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Innovation Launchpad Network+

THE POLITICS OF INTEROPERABILITY: WHAT'S BEHIND VISIONS, EXPECTATIONS AND BUZZWORDS?

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Everyone is talking about interoperability…

ENA, Elexon, NESO and OpenADR Alliance sign letter of intent to pave the way for international flexibility standard

26 MARCH 2025

The OpenADR 3.0 standard allows for the interoperability and interchangeability of systems.

The £18.2 million Phase 2 of the DARE UK programme commenced in August 2024 and is perfectly placed to rise to the challenge of the NDL. The consortium is working to integrate outputs from recent years into a comprehensive reference implementation of a federated network of TREs (Figure 1).

In addition to its integrating transformational programme addressing federation, interoperability, semi-automated disclosure control and machine learning, DARE UK is in the process of collaborating with key national TREs to build a prototype network of TREs to test a range of technical solutions and new capabilities, the outputs of which could feed into the NDL. Beyond these core developments, the programme will be seeking ideas for new innovations and scientific exemplar lighthouse projects in the next few years (cf. section 6).

A Federated Architecture for a National Data Library 2024 (DARE UK)

Design Note – Interoperability models for UK based payments

This design note sets out the Bank of England's emerging thinking on potential interoperability models for a digital pound.

42. **Mandating infrastructure interoperability, code reusability and open sourcing.** The AI infrastructure choice at-scale should be standardised, tools should be built with reusable modular code components, and code-base open-sourcing where possible.

AI Opportunities Action Plan 2025

…But are we talking about the same thing?

- **Take inspiration from existing research data infrastructures, rather than the library metaphor**. We pointed to 11 types and 39 examples of data infrastructures that already serve researchers' needs, such as by generating new datasets for research (UK Biobank), unlocking access to data held by the private sector (Smart Data Research UK) and providing access to linked or combined datasets from multiple organisations (ONS Integrated Data Service). The National Data Library won't exist in isolation and must be built with an understanding that it'll be one node in a network of research data infrastructures.

IceBreaker One 2025

Has it become any clearer what the NDL actually is?

The short answer is sadly "no". Before you stop reading, though, let me tell you the good news: the research, data and policy community have done a lot of thinking on what the answer should be.

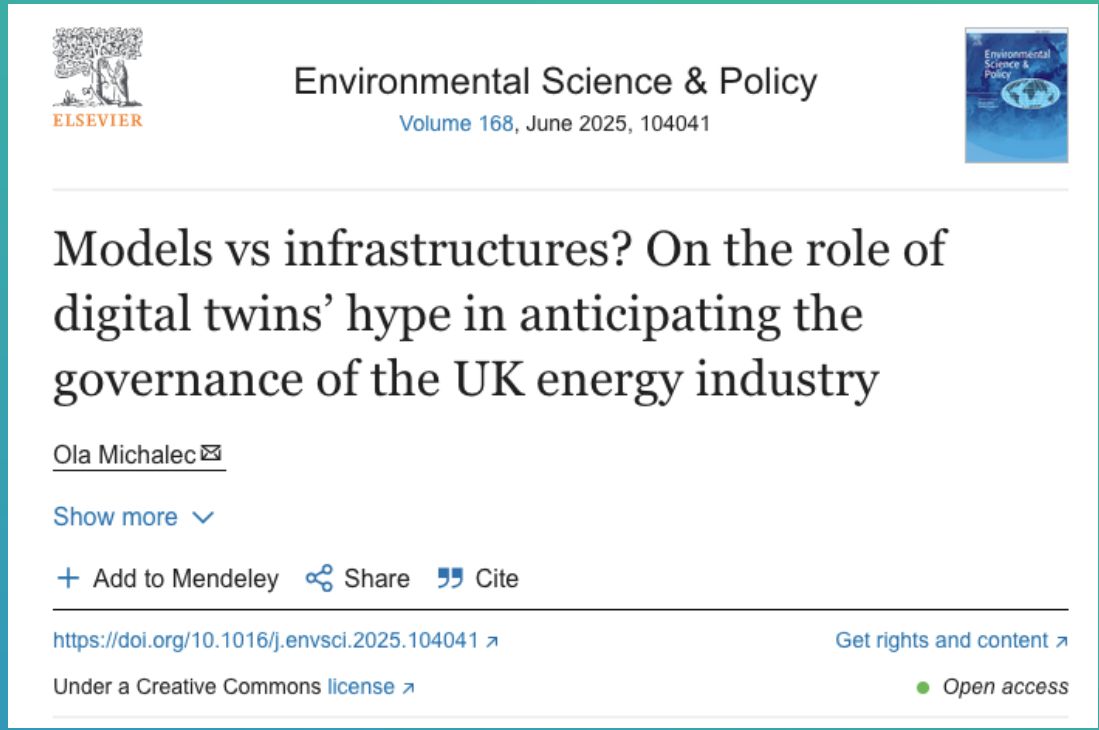
Alexander Iosad 2025 (Director of Government Innovation Policy at the Tony Blair Institute)

- **Limited National Data Library (NDL) specification**: Despite being presented as a cornerstone initiative, the NDL lacks detailed implementation plans, governance frameworks, operating models, and technical architecture. This contrasts with our recommendations for making the NDL "AI-ready" and treating it as essential public infrastructure.
- **Limited data governance frameworks**: The blueprints don't yet articulate comprehensive accountability models for data quality, standards compliance, and ethical data use across government, suggesting a continuation of current fragmentation continues to exist as a risk.

Open Data Institute 2025

WE'VE BEEN THERE BEFORE!

- Since c. 2017 (CDBB established), practitioners used hype to mobilise, re-align, conceal and reflect on the role of digital twins in UK policy
- **Hype = a state of anticipation generated through the circulation of promotion, often at the expense of discussing existing properties of technology /culture/field**
- The initial framing of 'models' led to disappointment and was followed by the framing of 'data sharing infrastructures'
- Despite the shift, the debate on the politics of digital twins stayed with the initial framing of 'models' (i.e., bias, accuracy or explainability, responsibilities of model developers)
- We need to explicitly address the politics of data sharing or we risk 'interoperability' becoming another poorly defined buzzword.
- What needs addressing: govt procurement of third-party IT; public engagement; sustainable financing of public IT projects



https://doi.org/10.1016/j.envsci.2025.104041

THE REST OF THIS TALK:

A rapid review of 12 articles analysing past projects on interoperability, data sharing, data standardisation

- The importance of learning from past attempts to advance data sharing (examples from health, education, border security, environment)
- If 'barriers to data sharing' (Li et al., 2025) are well known, then how come interoperability initiatives continue facing challenges?
- Data sharing can be both 'for good' and 'for bad', depending who is in power of executing and coordinating the agenda
- Sometimes, ambiguity is useful (e.g. for developing broad coalitions, developing competing ideas in parallel; Star and Bowker, 1999). But: eventually, the UK government needs to commit to a particular vision, technology and architecture

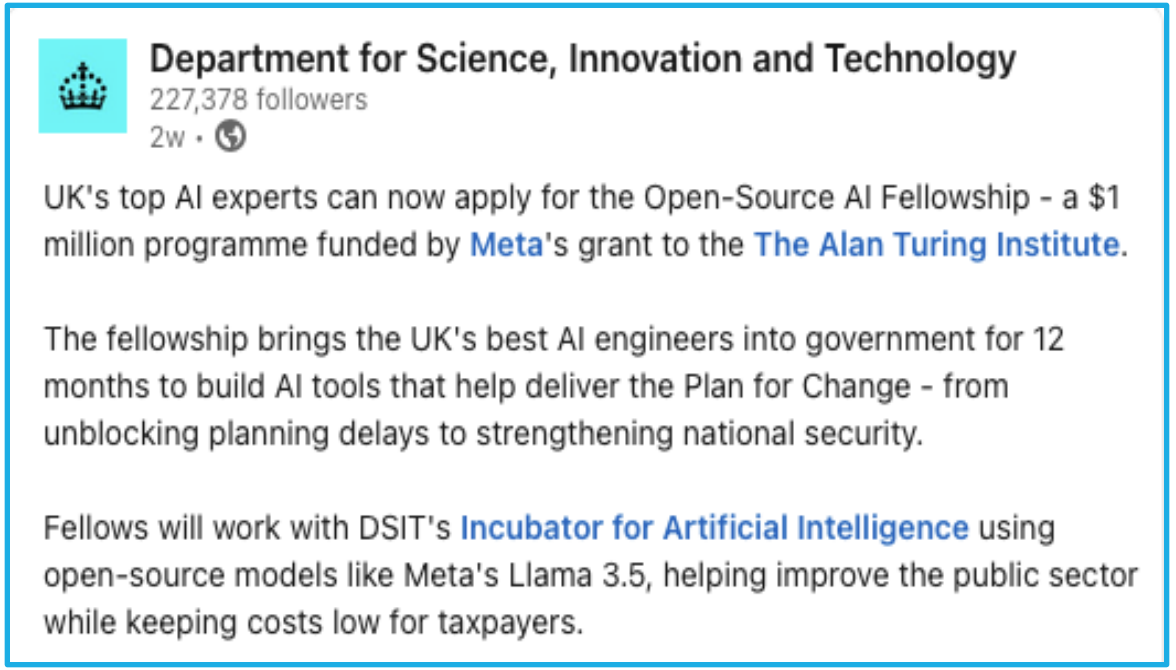
INTEROPERABILITY: VISIONS VS REALITY

Vision	Reality	Example
Economic growth and integration across Europe, embrace of experimentation in policy	National growth, centralisation of governance, asymmetry of data, flattening the richness of data,	European Biobanks (Aarden, 2023; Argudo-Portal, 2020)
Ease of sharing and management of information regarding academic teaching	Limited opportunities to experiment with curriculum due to standardised output format, tool for top down bureaucratic control	Italian Higher Education (Piromalli, 2022)
Reduction of ambiguity in classification of people: migrants, patients, energy consumers etc.	Front-loaded, time consuming work; political negotiation that went into the design largely forgotten once operational	European biometric border security (Trauttmansdorff, 2023) AIDS research in the US (Ribes, 2017)
Promoting efficiency, productivity and quality in construction	Compatibility with a single platform provider (or vendor lock in); lack of useful updates, risks of data loss	German digital construction - Autodesk (Boeva et al, 2024)
'Adversarial interoperability': Enabling compatibility across the market and preventing vendor lock-in	Arms race between two companies rather than robust interoperability across the whole system	'Adversarial interoperability' of early 2000s Mac products with Windows products (Doctorow, 2019)
Unified, easy to adopt vocabulary to support connected web applications and SEO	Free labour of tagging, everyone interoperates *with* Schema.org, less vocabulary for marginalised groups	Schema.org metadata (Iliadis et al. 2023; Halford et al. 2024; Grant Clark, 2001)

What does it mean for the UK tech policy?

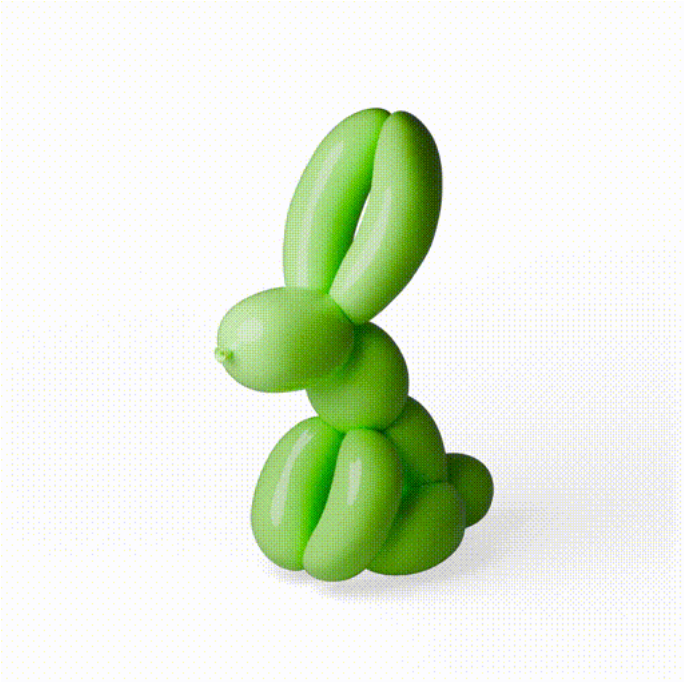
- **Case: DSIT/ ATI/ Meta partnership**
  DSIT opened a fellowship call for using 'Open source' models but according to the Open Source Initiative, Llama 3.x models do not meet the criteria

- **Call to action**:
  1) All stakeholders to keep the government, developers and researchers accountable by demanding more precise definitions
  2) Technologists to team up with lawyers, sociologists, economists to better understand politics hidden in tech stack
  3) DSWG to run a deep dive of the National Data Library White Paper challenge



Next steps

- Advisory Board for Digital Twin Network+: join LLODIA SIG!
- Inaugural Conference on Hype Studies; 10-12 Sept 2025, Barcelona/online (free registration!)
- Publishing Cyber Growth Action Plan for DSIT to inform the upcoming National Cyber Strategy
- Suggestions and collaborations welcome! Email: ola.michalec@bristol.ac.uk



Gif: Alex wifi

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THANK YOU FOR YOUR ATTENTION!