSIT, Accessed August 2023

<sup>7</sup> [Local authority transport: understand data sharing](#), DfT, Accessed August 2023



may be a conclusion an automated assessment comes to. Humans therefore will still need to ensure they review computer-generated decisions to ensure they align with common sense and society's values.

**Recommendation 4: Transport authorities should develop a Data Strategy for the use of data in transport, considering key issues like security, ownership, discrimination and privacy. This should be guided by a national framework to ensure the right balance between giving businesses uniformity from one authority to another, whilst giving also each enough flexibility in approach.**

## 6 Government's Role

- 6.1 Government has a key role to play in catalysing the growth of the transport data industry and its applications amongst transport authorities, through strategy, trials and guidance.
- 6.2 **Strategy:** The Transport Data Strategy was published in March 2023 and highlights a number of pillars to enable the better use of data, including 'sharing, discoverability and access', 'data standards and quality', 'skills, culture and leadership', 'user needs and communications' and 'governance, protection and ethics'.
- 6.3 The Transport Data Strategy sets out clear and practical actions for the medium term, to support the better use of data across the transport. The barriers it identifies are the right ones, and there are clear actions to be monitored annually when the Strategy is updated.
- 6.4 However, the Strategy - as itself notes - does not set out a long-term vision for the use of data in transport and has little in funding assigned to its outputs. Alongside the Strategy, it would be useful to understand Government's vision of how it sees data being used across the transport sector over the coming 30 years, and how Government will seek to support and shape the policy landscape. It sets out little on what is required in the next three years.
- 6.5 Furthermore the Strategy does not answer the key question on how local authorities can deliver better data systems with their current limited resources, which will ultimately limit the effectiveness of the Strategy, even with the guidance it provides.
- 6.6 **Trials:** The Government has run a number of small-scale trials and projects to show how data can help support a smarter transport network, like the Green Light Optimisation Speed Advisory (GLOSA), which encourages drivers to maintain their current speed in a vehicle to enable them to pass through traffic signals without needing to stop. However, rarely are these projects scaled up from local successes to national services. This means benefits are often lost, and valuable lessons and experience from the trials are not acted upon.
- 6.7 Currently, the main trials for data in transport are the four Future Transport Zones in the West Midlands, Nottingham and Derby, West of England and Solent, which received

£90 million in March 2020. Many of the projects within these FTZs are focused on data and MaaS applications and are now delivering effective services, such as the Breeze app in the Solent area.

- 6.8 Although it is still early to see the full benefits of the MaaS projects realised, progress made so far shows there is a case for further funding to be provided to support the FTZs when the programme ends in 2024/5, given the clear benefits these trials are providing. Government could also look to expand out the FTZs to other regions.

**Recommendation 5: Government should continue to fund the Future Transport Zones after 2024/25 and look to expand them to additional regions.**

- 6.9 **Guidance:** The Government can help transport authorities navigate a complex technology environment. The Local Authority Sharing Data guidance<sup>8</sup> and Manual for Smarter Streets<sup>9</sup> show what can be done to provide guidance for local authorities. The sector is expecting the Transport AI Strategy and the MaaS Code of Practice, both of which should be published as soon as possible. Similarly, the Government should ensure it updates the Transport Data Strategy once a year, as promised, so that it remains a ‘living’ document.

## 7 The International Perspective

- 7.1 Approaches to data differ around the world. The UK intelligent transport sector is highly regarded across the globe, with many of our Members exporting their skills, products and services abroad. However, not having a “home market” adopting these technologies can pose a real challenge, reducing the ability of companies to sell overseas.
- 7.2 When it comes to international best practice, ITS UK has partnerships with ERTICO-ITS Europe and with over 35 ITS national organisations and would be happy to support the Committee in collating international examples. Of particular note is the work being undertaken by the European Union to develop and standardise data usage across transport, with some key initiatives set out below.
- 7.3 **EU Data Strategy:** An overarching EU Data Strategy has been developed with policy actions (including mandates) and research & innovation funding. The EU’s Data Strategy has been pivotal in increasing the availability of data, with a strong focus on data for the transport and mobility sector and its various use cases, whether that is B2B, B2G, G2B or B2B2C. Mandates are being used as a regulatory tool in a selective way (only where there are market failures and where there is a public good case, such as road and vehicle safety data or traffic data).

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<sup>8</sup> [Local Authority Sharing Data Guidance, Accessed August 2023](#)

<sup>9</sup> [Manual for Smarter Streets, Accessed August 2023](#)

- 7.4 The European framework also includes new tools for governance of transport data that are published through National Access Points. The European NAPCORE project<sup>10</sup> (co-managed by ERTICO) focuses on a better streamlining and harmonisation of data sets to create a “one-stop-shop” among different member states’ National Access Points. The Data Strategy also includes governance of data intermediaries and the approach towards data held by governmental authorities.<sup>11</sup>
- 7.5 Our European colleagues of ERTICO-ITS Europe are deeply involved in this matter through the management of European funded projects on data sharing and standardisation. ITS UK would be pleased to bring the lessons learned jointly with ERTICO to the Committee.
- 7.6 **Common European Mobility Data Space:** Currently, the EU is looking to establish the Common European Mobility Data Space, creating a single market for data and allowing for greater flow across sectors. The EU Commission aims for the CEMDS to support the greater take-up of data and provide a single source and increasing awareness of what is available. CEMDS aims to offer access to real-time traffic data and sensitive mobility data beyond their secure exchange.<sup>12</sup>
- 7.7 **EU Data Act:** In order to put in place a data governance regime, the Commission has proposed the Data Act to harmonise procedures and regulations - in order that rules of access are fair, practical and clear and that privacy, data protection and competition law are respected. The Commission has also begun pooling data in key sectors to create common and interoperable data space with clear and fair rules on access and re-use of data.
- 7.8 This is a major policy initiative by the EU including the 27 EU countries and others such as Switzerland and Norway. UK industries and suppliers will have to comply with many elements of this initiative, such as the Data Governance Act and the proposed Data Act, even with the UK being outside the EU.
- 7.9 **Other initiatives:** There are a number of other initiatives across the EU and Europe, with some of them including a strong regulatory call for increasing the availability and sharing of data, including:
- The revised EU ITS directive which focuses on new data sets for real time traffic information, EV charging, other data for sustainability purposes or for the public good.<sup>13</sup>
  - The Mobility Data Space, an open data source offering access to real-time traffic data and sensitive mobility data beyond their secure exchange.<sup>14</sup>

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<sup>10</sup> [Napcore](#), Accessed August 2023

<sup>11</sup> [European Data Governance Act](#), EU Commission, Accessed August 2023

<sup>12</sup> [Mobility Data Space](#), Accessed August 2023

<sup>13</sup> [Council and Parliament strike a deal on the roll-out of intelligent transport systems](#), European Council, Accessed August 2023

<sup>14</sup> [Mobility Data Space, Accessed August 2023](#)

- National Access Points, with the aim of creating a Single European Transport Area with digital layer interlinking all of the elements of transport.<sup>15</sup>
- The Multimodal Digital Mobility Services, which has a focus on MaaS and aims to integrate public transport and rail services to achieve seamless multimodal passenger transport, as part of the EU Green Deal.<sup>16</sup>
- The upcoming regulatory initiative on access to in-vehicle data.<sup>17</sup>

7.10 A number of key reflections have come from these initiatives which could be applied to the UK:

- The need for more interoperability (open APIs). The role of industry-led and, where needed, regulatory mandated standards is paramount. Examples can be found in the area of eCall (CEN standards), traffic management (TN-ITS and DATEX-II) and CO2 measurements, for example.
- The need for alignment on metadata, whilst not mandating the alignment of detailed data sets, to allow for entrepreneurship from the private sector.
- The need for quality assurance of data with either regulatory oversight on the mechanism and procedures for reporting the data, or on the actual data sets themselves.
- The need to deal organisations who may have a significant market power on data gathering. Creating a level playing field so others in the sector have the means to create new services and products is vital. For example, the EU new Digital Market Act has regulated the so-called ‘gatekeeper role’ of some organisations who may be overly restrictive with their data.
- The need to provide incentives to the private sector to increase data availability and data sharing (financial incentives, auctioning/public procurement, research & innovation funded programmes, etc.)
- The deployment of high bandwidth communication networks and technologies that are interoperable and can cope with backwards compatibility requirements, so do not risk obsolescence,
- Managing issues around data protection and privacy challenges. An increasing number of data can be qualified as personal data where appropriate consent management tools are needed.
- Focusing on cyber resilience and trust.
- Consideration about the ‘digital divide’, the gap between people in society who have full access to digital technologies and those who do not.

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<sup>15</sup> [National Access Points, Accessed August 2023](#)

<sup>16</sup> [Multimodal Digital Mobility Services, Accessed August 2023](#)

<sup>17</sup> [Access to vehicle data, functions and resources, EU Commission, Accessed August 2023](#)