Working Session 3

Interoperable Testbeds for Data and AI

24 November 2025 at Millbank House, House of Lords

> Bringing together leaders from across government, industry and academia, this roundtable marks a pivotal step towards building a trusted, interoperable data and AI infrastructure for the UK.
> By fostering collaboration and embedding ethical, user-focused innovation, we lay the groundwork for a digital future that delivers lasting value.
>
> Merlin Hay, The Earl of Erroll

The Case for Investment in AI-Ready Data Infrastructure in the UK: Accelerating AI-Readiness

Executive summary

- The UK stands at a pivotal moment in its digital transformation, with world-class capabilities in AI, digital twins and advanced infrastructure. Despite these strengths, the innovation landscape is fragmented – assets are strong in parts but disconnected as a whole.
- The Department of Science Innovation and Technology's activity especially the 'Data for Growth' initiatives including Data Exchanges, Standardised Data Licensing, Data Sharing Infrastructure Initiatives, the National Data Library and Data Valuation Framework are focused on unlocking high potential growth across the country driving increased prosperity.
- This roundtable brought together leaders from government, industry, academia and infrastructure to define the challenges and interventions needed for AI-ready data infrastructure.
- Interoperable testbeds – collaborative environments where new technologies, standards and business models can be trialled – were recognised as foundational for accelerating AI adoption and ensuring that the economic and societal value of innovation remains within the UK.
- The roundtable stress tested the concept of 'Testbed Britain' a national proposition – intra-national connection and interoperation of existing testbeds, living labs and data platforms through shared frameworks and governance.
- The report sets out actionable recommendations to develop frameworks for data, governance and trust, as well as a culture of openness that treats connection as an opportunity, not a risk.

1. Isolated innovation to innovation nation

Britain's innovation assets – hundreds of testbeds, living labs and data platforms – are proven every day, but lack the connective tissue that allows their results to travel and scale. Data generated in one domain cannot easily be used in another; regulatory frameworks differ, procurement processes diverge and valuable learning is trapped within projects and regions. This fragmentation slows national adoption, reduces return on public investment, and risks making innovation episodic rather than cumulative.

The barriers to connection are not simply technical or financial – they are cultural, institutional and psychological. The UK's 'spreadsheet society' persists, with data often moved in ways that feel safe but ultimately reinforce silos and duplication. Digital transformation has increased visibility within organisations, but rarely across them. The instinct for control, the legacy of bureaucratic culture and the absence of functioning markets for data sharing all contribute to a system where caution is rewarded over curiosity, and pilots rarely scale into platforms.

Testbed Britain begins with a simple premise: connection is infrastructure. Just as roads, railways and energy networks once defined industrial growth, the next phase of economic productivity depends on the infrastructure that enables data, models and insights to move safely between organisations. Building that connection requires more than technology – it depends on shared frameworks for data, governance and trust that make collaboration repeatable and safe. Above all, it demands a culture of openness in which public and private sectors treat connection not as risk, but as opportunity.

2. Why connected spaces for accelerating innovation matter

Innovation struggles to scale, confined to siloed accelerators and sandboxes. Intra-national connected testbeds, sandboxes and living labs reduce friction for starts-ups, spin-outs and SMEs to scale from break-through ideas to industry giants.

Connected testbeds mitigate risks and provide safe spaces to test guidance, develop best practice and ensure secure-by-design approaches at scale without jeopardising critical national infrastructure or private enterprise.

By providing pathways for maturing adoption readiness levels, connected testbeds, link existing excellence in innovation clusters to enable:

- **System fit:** Integration with existing, often fragmented and legacy, real-world systems.
- **License to operate:** Compliance with legal and regulatory frameworks, enabling safe and responsible data use.
- **Market trust:** Confidence in the adoption of innovation as business-as-usual, underpinned by ongoing investment in data quality, interoperability, and transparency.

3. Roundtable insights: challenges and opportunities

A. Customer-centric and collaborative approaches

> **“If we identify more high value use cases that end-customers would value, it would help us to foster and accelerate cross-sector collaboration**
>
> Ella Haapiainen, Siemens

A recurring theme throughout the roundtable was the importance of placing real-world user and customer needs at the centre of innovation. Rather than allowing technology to dictate direction, participants advocated for an ‘outside-in’ approach, where the starting point is the practical challenges and aspirations of end-users – be they citizens, businesses or public sector organisations. This philosophy was championed by both industry and public sector voices, who argued that connected testbeds and innovation clusters should be co-designed with users, SMEs and customers to ensure solutions are relevant, trusted and ready for market adoption.

The water sector's experience with joint data publication standards and collective risk assessment was cited as a model for how industry-led collaboration can anchor trust and accelerate adoption. One participant described how convening the industry to agree on data publication and undertake joint risk assessments has enabled responsible data stewardship and built confidence in data sharing. The group also discussed the value of testbeds as platforms for rapid prototyping and early customer testing, enabling quicker decisions about which innovations to scale and which to retire. By 'working backwards' from high-value use cases, connected testbeds can foster cross-sector collaboration and create a commercialisation flywheel, ensuring that innovation is both demand-driven and sustainable.

Participants also noted that connected testbeds should not be limited to technical demonstrations but should serve as environments for co-design where users, SMEs and end-customers are actively involved in shaping solutions. This approach not only de-risks innovation but also ensures that solutions are market-ready and have the buy-in of all relevant stakeholders.

B. Incentives, value proposition and economic case

> **"Companies think about what's in it for me. What is the incentive?**
>
> Natasha Good, Freshfields

A central challenge identified was the fragmentation of incentives and the lack of clear value propositions, which often inhibit participation and limit the scale of data infrastructure initiatives. Participants from both the legal and policy spheres highlighted that for businesses, the decision to share data or participate in joint testbeds is fundamentally commercial: there must be a compelling incentive and a transparent business case. To help with evidence and making the case for continuity, one approach might be that for every pound government puts in, there is a demonstrable return. One roundtable participant articulated the private sector perspective, emphasising that companies need to see clear commercial incentives to participate in multi-party testbeds, not just technical demonstrations.

Government investment too, must be justified by demonstrable returns, whether in efficiency gains, data monetisation or broader innovation dividends. One roundtable participant expanded this to a policy level, suggesting that government funding should be linked to measurable national returns, such as through 'geo return' models or public data marketplaces. The table explored mechanisms such as data marketplaces, guaranteed returns and innovation royalties as ways to align incentives and make participation attractive for all sectors.

However, it was acknowledged that the business case for data infrastructure, such as connected testbeds, is often difficult to articulate, as benefits may be diffuse or realised over the long term. This is where government's role in de-risking and incentivising investment becomes critical, providing the confidence and clarity needed to unlock private sector engagement and ensure that the value of innovation is shared across the economy. The group also discussed the need for transparent mechanisms that allow both funders and participants to see tangible value, such as efficiency gains, data monetisation or innovation royalties.

C. Governance, trust, and ethics

> **"We are already convening the industry, agreeing how data should be published, and undertaking joint risk assessments and we need to do more across the water sector more broadly.**
>
> Melissa Tallack, Northumbrian Water / Stream

Trust emerged as a foundational requirement for any interoperable data ecosystem. The roundtable heard that robust governance and ethical frameworks must be embedded from the outset, not added as afterthoughts. Security, privacy and responsible data stewardship were seen as non-negotiable, with participants urging that these principles be 'baked in' from the beginning of any initiative. There is a need to move away from afterthought 'bolt-on' security, instead formalising cyber resilience and ethical frameworks from inception.

The water sector's collaborative approach, in bringing together industry to agree on data publication standards and undertake joint risk assessments, was highlighted as an example of best practice, enabling organisations to participate with confidence and ensuring that data is handled responsibly. Embedding open, consistent and sector-agnostic governance was seen as essential for compliance with evolving regulations and for building the public trust needed to support national digital infrastructure.

The group also discussed the need for transparency, clear ethical standards and mechanisms to address concerns around data sharing, surveillance and bias, recognising that public trust is earned through ongoing engagement and demonstrable accountability. Building public trust, it was agreed, requires not only technical solutions but also ongoing engagement with citizens and stakeholders to ensure that their concerns are heard and addressed.

D. Interoperability, standards, and technical integration

> **“Scale should come from connectedness by thinking about interoperability from the start, which concurrently yields business pivot potential.**
>
> Amit Bhave, CMCL
>
> **We must qualify and assure that new technology is safe; that it functions as specified; and is sustainable before deployment on critical national infrastructure.**
>
> Graham Faiz, DNV

Technical interoperability was identified as both a persistent challenge and a critical enabler for the UK’s digital ambitions. Participants agreed that interoperability must be a design principle from the outset, enabling scale, resilience and the seamless integration of new technologies. The current landscape, characterised by siloed systems, legacy technology and inconsistent standards, was seen as a major barrier to scaling innovation and market adoption.

Meeting participants emphasised that interoperability is not merely a technical afterthought, but a foundation for scale. They underlined the necessity of formal qualification and standard setting before technology is rolled out on critical infrastructure. The roundtable strongly supported the idea of a ‘federated’ architecture, where testbeds are open, technically compatible and interoperable from day one. Such an approach would allow SMEs and enterprises to participate, migrate solutions and export best practices across sectors – accelerating standards convergence and reducing duplication of effort.

Participants also advocated for connected testbeds designed to tackle mission-critical challenges that by necessity span multiple sectors, such as energy flexibility for the grid. The need for formal qualification and standard-setting before deploying new technologies on critical infrastructure was also emphasised, with participants advocating for testbeds that tackle mission-critical challenges spanning multiple sectors, rather than being confined to narrow, sector-specific problems.

E. Skills, collaboration, and sectoral engagement

> **“Take government with you. Take business and enterprise with you. Take academia with you.**
>
> Professor Michael Henson, UK2070 Commission

The roundtable underscored that building a digital future is as much about people and institutions as it is about technology. Broad, sustained collaboration across government, industry, academia, SMEs and civil society was seen as essential for success. Participants called for broad, sustained collaboration across the ‘triple helix’ of government, industry and academia, with active engagement of SMEs and civil society.

Connected testbeds were described as vital training grounds for developing the skills, sectoral empathy and entrepreneurial mindset needed to drive innovation. Participants highlighted the importance of addressing talent shortages and building collaborative pipelines for solution-finding, with practical, hands-on workforce development and knowledge transfer seen as just as important as board-level engagement. Cross-pillar testbeds enable requirements to be iteratively refined and adopted at scale nationally, instilling confidence throughout the value chain accelerating investment and willingness to adopt, adapt and exploit new technologies.

By fostering cross-sector engagement, testbeds can accelerate learning, enable the rapid dissemination of best practices and ensure that the benefits of digital innovation are shared widely across the UK. The group stressed that ensuring all regions and industries participate in growth, not just a few leading sectors, is vital for building national capability and resilience.

F. ‘Testbed Britain’: Realising the opportunity

> **“Testbed Britain is a national proposition to connect our testbeds into a unified architecture, breaking down silos and enabling scalable, cross-sector innovation.**
>
> Justin Anderson, Connected Places Catapult

The concept of a Testbed Britain emerged as an ambitious but achievable platform for breaking down silos and positioning the UK as a leader in trustworthy, interoperable digital innovation. By creating a national fabric of federated, collaborative and mission-driven testbeds – each grounded in shared governance, aligned incentives, customer-centricity and common standards – the UK can maximise the innovation dividend for the public, business and society. This vision harnesses both traditional sector strengths and new entrants, supporting AI, digital twins and smart data contracting for future economic and societal benefit.

Recommendations

1. Governance and strategic oversight

To address fragmented governance and regulatory uncertainty, the roundtable recommended the creation of a cross-sector orchestration body with representation from government, industry and academia. This body would oversee data and AI initiatives, foster a healthy ecosystem and ensure strategic alignment across sectors.

2. Standards and regulatory clarity

Accelerate the development and adoption of standardised approaches for data sharing that are AI-ready. Establish a governance layer, including exemplar licenses, to enforce these approaches, provide regulatory clarity and avoid fragmentation, and support responsible innovation.

3. Infrastructure and public assets

Invest in public infrastructure such as benchmarks, evaluation protocols and registers of best practice, recognising sectoral nuances and regulatory environment. These assets are essential for trust, transparency and continuous improvement, and require multi-stakeholder collaboration to ensure credibility and adoption.

4. Data valuation framework and skills development

Support organisational change by enabling enterprises to recognise data as an economic, financial and social asset. Expand smart data schemes and support the growth of data intermediaries to encourage businesses to invest in new roles and skills to manage AI's impact. This includes fostering cross-functional collaboration, upskilling the workforce and embedding AI responsibly into business operations.

5. Government coordination and stakeholder engagement

Enhance government coordination through cross-departmental activity. Maintain momentum via aligned governance, including regular engagement and reporting to ensure policy remains grounded in real-world needs, confidence is raised and implementation stays on track.

Next steps

- Identify cross-testbed, sandbox, living labs project, based on customer requirements that embody interoperability and collaborative governance.
- Co-ordinated governance to review existing security, frameworks and investment cases and draft implementable recommendations and standards for national adoption. Enabling embedding of ethical, secure data-handling practices from the outset.
- Recognise the value of public digital infrastructure as a national asset and encourage knowledge exchange and peer mentoring between sectors.
- Monitor and evaluate progress, updating recommendations and roadmaps to ensure SMEs, jobs and investment returns remain in the UK.

Useful resources

Data Sharing and Innovation Roundtable Working Session, August 2025
Accelerating AI Readiness Roundtable Working Session, October 2025
AI Opportunities Action Plan
Blueprint for Modern Digital Government
CReDo Climate Resilience Decision Optimiser
Creative Content Exchange
Data Intermediaries – Government Response
Data Use and Access Act
European Data Spaces
Geospatial Commission Framework Document
National Data Library
NESO's Energy Data Sharing Infrastructure (DSI)
NESO Virtual Energy System
Open Banking Roadmap
Open Government Licence (OGL)
Re-use of Public Sector Information Regulations 2015
Smart Data Roadmap
Resilience Action Plan (HTML) – GOV.UK
UK Infrastructure: A 10 Year Strategy
UK Modern Industrial Strategy and IS-8 Sector Plans

Get in touch or to request a copy of Testbed Britain

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Organisations at the roundtable

CMCL
Connected Places Catapult
DNV UK Ltd
Energy Systems Catapult
Freshfields
Liverpool City Region
National Cyber Security Centre
Northumbrian Water / Stream
NVIDIA
Open Data Institute
Satellite Applications Catapult
Siemens Advanta
Siemens Smart Infrastructure UK
UK Space Agency
UK2070 Commission

Non-participatory observers

Department for Science, Innovation and Technology

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