



Department for
Business & Trade



Department
for Transport

Exploring Smart Data opportunities in the transport sector

June 2026

This report was written by Innovate UK Business Connect. The findings do not necessarily reflect the views of the Department for Business and Trade, the Department for Transport or the UK Government.

Table of Contents

- Introduction..... 4**
- Executive summary..... 6**
- Background..... 9**
 - Why transport? 9
 - Scope of the research..... 10
- Methodology 11**
 - Workshop design..... 11
 - Participants 11
 - Data collection and analysis 12
 - Use of Artificial Intelligence (AI) 13
- Findings..... 14**
 - Cross-cutting system challenges 14**
 - Smart Data opportunity areas and use cases 15**
 - Improving passenger journeys..... 17
 - RO-UC1 – Real-time multimodal journey planning..... 17
 - RA-UC1 – Door-to-door journey planning..... 18
 - RO-UC2 – Interoperable end-user transport account..... 19
 - RO-UC4 – EV charging and pricing 20
 - RA-UC2 – Incentives and value for money..... 21
 - RA-UC4 – Multimodal integrated ticketing 23
 - Supporting more efficient freight and logistics 24
 - FR-UC1 – CO₂ reporting..... 24
 - FR-UC3 – Intermodal capacity optimisation 25
 - FR-UC4 – Last mile efficiency 26
 - Enhancing network management 27
 - RO-UC3 – Multimodal journey planning 27
 - RA-UC3 – Rail infrastructure planning..... 28
 - FR-UC2 – Freight EV charging coordination 29
 - Potential benefits of use cases 30**
 - National scalability trends..... 32**
- Implications and next steps..... 34**
 - Implications for a Smart Data scheme design in transport..... 34**
 - Interoperability 34
 - Governance arrangements 34
 - Legacy systems 35
 - Procurement practices 35
 - Cross-sector coordination 35

Implications for policy development.....	35
Scope and stakeholder coverage	35
Institutional barriers to data sharing.....	36
Alignment with wider policy objectives.....	36
Next steps.....	36
<i>Annex 1: Smart Data use case template.....</i>	38
<i>Annex 2: National Scalability Index and scoring results</i>	40
Summary of results	42
Interpreting the results	46
Comparative insights.....	47
Implications.....	47
<i>Annex 3: Business personas.....</i>	49
1. Logistics Operations Manager	49
2. Rail Asset Manager.....	49
3. Sustainability and Environmental, Social and Governance (ESG) Lead.....	50
4. Fleet Electrification Manager	50

Introduction

The UK's transport system generates large volumes of operational and behavioural data in all domains: infrastructure, vehicles, services and users.

Taken as a whole, it has the potential to enable further data-driven decision-making, and thereby help create a more efficient, user-friendly transport system across all modes and domains.

However, it is currently difficult to realise this potential. This is because the data is:

- governed by inconsistent standards
- constrained by commercial, legal and technical barriers
- owned by many different organisations.

All of this makes the data hard to share, aggregate, interpret and reuse.

In the wake of the Data (Use and Access) Act 2025 (DUAA)¹, the Department for Transport (DfT) and the Department for Business and Trade (DBT) are exploring the feasibility of a Smart Data scheme for the transport sector.

Smart Data is the secure sharing of customer data – at the customer's request – with Authorised Third Parties (ATPs), who use this data to provide innovative products and services that benefit the customer. While Smart Data schemes typically involve the sharing of data about the customer, complementary open data initiatives (e.g. the Fuel Finder scheme) illustrate how Smart Data powers in the DUAA can also support broader market transparency and efficiency. These initiatives share the common goal of using data to drive better decision-making and consumer outcomes and may inform future Smart Data applications. Smart Data is not primarily focused on public sector data, but certain use cases could be enabled or enhanced by it.

A use case is a purpose to which Smart Data can be put, and which may motivate the initiation and design of a Smart Data scheme.

A Smart Data scheme is the policy, regulatory (or contractual), technical and governance framework that enables the secure, standardised sharing of data. This includes a trust framework to define rules and standards. All of these elements must be present for a data sharing initiative to be defined as a scheme. For example, Open Banking and the UK Payments Initiative operate as single schemes within the wider financial services sector. Schemes typically apply to a particular sector of the economy but could also span multiple sectors or include several schemes within one sector. A Smart Data scheme can be mandated through regulation or delivered through voluntary contractual arrangements.

¹ The National Archives, 2025, [Data \(Use and Access\) Act](#)

A sector is a plausible candidate for a Smart Data scheme where:

- there is a real data-access or portability problem
- solving the data problem could produce meaningful benefits for customers, businesses and the wider economy
- those benefits likely include growth, competition or innovation
- a formal, trusted, interoperable scheme is needed because the market is unlikely to deliver those outcomes on its own.

Journeys often involve multiple modes, operators and systems. Data that is currently held in separate silos could potentially be combined to improve travel planning, logistics efficiency, network management and accessibility. This indicates that the transport sector could be a promising candidate for a Smart Data scheme.

However, any Smart Data schemes should be evidence-led, viable, proportionate, and designed around clear Smart Data use cases that address existing policy challenges.

This report summarises findings from a series of research workshops commissioned by DBT and DfT and facilitated by Innovate UK Business Connect to collect evidence from a representative pool of stakeholders about potential use cases for Smart Data in transport. The evidence informs the early-stage research into the feasibility of a national Smart Data scheme for transport under the DUAA.

The following sections set out the policy context for Smart Data, the methodology used in the workshops, and the insights that emerged from discussions with industry and public-sector participants.

Executive summary

Purpose of the research

This research explores the potential for Smart Data schemes to support innovation, investment and growth within the UK transport sector. It sits within a broader policy context in which the UK government has identified data as a key economic asset in its flagship strategies, including the UK Industrial Strategy², the Smart Data Strategy 2035³, and the Transport Data Action Plan (DAP)⁴. The Department for Business and Trade (DBT) and the Department for Transport (DfT) recognise transport as a large, digitally transforming sector where Smart Data could further improve services and accessibility, promote greener travel choices, and reduce business admin burden. Their cross-government programme for 2026 includes joint discovery research and a call for evidence to identify and test the feasibility of high-value Smart Data use cases in transport.

The report provides an initial evidence base to inform ongoing policy development by examining where improved data mobility could address current system challenges.

What we did

The research was conducted through 3 structured stakeholder workshops involving 112 representatives from across the transport ecosystem in February 2026. These workshops were designed to explore the system-level barriers that currently limit data sharing and to identify practical use cases for Smart Data. Participants identified a set of cross-cutting challenges affecting the transport system and 12 distinct use cases.

Findings

The workshops highlighted that data within the transport system is often fragmented across organisations, modes and sectors. This fragmentation is both technical (for example, inconsistent data formats, incompatible systems and lack of common standards) and institutional (for example, differing organisational incentives, unclear liability and restrictions on data sharing). It reflects differences in incentives, governance arrangements and risk appetite.

Participants identified a set of use cases showing how Smart Data could improve journey planning, ticketing and accessibility for passengers. They also highlighted opportunities to improve operational improvements in freight logistics, infrastructure management and alignment of transport activity with energy system capacity and infrastructure. For a full list of use cases, see the Findings section of this report.

² Department for Business and Trade, 2025, [Industrial Strategy](#)

³ Department for Business and Trade, 2026, [Smart Data Strategy](#)

⁴ Department for Transport, 2026, [Transport Data Action Plan](#)

Across these use cases, common themes emerged, including the need for interoperable data standards, clearer governance arrangements and more joined-up decision-making between organisations, enabled by sharing data.

The findings also highlighted a number of systemic barriers. These include concerns around liability and data misuse, the complexity of legacy systems, and procurement practices that can limit the adoption of new data-sharing approaches. Together, these factors constrain the ability of organisations to share and use data effectively.

The use cases are intended to illustrate practical scenarios and system-level opportunities. They do not represent specific policy proposals. Their inclusion does not imply that relevant data or services are absent or ineffective. Examples of existing integrated transport system initiatives for England can be found in DfT's strategy for transport⁵. Instead, the use cases highlight where fragmentation or limited interoperability may constrain system-wide benefits. While findings offer insights, they should be treated with caution in drawing firm conclusions. Instead, the data should be treated as exploratory and used to inform future research.

What this means for policy

The findings suggest that Smart Data schemes in transport could play a targeted role in addressing some of the systemic barriers to data sharing identified in the workshops. In particular, issues such as interoperability, governance, incentives and trust are structural in nature and are unlikely to be resolved through voluntary action alone. These are areas where a Smart Data scheme – through common standards, clearer rules and coordinated data-sharing frameworks – could add direct value.

However, not all barriers identified in the workshops would be addressed by a Smart Data scheme. Constraints such as legacy systems, organisational capability and physical infrastructure limitations would likely persist, and in some cases may affect the pace or extent of implementation. This suggests that Smart Data should be understood as one component of a wider set of interventions rather than a silver bullet.

The use cases show that Smart Data opportunities are not limited to passenger-facing services. They extend to areas such as freight, infrastructure and coordination with other systems, including energy. This implies that policy development may need to consider a broad scope of data and actors, including both businesses and individual users.

Overall, Smart Data schemes could play a supporting role in improving coordination across parts of the transport system where data is currently fragmented. However, data sharing alone is unlikely to deliver system-wide outcomes without complementary changes in infrastructure, regulation, capability and market behaviour.

⁵ Department for Transport, 2026, [Better Connected: a strategy for integrated transport](#)

What happens next

This research is an exploratory project. Future DfT and DBT work will focus on:

1. targeted feasibility analysis of selected use cases, including data availability, governance models and Data (Use and Access) Act 2025 (DUAA) legal applicability
2. continued engagement with stakeholders to explore governance and commercial implications
3. assessment of how Smart Data schemes might align with existing transport data initiatives. Any future policy decisions will be taken in line with wider government priorities and complement existing initiatives on data sharing in the sector

These steps will support a more detailed evaluation of whether and how Smart Data could be applied in the transport sector.

Background

In recent years, the UK Government has explored how improved access to data can support innovation, competition and better services across the economy. Recent flagship policy strategies, including the UK's Industrial Strategy, emphasise the role of data as a key economic asset supporting productivity and innovation across sectors.

One policy area that could drive better outcomes is Smart Data. Smart Data is a framework that allows the secure sharing of customer or business data with Authorised Third Parties (ATP). With the customer's permission, that data can then be used to create new services, tools or insights that would not otherwise be possible.

The concept gained prominence with the introduction of Open Banking, which allows bank customers to share financial data with authorised third parties to access services such as budgeting tools, account aggregation or alternative lending assessments. Established following recommendations from the Competition and Markets Authority (CMA), the model demonstrates how secure, standardised data sharing can stimulate new services while maintaining user control.

Building on Open Banking, the UK government is exploring whether similar approaches could be applied in sectors where data is fragmented or difficult to access. The DUAA provides powers to introduce sector-specific Smart Data schemes, requiring organisations to share certain categories of customer data securely where authorised. These developments provide the policy context exploring opportunities for Smart Data in transport.

Why transport?

Transport systems generate large volumes of data. This includes information about journeys, services, infrastructure, vehicles and logistics operations. These datasets are created by a wide range of actors including public authorities, transport operators, infrastructure managers and technology providers.

Despite this abundance of data, it is often difficult to combine information across different parts of the transport system. Data may be held by multiple organisations using different formats, standards or governance arrangements. In some cases, commercial sensitivities or legal uncertainty can also limit data sharing.

These challenges can make it harder to develop services that rely on integrating information from multiple sources. Examples include:

- tools that combine journey planning with real-time network information
- systems that optimise freight operations across logistics networks
- analytics that support better infrastructure planning

Participants in the workshops noted that many of these challenges are system-level issues rather than problems faced by individual organisations alone. Addressing them may therefore require coordinated approaches to data governance, standards and incentives.

Smart Data schemes have been suggested as one possible approach to help overcome some of these barriers. By creating structured frameworks for secure data sharing, Smart Data schemes can enable new services while providing clarity on roles, responsibilities and safeguards. In transport, this could support improved services for passengers and freight operators while also strengthening planning and operational decision-making.

Scope of the research

The research summarised in this report was designed to explore where Smart Data schemes might be most relevant within the transport sector.

The study did not attempt to analyse specific datasets or technical architectures. Instead, it focused on identifying potential use cases where improved data sharing could deliver value.

The research brought together a representative group of transport stakeholders to discuss practical challenges and opportunities related to data sharing. Participants were encouraged to think about real operational problems and consider how Smart Data principles might help address them.

Through these discussions, twelve distinct Smart Data use cases were identified. These use cases reflect different parts of the transport ecosystem and illustrate a range of potential applications.

The research also explored the wider system conditions needed to enable such use cases, including issues such as governance, interoperability, trust and commercial incentives.

The findings presented in this report should therefore be understood as exploratory insights, intended to inform further policy development rather than define specific solutions.

These findings draw on workshops held across three English regions: road transport in North West, rail transport in East Midlands and freight and logistics in West Midlands. Transport policy is devolved in Scotland, Wales and Northern Ireland. Further feasibility analysis on the identified use cases will be undertaken at a UK-wide level, with engagement with Devolved Administrations to inform subsequent scheme design decisions.

Methodology

Workshop design

The research was conducted through a series of structured stakeholder workshops designed to explore Smart Data opportunities within transport.

Workshops were organised around facilitated discussions that encouraged participants to share experiences, identify challenges and propose potential solutions. Instead of starting with pre-defined solutions, participants were asked to identify real operational problems where improved data sharing might help.

This approach allowed ideas to emerge from the experience of stakeholders working across different parts of the transport ecosystem.

Each workshop session focused on three core questions:

1. Where are the current barriers to accessing or sharing transport data?
2. What new services or capabilities might become possible if these barriers were reduced?
3. What governance or policy conditions would be required to enable these changes?

The resulting discussions allowed participants to identify and refine a set of potential Smart Data use cases.

Participants

Participants were selected to represent a broad cross-section of the UK transport ecosystem. This included stakeholders from transport operations, infrastructure management, manufacturers, digital services, data analytics and policy. Recruitment was designed to capture both operational and strategic perspectives on how data is generated, shared and used across the system.

The research was delivered through three regional workshops that took place in February 2026. They were each centred on a specific transport mode: road transport (North West), rail transport (East Midlands) and freight and logistics (West Midlands). This structure was intended to maximise stakeholder reach across different parts of the UK, leverage existing regional innovation ecosystems, and generate insights grounded in real-world operating environments that could be synthesised into national-level findings.

The North West, East Midlands and West Midlands were selected as priority regions based on evidence of data maturity, institutional capability and the likelihood of generating actionable insights. Innovate UK's knowledge, stakeholder engagement and desk research outlined that these provide a mix of urban, inter-urban and multimodal transport contexts. Each region has established programmes or clusters relevant to the focus mode. The North West has digital

road and decarbonisation,⁶ the East Midlands has rail digitalisation activity,⁷ and the West Midlands has logistics and freight innovation networks⁸. This makes them suitable testbeds for exploring Smart Data use cases.

This research project used purposive sampling. Participants were recruited through a targeted approach led by Innovate UK Business Connect, leveraging its extensive transport and data networks to identify organisations and individuals best placed to contribute to the workshops.

Rather than broad outreach campaigns, invitations were issued directly to selected stakeholders, ensuring a balanced mix of expertise across the three focus areas. This approach was complemented by engaging with Combined Authorities to access established regional networks, including senior leads, board members and delivery partners.

All participants registered through a dedicated online event platform, providing a structured and consistent process for managing attendance.

The aim was to ensure that discussions reflected a range of perspectives and that participants brought both local and system-level insights.

Bringing together participants from different sectors and regions also allowed the workshops to explore interdependencies across transport modes and between transport and other systems, which is particularly relevant when considering Smart Data schemes.

Data collection and analysis

The research used a mixed-methods workshop design, combining qualitative deliberation and use-case development with structured quantitative prioritisation and scoring to support comparison and synthesis.

Insights from the workshops were captured through recordings, Post-It note exercises, structured note-taking and documentation of group discussions. Facilitators recorded key observations, proposed use cases and points of agreement or disagreement among participants.

Each workshop followed a consistent evidence-gathering process designed to capture both system-level challenges and potential use cases. The workshop methodology included the following sequenced steps:

1. individual reflection on key challenges
2. thematic clustering of issues based on recurring patterns

⁶ See, for example, Transport for the North's [Strategic Transport Plan: Transforming the North](#) and The Northern Powerhouse Partnership's [Net Zero by 2050: analytical report 2024](#).

⁷ The East Midlands is a designated [freepoint](#) and the location of the [planned headquarters for Great British Railways](#).

⁸ The West Midlands is the location of the [West Midlands Logistics and Distribution Cluster](#) developed by the Connected Places Catapult in partnership with the West Midlands Combined Authority.

3. prioritised dot voting to identify the most significant challenges and the most scalable use cases
4. rotated small-group deep dives into priority use cases, enabling participants to test perspectives across sectors and regions using a structured use case template (see Annex 1). Deep dives were audio recorded to capture details.
5. assessment of most promising Smart Data use cases using a National Scalability Index (NSI), a structured scoring framework delivered via an online form to evaluate potential for wider regional or national application (see Annex 2).

Workshop outputs were organised into consistent formats using this methodology, allowing ideas emerging from different sessions to be compared and synthesised.

The collated material was then reviewed to identify common challenges and patterns across the discussions. Several recurring themes emerged, including governance, interoperability, incentives and trust. These themes are presented alongside the use cases in the findings section.

While many transport innovation initiatives focus primarily on individual travellers and passenger experiences, a significant proportion of the potential value of Smart Data in transport is in business-to-business applications. For this reason, the potential impact of Smart Data use cases was explored using two different categories of personas. Seven use cases were assessed from the perspective of individual customers using the DfT's transport user personas⁹. The remaining five were assessed from the perspective of business customers using business personas developed for this report (See Annex 3).

Use of Artificial Intelligence (AI)

Lorefully¹⁰ is an AI-enabled tool used to capture and structure discussions from workshops, helping to turn unstructured conversations into clear, analysable insights. Funded through the Innovate UK BridgeAI programme¹¹, its application in this work has been supported as part of exploring how advanced AI can enhance evidence gathering and insight generation.

To ensure robustness and credibility, all outputs generated by the tool have been carefully reviewed by researchers and workshop facilitators, validating that the themes, summaries and insights accurately reflect the discussions held during the sessions.

This combined approach balances the efficiency of AI-driven analysis with expert oversight, ensuring the final outputs remain grounded in real participant input.

⁹ Department for Transport, 2023, [Transport user persona summary pack](#)

¹⁰ Lorefully, 2025, [Website](#)

¹¹ Innovate UK Business Connect, 2025, [BridgeAI programme page](#)

Findings

This section summarises the key insights that emerged from the stakeholder workshops, including the system-level challenges affecting transport data sharing and the twelve use cases identified by participants. These insights reflect views expressed by workshop participants and should be interpreted as exploratory evidence.

Cross-cutting system challenges

Across the workshops, participants identified a consistent set of systemic barriers that limit data sharing across the transport system. These findings are broadly consistent with the DfT's Strategy for Integrated Transport¹² and the challenges identified in their Transport Data Action Plan¹³. Several recurring challenges emerged from the workshops:

- **Fragmented data ecosystems:** Transport data is generated by a wide range of actors, including operators, infrastructure managers, local authorities and technology providers. Much of this data sits within organisational silos, using different formats and standards. Participants noted that combining data from multiple sources can therefore be complex and resource-intensive.
- **Inconsistent data standards:** In many cases, organisations collect similar types of data but structure or label it differently. This makes it difficult to integrate datasets across systems or services without additional processing.
- **Commercial sensitivities:** Some stakeholders expressed concerns about sharing operational data that could reveal commercially sensitive information. Participants emphasised that any data-sharing framework would need to recognise legitimate commercial interests while enabling innovation.
- **Unclear governance and incentives:** Workshop discussions highlighted uncertainty about who should take responsibility for enabling cross-system data sharing. While many stakeholders recognised the potential benefits of improved data mobility, they also noted that individual organisations may lack clear incentives to share data voluntarily.
- **Trust and security:** Participants emphasised the importance of ensuring that data sharing occurs within trusted governance frameworks. This includes clarity about who can access data, how it can be used and how security risks are managed.

¹² Department for Transport, 2026, [Better Connected: a strategy for integrated transport](#)

¹³ Department for Transport, 2026, [Transport Data Action Plan](#)

- **Liability:** Participants expressed concerns about their exposure to liability claims if data that they have generated is inaccurate or becomes inaccessible or unusable, if ownership of the data is unclear, or if regulations related to data use are interpreted conservatively.
- **Institutional inertia and procurement rigidity:** Participants acknowledged that compliance governance in the transport sector is complex, a legacy that makes it difficult to integrate cross-system solutions. Business as usual is locked in through existing contractual arrangements and frameworks.

These challenges reflect system-level conditions that shape how transport data is currently used across the UK.

Smart Data opportunity areas and use cases

Against this backdrop, workshop participants across the three workshops identified twelve potential use cases illustrating where Smart Data schemes could address practical transport challenges.

While the specific use cases were developed within the modal workshops (road, rail and freight), they broadly fell into three opportunity areas:

- **Improving passenger journeys:** Several use cases focused on enabling travellers to make better decisions by combining information from multiple transport services.
- **Supporting more efficient freight and logistics:** Participants identified opportunities for improved data sharing to help freight operators plan routes, manage assets and coordinate logistics more effectively.
- **Enhancing network management:** Some use cases explored how transport authorities or infrastructure managers could use integrated data to better understand and manage network conditions.

The twelve use cases – four related to roads, four to rail, and four to freight and logistics – are presented below to illustrate how Smart Data schemes could influence real-world transport decisions. They are described through personas to reflect how these opportunities may be experienced in practice. Five are from the perspective of business customers using business personas developed for this report.

The inclusion of a use case does not imply that relevant data, services or digital products are not already in place, nor that existing initiatives are ineffective. In many cases, users already experience a degree of integration through applications and platforms that combine data from multiple sources. However, workshop participants highlighted that this integration is often achieved through partial data access, proprietary arrangements or workarounds, rather than

through consistent, system-wide interoperability. The use cases therefore reflect system-level fragmentation, where data is not uniformly available, comparable or usable across modes, regions or use cases, and where this limits the ability to realise wider system benefits.

Subsequent phases of research should assess existing initiatives in more detail and explore where, and under what conditions, Smart Data schemes could add value, including by complementing or scaling what is already in place.

Table 1: 12 Smart Data use cases shortlisted during the three regional workshops

Use case name	Origin
RO-UC1 – Real-time multimodal journey planning	Road transport workshop (North West)
RA-UC1 – Door-to-door journey planning	Rail transport workshop (East Midlands)
RO-UC2 – Interoperable end-user transport account	Road transport workshop (North West)
RO UC4 – EV charging and pricing	Road transport workshop (North West)
RA-UC2 – Incentives and value for money	Rail transport workshop (East Midlands)
RA-UC4 – Multimodal integrated ticketing	Rail transport workshop (East Midlands)
FR-UC1 – CO ₂ reporting	Freight and logistics workshop (West Midlands)
FR-UC3 – Intermodal capacity optimisation	Freight and logistics workshop (West Midlands)
FR-UC4 – Last mile efficiency	Freight and logistics workshop (West Midlands)
RO-UC3 – Multimodal journey planning	Road transport workshop (North West)
RA-UC3 – Rail infrastructure planning	Rail transport workshop (East Midlands)
FR-UC2 – Freight EV charging coordination	Freight and logistics workshop (West Midlands)

Journey planning use cases appear across both road and rail workshops because they reflect a cross-modal user need rather than a mode-specific issue. Participants in different workshops identified similar challenges when combining information from multiple services, highlighting that journey planning is inherently multimodal.

Improving passenger journeys

RO-UC1 – Real-time multimodal journey planning

This use case illustrates how Smart Data could support integrated journey planning across transport modes.

DfT persona segment: urban professionals without cars

Rosa lives and works in a city and does not own a car. Like many urban professionals, she relies on a combination of buses, trains and walking to travel across the city.

The situation today	The Smart Data enabled future
<p>One morning Rosa is travelling to a meeting that requires a bus journey followed by a train. When the bus runs slightly late, she misses her train connection. Although information about alternative routes exists, it is spread across separate apps run by different operators. The rail app shows train services, the bus app shows buses, and shared mobility options appear elsewhere.</p> <p>Rosa spends several minutes searching across platforms before choosing a longer route involving another train and a taxi.</p> <p>She arrives late and stressed.</p>	<p>In a Smart Data ecosystem, transport operators publish key operational information through standardised interfaces, including real-time service status, disruption alerts and shared mobility availability.</p> <p>Rosa enters her destination into a journey planning app that combines these datasets.</p> <p>When her train is delayed, the system automatically recalculates the journey and suggests a faster alternative using a bus and tram connection. The update is delivered immediately, without Rosa needing to search across multiple services.</p> <p>She arrives on time and the journey feels seamless, even though it involved several transport providers.</p>

RA-UC1 – Door-to-door journey planning

This use case illustrates how Smart Data could support more reliable and integrated journey planning across transport networks.

Note: *This use case overlaps with RO-UC1 (Real-time multimodal journey planning) above. While both address integrated journey planning, they were developed independently in different workshops and emphasise slightly different aspects of a problem. RO-UC1 focuses on real-time disruption management and dynamic re-routing, whereas this use case places greater emphasis on end-to-end journey reliability and door-to-door integration.*

DfT persona segment: urban professionals without cars

Rosa lives in the city and relies entirely on public transport, walking and cycling to travel around. Because she does not own a car, the quality and reliability of journey planning information plays an important role in her daily mobility.

The situation today	The Smart Data enabled future
<p>One morning Rosa is travelling to an important meeting across town. Her journey involves walking to a bus stop, taking a bus to a train station and then completing the final part of the journey on foot.</p> <p>Although journey planning apps are available, the information they provide is not always consistent. Different transport providers hold their own datasets and real-time updates are not always integrated.</p> <p>When services are disrupted, Rosa often needs to check multiple platforms to understand her options. This makes the journey experience fragmented and uncertain, even where good public transport services exist.</p>	<p>In a Smart Data ecosystem, transport operators publish real-time operational data through standardised interfaces. Journey planning platforms combine this information to provide fully integrated door-to-door travel guidance.</p> <p>When Rosa enters her destination, the system generates a complete journey plan and continuously monitors network conditions. If a disruption occurs, the platform automatically recalculates the route and suggests alternatives across different modes.</p> <p>Updated guidance appears instantly on Rosa’s phone, allowing her to adapt her journey without searching across multiple apps.</p>

RO-UC2 – Interoperable end-user transport account

This use case illustrates how Smart Data could support a single interoperable mobility account across transport services.

DfT persona segment: heavy car users, frequent flyers

Oliver lives in a suburban area and relies heavily on his car. His work involves frequent travel to meetings and airports, and so he values journeys that are predictable and easy to manage. Although alternatives such as rail and shared mobility exist, using them often feels more complicated than simply driving.

The situation today	The Smart Data enabled future
<p>One morning Oliver needs to travel to the airport for a business trip. To avoid parking costs, he decides to combine driving, rail and local transport.</p> <p>Planning the journey quickly becomes fragmented. He must buy a train ticket on one platform, pay for station parking through another app, and later arrange a taxi or shared mobility option at the airport.</p> <p>Each service requires separate registration, payment details and journey information.</p> <p>At the station he discovers that parking must be paid through an unfamiliar mobile app. After downloading it and creating an account, he is running late. Later, when he reaches the airport city station, he must repeat the process again to hire a shared mobility scooter.</p> <p>Although the services exist, the lack of integration makes the journey feel inconvenient and reinforces Oliver’s preference for driving.</p>	<p>In a Smart Data ecosystem, transport providers can interact with a secure, interoperable mobility account linked to a traveller’s identity and payment method.</p> <p>Oliver plans his airport journey through a mobility app that connects to multiple transport providers. The system automatically assembles the trip, reserving station parking, purchasing the train ticket and booking shared mobility at the destination.</p> <p>All services are linked to the same account. Oliver receives a single journey plan and a single estimated cost.</p> <p>Parking is validated automatically when his car enters the station car park, the train ticket opens the station gate, and the scooter unlocks at the airport city station using the same account.</p> <p>The entire journey appears on one consolidated mobility statement.</p>

RO-UC4 – EV charging and pricing

This use case illustrates how Smart Data could support transparency and reliability in EV charging.

DfT persona segment: suburban families

Nigel lives in the suburbs and drives frequently for work meetings, shopping and family activities. He currently owns a petrol car but has been considering switching to an electric vehicle. Uncertainty about charging availability, pricing and reliability has made him hesitant to make the change.

The situation today	The Smart Data enabled future
<p>On a Saturday morning Nigel is planning a 120-mile family trip to visit relatives. If he owned an electric vehicle, the journey would require careful planning.</p> <p>To identify charging options, he would need to check several different apps because charging networks operate separate platforms. Some show charger locations but not prices, others display prices without showing whether chargers are available or working.</p> <p>Even after planning a stop, Nigel could still arrive to find the charger occupied, out of service, or significantly more expensive than expected.</p> <p>With two children in the car and a fixed arrival time, this uncertainty makes long journeys feel risky. For now, Nigel decides that switching to an EV would be too inconvenient for family travel.</p>	<p>In a Smart Data ecosystem, charge point operators share key operational information through standardised interfaces.</p> <p>When Nigel enters his destination into his vehicle’s navigation system, the journey planner retrieves real-time information across multiple charging networks, including charger availability, pricing and predicted waiting times.</p> <p>The system recommends a charging stop along the route where chargers are available, the queue time is minimal and the price is competitive. It also estimates the total charging cost for the journey.</p> <p>When Nigel arrives at the service station the charger automatically recognises his vehicle and allows him to begin charging without requiring a separate app or payment process.</p>

RA-UC2 – Incentives and value for money

This use case illustrates how Smart Data could support accessibility and reliability information across the rail system.

DfT persona segment: less mobile, car-reliant

Brian is a wheelchair user who relies heavily on his adapted car because it provides a predictable and accessible door-to-door journey. Although he occasionally uses rail services for leisure trips, uncertainty about reliability and accessibility often discourages him from doing so.

The situation today	The Smart Data enabled future
<p>Brian is planning a short trip to another city with his family. Travelling by train would be easier than driving long distances, but he is unsure whether the journey will run smoothly.</p> <p>Rail organisations collect large amounts of operational information, but much of it sits in separate systems across train operators, infrastructure managers and ticketing providers. Because these datasets are not always integrated, passengers can receive incomplete or delayed information when disruptions occur.</p> <p>For Brian, uncertainty about whether lifts are working, whether services are delayed, or whether assistance will be available can make rail travel feel risky. In many cases, driving remains the safer option.</p>	<p>In a Smart Data ecosystem, incentives and governance arrangements encourage rail organisations to share key operational data in interoperable formats.</p> <p>Journey planning systems combine information about service reliability, infrastructure performance and accessibility features such as lift availability or step-free routes. When Brian plans his trip, the system confirms accessibility at each station and allows him to arrange assistance automatically.</p> <p>Because these datasets are integrated, passengers receive more reliable information and updates throughout the journey.</p>

Note on scope and system insights

This use case originated from an initial discussion on transactional money flows, including refunds, compensation and ticketing. The discussion evolved into a broader examination of how value is created, distributed and constrained across the rail system. While incentives and value for money is not a use case, the insights are relevant to multiple use cases developed during this project. Workshop discussions highlighted the link between data sharing, service reliability and user trust. While organisations already hold relevant operational data, limited

interoperability and misaligned objectives can restrict its use at a system level. This can result in inconsistent information and reduced confidence for users, even where underlying services are available.

This highlights the importance of integrating payment flows and incentives into scheme design. In particular, it points to the need to align incentives across organisations so that data is used to improve reliability, accessibility and user confidence.

Next phases of research should consider the integration of payments and incentives in other use cases and within a future Smart Data scheme.

RA-UC4 – Multimodal integrated ticketing

This use case illustrates how Smart Data could support interoperable multimodal ticketing.

DfT persona segment: young urban families

Farah lives in Bradford with her husband and young daughter. The household owns one car, but Farah would be open to using public transport more often if planning and paying for journeys were simpler.

The situation today	The Smart Data enabled future
<p>One Saturday morning Farah wants to take her daughter into the city centre for shopping and lunch. The journey could involve a bus from their neighbourhood followed by a train into the city centre.</p> <p>However, planning and paying for the trip feels complicated. Different transport modes use separate ticketing systems and payment methods, and fares are not always easy to compare. While some apps and services already offer elements of integrated planning or payment, these are often limited to specific operators, locations or arrangements. Farah also finds it difficult to know whether she is choosing the best-value ticket.</p> <p>Because of this complexity, she often defaults to driving even when public transport might be a practical alternative.</p>	<p>In a Smart Data ecosystem, transport operators publish ticketing and pricing data through standardised interfaces.</p> <p>When Farah enters her destination into a journey planning app, the system automatically builds a door-to-door travel plan and calculates the best-value fare for the whole journey. Instead of buying separate tickets, Farah simply taps her phone when boarding each service.</p> <p>This is enabled behind the scenes by consistent, system-wide data sharing rather than partial or proprietary integrations. The system allocates the correct fares across operators and provides a single travel summary at the end of the day, allowing the service to work reliably across different operators, locations and journey types.</p>

Supporting more efficient freight and logistics

FR-UC1 – CO₂ reporting

This use case illustrates how Smart Data could support more consistent carbon reporting across transport supply chains.

Segment: large companies managing and reporting supply-chain emissions

David is the Sustainability and Environmental, Social and Governance (ESG) Lead for a large UK retail company that distributes goods nationwide. Part of his role is to measure and report the environmental impact of the company’s logistics and transport operations. As regulatory and investor expectations around environmental transparency increase, David must produce accurate and credible emissions reporting about the company’s supply chain.

The situation today	The Smart Data enabled future
<p>At the end of the financial year, David is preparing the company’s sustainability report. To calculate transport emissions, he must gather information from multiple logistics providers moving goods between warehouses and retail stores.</p> <p>However, each provider measures and reports emissions differently. Some use fuel data, others estimate emissions using distance or vehicle type, and different transport modes follow different reporting approaches. David spends considerable time reconciling inconsistent datasets, and even then, the figures are difficult to compare with confidence.</p>	<p>In a Smart Data ecosystem, transport operators share verified operational data through standardised interfaces that support consistent emissions calculations.</p> <p>When David prepares the company’s sustainability report, the reporting system can retrieve emissions data directly from logistics providers through secure connections. Because the data is standardised across operators and modes, the system produces comparable emissions figures for the company’s transport activities.</p>

FR-UC3 – Intermodal capacity optimisation

This use case illustrates how Smart Data could support visibility and coordination across freight networks.

Segment: *logistics companies managing national freight networks*

Sarah manages national freight operations for a logistics company that transports goods between ports, warehouses and retail distribution centres across the UK. Her team coordinates shipments across road and rail networks while trying to minimise operational costs and delivery delays.

The situation today	The Smart Data enabled future
<p>Every day, Sarah’s team plans hundreds of freight movements. However, logistics companies usually have limited visibility of transport capacity outside their own networks. Trucks may return empty after deliveries, rail services may run with unused capacity, and available terminal slots are not always visible to other operators.</p> <p>Because operational data is rarely shared between companies, freight planning often happens within organisational silos. This results in empty vehicle movements and underused rail freight capacity across the wider logistics system.</p>	<p>In a Smart Data ecosystem, freight operators can securely share information about available transport capacity across road, rail and terminal networks.</p> <p>When Sarah’s team plans shipments, their systems can identify spare capacity already travelling along the same routes. This allows freight to be matched dynamically with available transport services rather than requiring dedicated vehicles for each delivery.</p>

FR-UC4 – Last mile efficiency

This use case illustrates how Smart Data could support more coordinated and efficient urban logistics.

Segment: logistics companies managing urban delivery networks

Sarah manages logistics operations for a company that delivers parcels across the UK, including coordinating last-mile deliveries in several major cities. Her team is responsible for ensuring parcels reach customers efficiently while keeping delivery costs under control.

The situation today	The Smart Data enabled future
<p>Sarah’s company delivers thousands of parcels every day. However, last-mile logistics often operates inefficiently because delivery companies plan routes independently. In many neighbourhoods, several vans from different companies may visit the same street within minutes of each other.</p> <p>Because operators have little visibility of delivery activity outside their own networks, opportunities to coordinate routes or consolidate deliveries are difficult to identify. This leads to duplicated journeys, increased congestion in residential streets and inefficient use of delivery vehicles.</p>	<p>In a Smart Data ecosystem, logistics operators and local authorities can securely share aggregated information about delivery activity.</p> <p>Delivery planning systems can combine data on delivery volumes, route patterns and kerbside availability to optimise routes across multiple operators. This allows deliveries to be consolidated through shared distribution hubs and carried out using smaller vehicles for the final stage of the journey.</p>

Enhancing network management

RO-UC3 – Multimodal journey planning

This use case illustrates how Smart Data could support more evidence-based transport planning.

DfT persona segment: young urban families

Farah lives in Bradford with her husband and their seven-year-old daughter. The family owns one car, which they use for commuting, school drop-offs and daily errands. Although public transport is available nearby, coordinating journeys around school schedules and work commitments often makes driving the simplest option.

The situation today	The Smart Data enabled future
<p>On a typical Monday morning, Farah prepares for the school run before travelling to work. A bus route runs close to her home, but the timetable is difficult to interpret and connections to her workplace are unclear. Driving feels more reliable.</p> <p>Local transport planners are also struggling to understand travel patterns in neighbourhoods like Farah's. The data available to them is incomplete and fragmented. Traffic counts show only partial road usage, public transport data reveals little about unmet demand, and emerging travel behaviours such as ride-hailing or micromobility are difficult to track.</p> <p>Without a clear picture of how people actually travel, infrastructure decisions can miss the mark. Bus services are adjusted but ridership remains low, and congestion around schools continues.</p> <p>For families like Farah's, driving remains the default option.</p>	<p>In a Smart Data ecosystem, transport authorities can securely access anonymised mobility data from multiple sources, including public transport usage, connected vehicle data, and shared mobility platforms.</p> <p>By analysing these datasets together, planners gain a clearer picture of how people move around the city. In Farah's neighbourhood, the analysis shows that many school journeys are short, but parents drive because bus services do not align with school start times and safe cycling routes are limited.</p> <p>Using these insights, the local authority introduces targeted improvements, including revised bus timetables, safer cycle routes linking residential areas with schools, and improved pedestrian crossings.</p>

RA-UC3 – Rail infrastructure planning

This use case illustrates how Smart Data could support more proactive management of rail infrastructure.

Segment: organisations managing rail infrastructure assets

Mark manages rail infrastructure assets across a large section of the national rail network. His role involves monitoring asset condition, planning maintenance and ensuring the reliability of rail services.

The situation today	The Smart Data enabled future
<p>Mark knows that rail infrastructure generates large volumes of monitoring information through sensors, inspections and maintenance records. However, these datasets are often held in separate systems across infrastructure operators, contractors and equipment suppliers.</p> <p>Because this information is not always easily combined, Mark does not always have a complete view of infrastructure performance across the network. This can make it harder to detect emerging faults early and plan maintenance efficiently.</p>	<p>In a Smart Data ecosystem, rail organisations can securely share infrastructure monitoring data through interoperable platforms.</p> <p>By combining information on asset condition, inspections and system diagnostics, Mark’s maintenance teams can analyse infrastructure performance across the network and identify emerging issues earlier. This allows them to plan maintenance activities proactively before faults lead to service disruption.</p>

FR-UC2 – Freight EV charging coordination

This use case illustrates how Smart Data could support coordinated planning of freight electrification infrastructure.

Segment: logistics companies electrifying freight fleets

Claire manages the electrification programme for a large national logistics company. Her role is to transition hundreds of heavy goods vehicles from diesel to electric while ensuring deliveries remain reliable and cost-effective. Achieving the company’s net-zero commitments depends on access to reliable high-capacity charging infrastructure across the freight network.

The situation today	The Smart Data enabled future
<p>As Claire plans the next phase of fleet electrification, she must decide where charging infrastructure will be needed across freight routes, depots and distribution hubs. However, the information required to make these decisions is fragmented across different organisations, including logistics operators, energy network companies and charging infrastructure providers.</p> <p>Because these datasets are not integrated, Claire must rely on partial information about freight movements, grid capacity and future charging infrastructure. This makes it difficult to identify where charging demand will emerge and creates uncertainty about whether sufficient electricity capacity will be available. As a result, planning investments in electric freight infrastructure carries significant risk.</p>	<p>In a Smart Data ecosystem, freight, energy and infrastructure datasets can be shared through interoperable platforms. Logistics operators, energy networks and infrastructure providers can combine information on freight movements, electricity capacity and planned charging infrastructure.</p> <p>Using this integrated data, Claire’s planning systems can identify where high-capacity charging hubs are most likely to be needed along major freight corridors. Infrastructure providers and logistics companies can then coordinate investments in charging facilities that reflect real freight movement patterns.</p>

Potential benefits of use cases

The use cases potentially benefit different groups across the transport system. The table below puts these groups into three categories – consumers, industry, and those responsible for infrastructure and policy – and summarises the value of each of the use cases to each of the groups.

Table 2: Potential value of use cases to three broad categories of transport sector stakeholders

Use case by opportunity area	Consumer value	Industry value	Infrastructure and policy value
RO-UC1 – Real-time multi-modal journey planning	Potential for reduced journey time variability, through real-time rerouting, improving reliability and reducing disruption impact.	Transport operators can balance passenger loads across networks and improve operational efficiency.	Transport authorities gain system-level visibility of travel patterns and network performance.
RA-UC1 - Door-to-Door Journey Planning	Travellers receive fully integrated journey guidance across all transport modes, which can reduce journey planning time and cost optimisation, supporting increased modal shift.	Mobility platforms and operators can offer integrated mobility services and improve customer engagement.	Enables a truly integrated transport ecosystem aligned with national mobility policy.
RO-UC2 – Interoperable end-user transport account	One account for booking, payment and access across multiple transport services, potentially reducing transaction friction and increasing multimodal uptake.	Transport operators gain access to new customers and simplified revenue collection mechanisms.	Enables an open mobility ecosystem supporting innovation and integrated mobility services.
RO UC4 – EV charging and pricing	Drivers gain clear visibility of charger availability, pricing and	Charging operators and vehicle manufacturers can	Better insight into charging demand patterns supports

	waiting times, reducing uncertainty around EV travel, and supporting EV adoption.	optimise charger utilisation and customer experience.	smarter infrastructure planning and grid integration.
RA-UC2 – Incentives and Value for Money	Passengers receive more reliable journey information and improved accessibility support, that can enable measurable behavioural shifts in travel and more efficient network use.	Rail operators gain improved coordination across operational and infrastructure systems.	Governance frameworks enable more transparent and interoperable rail data ecosystems.
RA-UC4 – Multimodal Integrated Ticketing	Passengers benefit from simpler payment, reduced fare inefficiencies and improved journey completion rates, supporting increased public transport usage	Transport operators see increased ridership and simplified fare settlement processes.	Supports integrated national transport systems and improved accessibility of public transport.
FR-UC1 – CO₂ Reporting	Travellers can choose lower-carbon transport options using verified emissions information.	Businesses and logistics operators gain reliable carbon reporting and easier ESG compliance.	Governments gain consistent emissions datasets to monitor progress toward net-zero targets.
FR-UC3 – Intermodal Capacity Optimisation (business)	Consumers benefit through more reliable supply chains and stable product availability.	Logistics operators gain improved vehicle utilisation and lower operational costs.	National freight systems become more productive with reduced empty vehicle movements and lower emissions.
FR-UC4 – Last Mile Efficiency	Communities experience fewer delivery vehicles, improved road safety and reduced noise.	Logistics operators gain more efficient routing, consolidated	Cities gain better visibility of urban freight flows to inform kerbside

		deliveries and lower operating costs.	management and logistics policy.
RO-UC3 - Multimodal Journey Planning	Travellers benefit from infrastructure that better reflects real travel behaviour, improving convenience and safety.	Mobility providers gain improved network performance through better-targeted infrastructure investments.	Authorities gain access to integrated mobility datasets enabling evidence-based planning and investment decisions.
RA-UC3 – Rail Infrastructure planning	Travellers experience fewer delays and more reliable rail journeys.	Infrastructure managers gain predictive maintenance capabilities and improved asset management.	Governments achieve better return on infrastructure investment and improved network resilience.
FR-UC2 – Freight EV Charging Coordination	Consumers benefit indirectly through more reliable goods distribution and reduced freight emissions.	Fleet electrification managers gain better visibility of charging corridors and infrastructure capacity.	Energy and transport planners gain insight into freight electricity demand to guide infrastructure investment.

National scalability trends

Although the use cases address different transport contexts, several common factors will shape whether Smart Data schemes could scale nationally.

- Successful implementation would require clear governance arrangements defining how data can be shared and used.
- Interoperable technical standards would be needed to enable datasets from different organisations to work together effectively.
- Appropriate incentives would need to exist for organisations to participate in data sharing.

- Public trust would remain essential. Participants emphasised that any Smart Data schemes must ensure transparency, security and clear user control over data sharing.

Together, these considerations illustrate both the potential opportunities and the practical challenges associated with applying Smart Data schemes in transport. For a summary of National Scalability Index results and their interpretation, see Annex 2.

Implications and next steps

Implications for a Smart Data scheme design in transport

The findings suggest that Smart Data schemes in transport could play a targeted role in addressing some of the systemic barriers to data sharing identified in the workshops, but would not, on their own, resolve all constraints.

In particular, issues such as interoperability, governance, incentives and trust are structural in nature and unlikely to be addressed through voluntary action alone. These are areas where a Smart Data scheme could add direct value through common standards, clearer rules and coordinated data-sharing frameworks.

Other constraints – such as legacy systems, organisational capability and procurement arrangements – would be likely to persist and shape how any scheme is implemented in practice.

Opportunities extend beyond passenger-facing services to include freight logistics, infrastructure management and coordination with the energy system, indicating that policy development may need to engage a wide range of stakeholders, including businesses as well as individual users.

Against this context, several design implications emerge, listed below.

Interoperability

Interoperability remains a core requirement to data sharing where a Smart Data scheme could add value. Many of the use cases depend on combining datasets across modes, organisations and, in some cases, sectors such as energy. Data must be interoperable at multiple levels, including common data formats and standards (so systems can exchange data), shared definitions and semantics (so data is interpreted consistently), and aligned governance and access arrangements (so data can be used appropriately across organisations). Without this, data may be technically accessible but not usable in practice. Establishing these forms of interoperability would likely be necessary to enable practical implementation.

Governance arrangements

Governance appears critical to enabling data sharing between organisations in a way that is trusted, lawful and operationally workable, and is another area where a Smart Data scheme could directly address existing barriers. Participants highlighted liability as a key concern, particularly in relation to data accuracy, downstream use and potential misuse. This suggests that any Smart Data scheme may need clear rules on accountability, alongside safeguards for security and commercial sensitivity.

Legacy systems

Legacy systems present a significant constraint that would not be resolved by a Smart Data scheme alone. Existing infrastructure and data systems are often complex and not designed for interoperability. This may limit the ability of organisations to participate in data sharing without substantial investment or transitional support from government.

Procurement practices

Procurement practices were identified as a structural barrier that may continue to constrain implementation. This is because they are embedded in organisational processes and contractual arrangements that shape how systems are specified, delivered and updated over time. Long-term contracts and rigid procurement processes can lock in existing systems and limit the adoption of new data-sharing capabilities. This suggests that scheme design may need to consider how procurement frameworks interact with Smart Data objectives. Wider reform or adaptation may also be required.

Cross-sector coordination

Several use cases point to the importance of cross-sector coordination. Opportunities in areas such as freight electrification and urban logistics require alignment between transport operators, infrastructure providers, energy networks and local authorities, particularly in how they plan, share data and make operational and investment decisions. A Smart Data scheme could support this coordination by enabling shared data flows, but effective alignment would also depend on wider institutional and policy arrangements.

Implications for policy development

The findings suggest that any consideration of Smart Data in transport policy would need to reflect both the breadth of potential applications and the systemic barriers identified in the workshops. Opportunities extend beyond passenger-facing services to include freight logistics, infrastructure management and coordination with the energy system, indicating that policy development may need to engage a wide range of stakeholders, including businesses as well as individual users.

Scope and stakeholder coverage

The use cases highlight that Smart Data opportunities are not confined to improving passenger experience. While some applications relate to journey planning, ticketing and accessibility, others focus on operational improvements in freight, infrastructure and cross-sector coordination. This suggests that policy development would need to consider impacts across the full transport system and ensure that both consumer and business use cases are reflected.

Institutional barriers to data sharing

The analysis indicates that data fragmentation is often driven by institutional factors rather than purely technical constraints. Differences in incentives, responsibilities and risk appetite between organisations were identified as key barriers. This suggests that policy approaches may need to go beyond technical standards and consider how governance frameworks and incentives can support effective data sharing. These are areas where a Smart Data approach could directly address structural constraints through common rules, standards and coordination mechanisms.

Alignment with wider policy objectives

Several use cases align with existing UK Government policy priorities (particularly those of DfT and DBT), including improving economic growth, innovation and system efficiency. However, the findings also indicate that data sharing alone is unlikely to deliver these outcomes without complementary changes in infrastructure, regulation and market behaviour. Smart Data should therefore be understood as an enabling component within a broader policy framework.

Overall, the findings suggest that Smart Data schemes could support improved coordination across parts of the transport system where data is currently fragmented. However, their effectiveness would depend on how they are combined with complementary interventions addressing legacy systems, capability, procurement and wider system constraints. Further work would be required to assess feasibility, costs and potential impacts before determining whether and how such schemes could be developed.

Next steps

This research is an exploratory stage in identifying potential Smart Data opportunities in transport. The use cases illustrate possible applications but do not assess feasibility or implementation requirements.

Further work should focus on three areas:

1. **Targeted feasibility analysis** of selected use cases could examine data availability, interoperability requirements, potential governance models and legal dimensions. This would help to identify where Smart Data schemes may be most practical, beneficial and feasible under the DUAA.
2. **Further engagement with stakeholders** across transport, energy and digital sectors could explore how data-sharing approaches might operate in practice, including the implications for liability, commercial arrangements and procurement.

3. **Additional analysis** could consider how Smart Data schemes might align with existing transport data initiatives and digital infrastructure programmes. Understanding these interactions may help identify where Smart Data could add value without duplicating existing efforts.

Together, these steps could support a more detailed assessment of whether and how Smart Data could be applied in the transport sector.

Annex 1: Smart Data use case template

The following template was used during the workshops to collect consistent, comparable information across use cases from participants.

Table 3: Smart Data use case template

Section	Description and guidance
Use case title	Short, descriptive title
Development origin	Is the solution an existing idea or has it been developed for the purpose of the workshop?
Mode and region	Identify mode (Freight, Road, Rail) and region, if applicable (e.g. West Midlands, Northeast).
Problem statement	Summarise the challenge being addressed.
Stakeholders involved	List participants: local authorities, operators, data providers, Small and Medium Enterprises (SME), research organisations, etc.
General data description	Specify the types of data involved (e.g. consumer data or business data, vehicle telematics, journey data, service performance data).
Vehicle telematics	Held by Original Equipment Manufacturers (OEM) or a third party? Should the data be opened? What are the pros and cons?
Smart Data opportunity	Describe how Smart Data DUAA powers or consent-based data sharing could improve outcomes.
Expected benefits	Identify expected impacts (e.g., efficiency, emissions reduction, accessibility, user experience, safety).
Barriers and enablers	Note technical, regulatory, or behavioural barriers; highlight existing enablers (open data standards, digital infrastructure).
Risk	Note use case risks (e.g. commercial).
Technical readiness	Rate maturity (Concept/ Pilot/ Operational).

Interoperability	Indicate what other sectors (e.g. finance, energy, property) could be interoperable with the transport customer data in this use case.
Supporting evidence	References to existing pilots, case studies, or supporting materials.
Notes and workshop insights	Summary of participant feedback, additional ideas, and regional context.

Annex 2: National Scalability Index and scoring results

A National Scalability Index was developed to provide a consistent framework for assessing the potential for Smart Data use cases to scale across the UK transport system. It supports comparison across use cases by identifying where opportunities are likely to be scalable with limited intervention and where they are constrained by structural, governance or coordination barriers.

The NSI is intended as a directional prioritisation tool to inform further analysis and policy development. It does not provide precise quantitative rankings, but rather comparative indications of scalability readiness.

Table 4: Assessment framework setting out the criteria, assessment questions and scoring approach used to evaluate each use case.

Criterion	Assessment Questions	Scoring Guide (1 to 5)	Notes and Rationale
Data availability	Is the required data available, standardised, and accessible across regions or sectors?	1 = fragmented/local only 5 = standardised/interoperable nationally	
Interoperability potential	Could the data interoperate with other potential Smart Data schemes (e.g. energy, finance, property)?	1= limited 5 = high potential	
Technical readiness	Is the underlying technology proven and adaptable to multiple contexts?	1 = concept 5 = fully proven and adaptable	
Risk	What is the level of risk in implementing this use case?	1 = minimum risk 5 = maximum risk	
Regulatory enablers	Would DUAA powers or policy intervention be necessary for replication?	1 = major legal hurdles 5 = compliant and low regulatory friction	
Stakeholder capacity	Do stakeholders across the UK have the capability and interest to adopt the model?	1 = niche or regional-only 5 = strong cross-sector support	
Contribution to economic growth	What scale of economic growth could national adoption deliver?	1= limited 5 = high potential	
Contribution to cost of living	Could the use case contribute to lowering the cost of living?	1= limited 5 = high potential	

Contribution to Industrial Strategy	What is the use case's potential contribution to the Industrial Strategy?	1= limited 5 = high potential	
Accessible travel potential	Does the use case improve accessible travel?	1= limited 5 = high potential	
Contribution to sustainability, resilience and adaptation goal	Does the use case optimise multimodal connections, reduce emissions, and support behavioural shifts towards active and public transport?	1 = limited 5 = transformational	
Business admin burden	Can the use case be used for automated reporting to reduce admin burden for businesses?	1= limited 5 = high potential	
Cross-modal applicability	Does the use case enable future cross-modal use cases?	1 = single-mode 5 = multi-modal potential	
Overall scalability score	Average total		

Data collection and scoring approach

NSI scores were collected via an online form across the three transport-focused workshop sessions (road, rail and freight). Participants assessed each use case against the common set of dimensions. The resulting scores reflect informed stakeholder judgement, rather than precise measurement. They should be interpreted as comparative indicators of scalability potential.

Summary of results

Table 5: Average NSI scores for road use cases

Topics	RO-UC1 - Real time multi-modal journey planning (Consumers)	RO-UC2 - Interoperable end user transport account	RO-UC3 - Integrated multi-modal journey planning (Infrastructure)	RO-UC4 - EV charging and pricing
Data availability	2.7	2.7	3.1	3.3
Interoperability potential	3.8	3.8	3.8	3.9
Technical readiness	3.5	2.9	3.5	3.7
Risk	2.6	2.6	2.3	2.6
Regulatory enablers	3.2	2.8	2.9	3.0
Stakeholder capacity	3.1	2.7	3.0	3.3
Contribution to economic growth	3.7	3.8	3.9	3.5
Contribution to cost of living	3.7	3.1	3.3	3.3
Contribution to Industrial Strategy	3.5	3.3	3.5	3.4
Accessible travel potential	4.1	3.9	4.2	3.0
Contribution to sustainability, resilience and adaptation goal	4.2	3.6	4.1	3.2
Business admin burden	3.4	3.0	3.4	3.1
Cross-modal applicability	4.2	3.8	3.9	2.5

Table 6: Average NSI scores for rail use cases

Topics	RA-UC1 - Journey Planning	RA-UC2 - Incentives and Value for Money	RA-UC3 - Rail infrastructure	RA-UC4 - Rail Ticketing
Data availability	2.7	1.9	2.3	2.9
Interoperability potential	3.9	3.7	3.7	4.2
Technical readiness	3.4	2.8	3.0	3.9
Risk	2.3	2.5	2.6	2.2
Regulatory enablers	3.6	2.4	3.1	3.2
Stakeholder capacity	3.3	2.8	3.6	3.6
Contribution to economic growth	3.4	3.8	3.8	4.2
Contribution to cost of living	3.9	3.1	3.1	4.4
Contribution to Industrial Strategy	3.3	3.7	4.1	3.8
Accessible travel potential	4.5	2.5	3.1	4.3
Contribution to sustainability, resilience and adaptation goal	4.4	3.2	4.2	4.7
Business admin burden	3.2	3.6	3.8	3.9
Cross-modal applicability	4.4	3.4	3.8	4.7

Table 7: Average NSI scores for freight use cases

Topics	FR-UC1 - CO2 reporting	FR-UC2 - EV Charging Infrastructure	FR-UC3 - Intermodal capacity optimisation	FR-UC4 - Last mile efficiency
Data availability	2.2	2.5	1.9	1.8
Interoperability potential	4.1	4.3	4.1	3.7
Technical readiness	3.5	3.8	2.9	2.8
Risk	2.3	2.5	2.6	2.9
Regulatory enablers	3.2	3.7	3.4	3.6
Stakeholder capacity	3.1	2.9	2.6	2.4
Contribution to economic growth	3.7	4.0	4.3	3.9
Contribution to cost of living	3.3	3.5	4.2	3.7
Contribution to Industrial Strategy	4.2	4.3	4.4	3.8
Accessible travel potential	2.4	3.3	2.7	2.8
Contribution to sustainability, resilience and adaptation goal	4.3	4.4	4.4	3.9
Business admin burden	3.8	3.8	3.9	3.0
Cross-modal applicability	4.2	3.8	4.6	3.6

Table 8: Average scores across all use cases

Topics	<i>Average of scores across all use cases</i>
Data availability	2.5
Interoperability potential	3.9
Technical readiness	3.3
Risk	2.5
Regulatory enablers	3.2
Stakeholder capacity	3.0
Contribution to economic growth	3.8
Contribution to cost of living	3.5
Contribution to industrial strategy	3.8
Accessible travel potential	3.4
Contribution to sustainability, resilience and adaptation goal	4.0
Business admin burden	3.5
Cross-modal applicability	3.9

Interpreting the results

The NSI provides an indication of how readily each use case could scale at a national level:

- higher scores indicate that core capabilities are in place and barriers are relatively limited
- lower scores indicate that structural or coordination challenges are likely to constrain scaling

Across all workshops, a consistent pattern emerged:

- technical capability is generally well developed
- relevant data exists but is fragmented across organisational boundaries
- the primary constraints relate to governance, incentives and coordination

This indicates that many use cases are technically feasible but not yet system-ready to scale. The principal barriers to scalability are therefore structural rather than technological.

In particular, participants highlighted a recurring coordination challenge: the costs of sharing data are often borne by individual organisations, while the benefits are realised at system level. This misalignment of incentives is unlikely to be resolved through voluntary action alone.

Across all use cases, average NSI scores suggest moderate to strong potential for national scalability, with most criteria scoring between 3.0 and 4.0.

Higher scoring areas include:

- contribution to sustainability (c. 4.0)
- data availability (c. 3.9)
- interoperability potential (c. 3.9)
- contribution to economic growth (c. 3.8)

These results indicate strong alignment between Smart Data use cases and wider policy objectives.

More moderate scores were observed in:

- technical readiness (c. 3.3)
- stakeholder capacity (c. 3.0)

This suggests that, while solutions are broadly feasible, delivery capability and coordination remain constraints.

Lower scores were observed in:

- risk (c. 2.5)
- regulatory enablers (c. 3.2)

These reflect uncertainty around implementation and the likely need for policy or regulatory intervention to enable scale.

Comparative insights

Comparing NSI dimensions against each other highlights recurring structural patterns.

Technical readiness v regulatory enablers

Most use cases demonstrate moderate-to-high technical readiness but require regulatory support to scale. This reinforces the finding that constraints are primarily institutional rather than technological. Customer-facing use cases tend to show higher readiness, reflecting more mature digital ecosystems.

Data availability v interoperability potential

Interoperability potential consistently exceeds data availability. This suggests that systems could integrate effectively if data were more accessible and standardised, particularly in freight and rail contexts.

Economic impact v regulatory enablers

Use cases with higher economic impact also tend to require stronger regulatory support, indicating that policy intervention is a key lever for unlocking growth.

Business admin burden v economic impact

There is a positive relationship between reducing administrative burden and generating economic value, suggesting that efficiency gains for businesses are an important driver of wider benefits.

Stakeholder capacity v risk

Risk levels are relatively low across use cases, but stakeholder capacity varies more significantly. This indicates that delivery challenges are driven more by coordination and capability than by inherent technical or operational risk.

Implications

The NSI results indicate that the greatest opportunity for intervention lies in addressing:

- data access and interoperability

- governance frameworks and standards
- alignment of incentives across stakeholders

These are areas where Smart Data schemes, enabled through the DUAA, may support scalable, system-wide beneficial outcomes.

The findings should be treated as indicative rather than definitive, reflecting workshop-based inputs. Further analysis would be required to support detailed policy or investment decisions.

Annex 3: Business personas

To complement the DfT's transport user personas¹⁴, this annex sets out four business personas representing key operational roles within the transport system that have been used to illustrate the use cases. Each group is represented by one persona (a fictional character) that provides us with an illustration of the people that belong to that segment. These roles are data-intensive and depend on access to reliable, interoperable information across organisations and modes.

1. Logistics Operations Manager

Persona: Sarah – National Logistics Operations Manager

Profile

- Age: 42
- Role: Operations Manager at a national logistics company
- Responsibility: Oversees fleet operations, delivery planning and network efficiency
- Organisation: Large third-party logistics provider with a national distribution network
- Key pressure: Deliver goods on time while reducing costs and emissions

Typical working context

Sarah manages hundreds of daily freight movements across road, rail and distribution hubs. Her team coordinates vehicle routes, delivery schedules and warehouse throughput while seeking to minimise delays and empty vehicle movements. Most planning decisions rely on internal systems with only partial visibility of the wider logistics network.

2. Rail Asset Manager

Persona: Mark – Rail Infrastructure Asset Manager

Profile

- Age: 50
- Role: Asset Manager responsible for rail infrastructure performance
- Responsibility: Oversees maintenance planning, asset reliability and safety
- Organisation: Rail infrastructure operator or maintenance contractor
- Key pressure: Maintain infrastructure reliability while controlling maintenance costs

Typical working context

Mark manages a portfolio of rail assets including track, signalling systems and station

¹⁴ Department for Transport, 2023, [Transport user persona summary pack](#)

infrastructure. His decisions affect service reliability, passenger safety and operational efficiency. Large volumes of monitoring data are generated, but much of it is fragmented across suppliers, contractors and internal systems.

3. Sustainability and Environmental, Social and Governance (ESG) Lead

Persona: David – Corporate Sustainability Manager

Profile

- Age: 38
- Role: ESG and Sustainability Lead for a large retail company
- Responsibility: Reports Scope 1, 2 and 3 emissions and supports net-zero targets
- Organisation: National retailer with complex supply chains
- Key pressure: Provide accurate emissions reporting while meeting regulatory requirements

Typical working context

David is responsible for measuring and reporting the environmental impact of the company's operations, including logistics and transport emissions across its supply chain. This requires collecting emissions data from multiple freight operators, transport providers and suppliers.

4. Fleet Electrification Manager

Persona: Claire – Fleet Electrification Programme Manager

Profile

- Age: 45
- Role: Fleet Electrification Manager at a national delivery company
- Responsibility: Leads transition of vehicle fleets to electric vehicles
- Organisation: Large logistics or fleet operator
- Key pressure: Achieve electrification targets while maintaining operational reliability

Typical working context

Claire leads the transition from diesel vehicles to electric vans and trucks. This involves planning charging infrastructure, vehicle procurement and operational changes across depots and routes. Planning is challenging because energy system data, freight movement data and infrastructure availability are not well integrated.

The Department for Business and Trade

The Department for Business and Trade is an economic growth department. We ensure fair, competitive markets at home, secure access to new markets abroad and support businesses to invest, export and grow. Our priorities are the Industrial Strategy, Make Work Pay, the Trade Strategy and the Plan for Small Business.

Legal disclaimer

Whereas every effort has been made to ensure that the information in this document is accurate, the Department for Business and Trade does not accept liability for any errors, omissions or misleading statements, and no warranty is given or responsibility accepted as to the standing of any individual, firm, company or other organisation mentioned.

© Crown copyright 2026

You may re-use this publication (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence.

To view this licence, visit nationalarchives.gov.uk/doc/open-government-licence/version/3

Where we have identified any third party copyright information in the material that you wish to use, you will need to obtain permission from the copyright holder(s) concerned.

Published by
Department for Business and Trade

JUNE 2026