

# Holding onto the vision : Conceptualising the UK's energy infrastructure

## Response to Consultation

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## Summary

The recent establishment of Great British Energy marks a transformative moment for the UK's energy sector, reflecting the nation's commitment to leading in renewable energy and achieving net-zero emissions by 2050. As this new state-owned entity aims to accelerate the deployment of clean energy technologies and drive innovation, there is a compelling need for a conceptual model of the UK energy infrastructure that incorporates standardised, common frameworks showing how service providers and operators fit together. An integrated, systematised model will facilitate the data flow and interoperability of the multiple systems and processes that constitute the energy infrastructure of a country.

At the moment, there is not currently an overarching vision for UK energy production. There are many initiatives, standards and projects covering different aspects of the energy infrastructure - including the ongoing Data Sharing Infrastructure consultation. But there is also a need for a simple, non-technical vision that C-Suite and senior decision makers can understand, buy into and ideally be involved in its development.

If we use a football analogy, it's like having a vision for the UK football industry, a plan for its direction and an understanding of what needs to happen to realise that ambition. Or to use a philosophical reference, we need to see the wood, not just the trees.

I've come to this perspective while discussing language and how to support companies to communicate effectively within the same sector - as we move towards interoperability, a shared language becomes more and more important. AI can help facilitate this process by rapidly producing wordsets and meanings for communication purposes - not just in meetings, but in the development of software.

An overarching view and vision of how energy moves through the UK provides the basis upon which communication can be facilitated and solutions developed.

## Introduction

Currently private sector companies control the delivery of energy infrastructure both in the UK and internationally. While these companies are regulated by government and global standards, there is no overarching strategy for the entirety of the country's resource infrastructure and how private sector provision fits into that strategy. Problems with water, energy and other utilities can be attributed in part to a lack of strength and vision from central government on how the resource infrastructure should be structured and managed.

Recent changes in government, a rise in energy security concerns, a growing dependence on digital technologies, a commitment to net zero and a change in how energy in particular is generated and distributed now present a significant opportunity

The government needs to take control of its energy production, distribution and financing. This can be achieved through a UK-wide energy conceptual model that maps all energy related functions and synchronises digital and data management systems. This integration can significantly enhance the efficiency, interoperability, and strategic management of the UK's energy infrastructure.

A UK-defined modern conceptual model of a country's energy infrastructure incorporating net zero and energy security aspirations alongside an eco-system of service suppliers and product providers also creates an opportunity for UK plc to lead internationally.

### **Response to consultation**

A shared data infrastructure is a key piece in delivery of UK energy. Here are direct responses to the questions in the consultation:

#### **Section 2 Questions**

**Q1. Do you see potential uses for the DSI within your day-to-day operation in the energy sector?**

##### **A1.1**

Yes. An overarching data sharing infrastructure will enable interoperability between systems and facilitate communication between teams and organisations.

However, this DSI should be supported through the production of an ontology not a platform. The government intermediary should own the vision and the ontology and ask stakeholders to develop solutions that use the ontology and integrate with each other.

An alternative governance structure produced using ChatGPT is provided as an accompaniment to this document (Appendix 1) to give a different perspective on possibilities.

**Q2. Do you have any comments on the funding mentioned within this section?**

##### **A1.2**

The notion of an 'MVP' implies a product/solution rather than a facilitated process. It is not clear who would be involved in its development. Since ARUP are named, there needs to be clarity on intellectual property.

We do not want to see a private sector company create something based on the contributions from government and other stakeholders, claim the IP as its own and then demand a licence from government and others to use it, whilst also selling it to other countries. This has happened too many times and the government needs to be smarter

about retaining and controlling the IP of products that it pays to develop and contributes significantly to the design.

**Q3. Do you have any comments on the timeline shown?**

**A1.3**

This 'solution' as it stands is too large and ambitious. If the solution was an AI-enabled ontology, it could be developed quickly (within 6 months) and then iterate and grow as the sector adopts it. Again, the government should not be creating another platform but instead creating a standardised process/ontology to support stakeholders to connect to each other.

### **Section 3 Questions**

**Q4. Do you agree with our short-term governance structure model where the**

**Interim DSI Coordinator is responsible for leading the short-term governance**

**(2024 – 2028) of the DSI?**

**A1.4**

Yes but see earlier comments. The DSI Coordinator needs to lead on the development of an ontology, not a solution.

**Q5. If not, state your reasons and propose an alternative governance model or improvements to our proposed solution.**

**A1.5 See alternative governance model in Appendix 1**

**Q6. Are there any additional governance roles that are not covered by the proposed governance model? If so, what are these?**

**A1.6**

- Managing the ontology
- Development of digital twin
- Use of AI and other emerging technologies

**Q7. Do you agree with the responsibilities of the interim DSI Coordinator? Are**

**there any additional responsibilities that it should undertake?**

**A1.7**

See earlier comments

The main responsibilities should be:

- Convening a vision for future of energy in the UK
- Managing the ontology

Extras

- Development of a digital twin showing energy infrastructure
- Use of AI and other emerging technologies

**Q8. Do the proposed deliverables reflect the outputs that the Interim DSI Coordinator should focus on in the initial DSI stages? Do you suggest any additional deliverables?**

**A1.8**

**See earlier comments**

The first deliverable should be vision for UK energy provision

The second deliverable should be an ontology and guidelines for how stakeholders can connect to it

A third deliverable could be the scoping of a 3D digital twin that shows the energy infrastructure of the UK alongside the other key infrastructure elements (water/waste/transport)

However there should not be a new platform / solution for this phase.

## **Section 4 Questions**

**Q9. Do you agree with us that the System Operator is the best option as the Interim DSI Coordinator? If no, explain your reasons and justify your proposed option.**

**A1.9**

No, since I am proposing a change of emphasis from a platform/solution to the development a flexible ontology, they are not appropriate. They will be invested in their proposed solution and will resist response to the consultation that suggest anything else.

**Q10. What assessment criteria do you foresee being required when transitioning from short-term governance to an enduring governance model?**

**A1.10**

How much more effectively are stakeholders able to deliver their services, measure and demonstrate their competencies.

See National Highways for great clarity of vision and purpose

<https://nationalhighways.co.uk/about-us/what-we-do/>

**Q11. What suggestions or feedback do you have for refining these governance assessment criteria to better meet the requirements and challenges of digitalisation in the energy sector?**

**A1.11**

In software development, we define the objectives of the system and then use it to create the testing criteria.

This project needs clear overarching objectives for how to deliver on energy production, distribution and financing. It needs to show how it will map all energy related functions and synchronise digital and data management systems. It needs to show how it can significantly enhance the efficiency, interoperability, and strategic management of the UK's energy infrastructure incorporating net zero and energy security aspirations alongside an eco-system of service suppliers and product providers

It could also incorporate an opportunity for UK plc to lead internationally.



## About the Author

**Visioning Lab Founder - Dr. Jessica Symons** Dr. Jessica Symons is a co-founder of Visioning Lab and the driving force behind the Ordinary Ontologies project. With a PhD in Anthropology, 30 years experience as a technologist and a career spanning both academia and industry, Dr. Symons has a deep understanding of the relationship between concepts, emerging technologies and their practical applications. Her work focuses on making complex systems accessible and interoperable, which is essential for the rapidly evolving energy sector.

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