national grid

Ofgem
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20 September 2024

Dear Jeff,

Consultation on Governance of a Data Sharing Infrastructure

This letter is National Grid Electricity Transmission Plc's (NGET's) response to Ofgem's Consultation on "Governance of a Data Sharing Infrastructure".

NGET welcomes the opportunity to respond on this important topic. While the consultation primarily seeks views on Governance, we see it as an opportunity to explore faster methods of achieving better data sharing and collaboration.

Over the past 18 months, we have been a leading voice in modernising data practices and services within NGET and the wider industry through our Data Strategy, Mesh Operating Model, Data as Product, and Technology Enablers. With growing recognition from the IT industry and support from Ofgem, the need to share and consume data across the Energy Network has accelerated, prompting multiple plans to achieve this.

We have attended several presentations by the Electricity System Operator (ESO) on the technical components of a Data Sharing Infrastructure (DSI) and the Virtual Energy Network (VEN) during March and April 2024. These presentations are moving towards practical implementation with several Proof of Concepts (POCs) planned before the end of RIIO-T2. While we support the DSI and VEN objectives, there are practical implementation challenges that we feel well-placed to assist with, and we outline these along with potential options for acceleration.

Establishing clear use cases, agreeing on standard data formats, and developing robust ingest/extract processes can streamline innovation. However, true innovation often comes from the freedom to explore data within an organisation before defining its use case for sharing over the DSI. Currently, the DSI lacks this capability, whereas other less centralised technology options allow independent data sharing as soon as it is available.

NGET is investing in data fabric technology, enabling open data to be shared and utilised publicly. This approach allows other organisations to explore data without relying on the DSI, sparking innovative use cases.

To leverage data's potential, we need industry-wide data exploration capabilities to delve into an organisation's data before considering integration with another organisations' data. These capabilities align with Ofgem Data Standards, which mandate treating data as a valuable asset for consumers, stakeholders, and the public interest, with a presumption of openness unless restrictions are necessary.

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Key Questions

Before moving towards practical implementation, Ofgem and industry should consider the following questions in the design of any Data Sharing Infrastructure (DSI): -

1.   Will the DSI support both analytical/reporting and operational use cases?

2.   Can existing infrastructure and technologies that comply with Ofgem's data best practices be leveraged within the DSI to avoid additional cost and complexity?

3.   Will the DSI enable organisations without the necessary infrastructure to comply with open data requirements, or will data only be shareable within the trust network?

4.   What governance process will be in place to manage the industry-wide ontology and business model?

5.   Who in the target organisation(s) is responsible for ensuring the integrity, security, and quality of copied data? Could a data licensing approach, aligned with the Data Best Practice Guidance, be adopted to clarify the rights and responsibilities of data providers and users? And how will this align with the shared licence being developed by the Energy Network Association (ENA)?

6.   What is the governance process for addressing data integrity or quality issues between source and copied data?

7.   How can we address potential competitive imbalances due to varying capabilities for data ingestion, storage, and analytics?

8.   How will change control for version updates be managed to ensure simultaneous upgrades of the Data Preparation Node (DPN) across organisations?

9.   What is the governance process for promptly addressing security breaches in the DPN?

10.   What steps have been taken in the DSI architecture to align with the 'data minimization' principle, as outlined in the Data Protection Act (2018) (DPA), and how can members of the DSI trust framework align with this principle?

Additional Comments

Detail the strategic outcomes and consumer benefits

Clearly articulating strategic outcomes and consumer benefits ensures stakeholders understand the value and impact of our efforts. Discussing use cases is essential for defining the operational model, governance, and technical implementation. Without these use cases, evaluating the governance structure's effectiveness is challenging. Outlining these use cases provides a clear framework for assessing governance and ensuring the architecture supports our strategic goals. A clearer vision would help frame what the governance aims to achieve, whether for reporting and analytics or operational use cases requiring 24/7 support.

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Provide Centralised Data Processing Capabilities

The current solution lacks centralised data processing capabilities, leading to the potential for separate digital twins within each organisation. This requires organisations to use their own machine learning and AI tools on local copies of industry-wide data, increasing the carbon footprint due to additional storage and processing needs. Implementing centralised data processing capabilities would reduce redundancy and promote efficiency, minimising environmental impact and streamlining data use across the industry. Embracing data fabric technology could seamlessly connect data across organisations, addressing specific queries more efficiently and reducing redundant data storage.

Addressing Competitive Imbalance Due to Data Duplication

Data duplication might inadvertently create a competitive imbalance, as not all organisations possess advanced capabilities for data ingestion, storage, and analysis. By enabling data to be interconnected and leveraging distributed execution through queries pushed down to shared organisational data, we can provide Business Intelligence (BI) and Machine Learning (ML)/Artificial Intelligence (AI) exploration tools for industry-wide reuse. This approach will help level the playing field, removing any unintended competitive advantages and fostering a more equitable environment for innovation.

Expanding Governance Scope for Comprehensive Data Management

The governance scope currently focuses on the DSI itself, rather than the data it carries and ensuring interoperability beyond formatting. Essential aspects like ontology and business modelling do not appear to be addressed. Expanding the focus to include these elements creates a robust framework that manages the DSI and ensures the data it facilitates is interoperable, meaningful, and aligned with business objectives. This holistic approach paves the way for a more integrated and efficient data ecosystem within the energy sector.

Challenges in Data Mesh Organisational Model

Additional storage and processing to ingest data from other organisations poses challenges for the data mesh organisational model within NGET. It remains unclear where the ownership of data copied from other organisations would reside. Addressing these concerns is crucial for ensuring the data fabric and DSI operate effectively and efficiently within the broader data strategy.

Referencing the Feasibility Study for Digital Spine

Referencing the feasibility study that examines the opportunities, risks, and potential architectures of a 'digital spine' would provide a deeper understanding of the alternative architectures considered and the rationale behind key design decisions. This transparency fosters a collaborative environment where stakeholders can appreciate the strategic thinking that informs the approach.

Leveraging Existing Data Sharing Investments

Ofgem's support of the RIIO-T2 reopener for the NGET data fabric is a significant step towards creating an open marketplace for accessing NGET data. This marketplace includes a data catalogue and Attribute Based Access Controls (ABAC) security features. However, the

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architectural decisions and technology conclusions drawn for the DSI may not fully capitalise on the flexibility to leverage existing mature capabilities that organisations have in place for data sharing, potentially necessitating additional infrastructure and technologies to provide overlapping capabilities.

Collaborating on DSI Architecture Improvements

We seek the opportunity to collaborate on improvements to the DSI architecture to align with the 'data minimisation' principle, as outlined in the DPA, HM Government Data Project Toolkit, and Cabinet Office Security Policy Framework. By considering these guidelines, we can ensure our approach to data sharing is both secure and efficient, enhancing our data management practices while respecting privacy concerns.

Ensuring Data Integrity in an Interconnected Ecosystem

As we move towards a more interconnected data ecosystem, the presence of duplicated digital twin copies of industry data in each organisation presents a data integrity challenge. If we query this data in isolation within each organisation, the results may vary due to differences in data quality, extract and ingest processes, update frequencies, and the potential for data loss during copying.

Adopting a data product approach offers a streamlined solution where a single copy of the data is managed by the data product owner. This data is then made accessible for multiple organisations to query, ensuring that the data product owner maintains responsibility for the data's quality and integrity. Such a strategy not only simplifies data management but also fosters a culture of trust and collaboration, as organisations can confidently rely on the data's accuracy and consistency for their needs.

Streamlining Update Processes for DPN Security

Enforcing a single, consistent cross-sector version of the Data Preparation Node (DPN) that each organisation is required to host could extend the time needed to coordinate and implement changes. This might impact the overall security of the Data Sharing Interface (DSI) if security updates are not applied promptly, potentially leaving room for vulnerabilities to be exploited. To mitigate these risks, it's essential to streamline update processes and ensure rapid deployment of security measures.

This proactive approach will help maintain the integrity and security of the DSI, fostering a safe and efficient data-sharing environment. In the event of a security breach through a DPN component, it's crucial to establish clear ownership for managing and resolving the issue. This responsibility could reside with the data product owner, who ensures the quality and integrity of the data, or it might be a shared responsibility across organisations involved in the DSI. By clarifying this aspect, we can enhance our preparedness and response to security challenges, safeguarding our collective data infrastructure.

Summary

Our full response to the consultation questions is included in Appendix 1.

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As I hope the depth of our response demonstrates we care deeply about the modernisation of data practices and services across the energy industry. We fully support the objective of the DSI and the principle of the VEN.

There is a great opportunity to deliver these objectives through modern, digital methods that could more quickly, flexibly, and accessibly achieve the industry goal of better data sharing and collaboration.

To discuss our consultation response further, please contact Matt Clark, NGET Data Director at Matthew.Clark1@nationalgrid.com or 07765 262221.

Yours sincerely,

Simon Johnston

NGET CIO (Interim)

Appendix 1 – Consultation Question Response

Section 2

A1.1 Q1. Do you see potential uses for the DSI within your day-to-day operation in the energy sector?

We have not yet identified any potential use cases for the DSI.

A1.2 Q2. Do you have any comments on the funding mentioned within this section?

The proposed funding model in the consultation suggests an initial Minimum Viable Product (MVP) stage funded by the System Operator, transitioning to a framework like the Security Controls Framework for steady-state operations. This centralised approach, focused on the NESO, streamlines control and governance of the DSI. While centralisation has its advantages, it's important to consider its potential to slow innovation and limit bilateral data sharing opportunities.

The current funding model grants the NESO more straightforward access to resources, contrasting this with other regulated participants who face the re-opener process. This centralised governance may lead to a sequential innovation process, with the NESO dictating the use-case pipeline. While this ensures their needs are met, it may inadvertently overlook the potential for bilateral and multilateral collaborations. Additionally, the requirement to host a DPN to join the DSI could deter smaller, innovative entities from participating. It is important to foster an inclusive environment that encourages diverse contributions and accelerates collective progress.

The consultation anticipates enduring annual costs for the DSI, with the scale to be determined upon the System Operator's proposal. As use cases grow, so may these costs. The T3 - RIIO-3 Business Plan Guidance from Ofgem advises licensees to forecast spending for DSI connectivity, including both general capability improvements and direct investments. The challenge lies in adjusting investments when future costs are uncertain and variable charges like egress apply.

We suggest exploring whether the Network Innovation Allowance could fund alternative governance models, architectures, and technologies that promote innovation, data democratisation, cost reduction, and alignment with digital standards.

A1.3 Q3. Do you have any comments on the timeline shown?

The six-year timeline for achieving steady-state operation of the software infrastructure is extensive. Solutions developed early on may become obsolete by the time the final solution is implemented. The timeline follows a traditional waterfall approach with some exceptions, which could introduce risks, potentially prolonging delivery and increasing costs. While the waterfall method suits projects with stable requirements and clear governance, an Agile, digital-first approach is recommended for digital services. Agile allows for evolving requirements, flexibility, and faster response to change, promoting collaboration and continuous improvement. It also enables quicker delivery of value to consumers through shorter iterations and adopting an agile approach would better align with the Agile methodologies directly referenced in Ofgem's DSAP supporting information document (sections 3.21 - 3.27). The consultation paper's preference for a waterfall approach in both the MVP and subsequent stages suggests a similar governance and funding model. However,

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the timeline raises concerns that later use cases may not be accommodated or may require significant changes. Clear definitions for the end of the MVP stage and the transition to 'steady state operation and compliance monitoring' are needed to ensure uninterrupted DSI service availability.

Additionally, the roadmap should specify when we might explore connecting the DSI to the Data Marketplace funded by Ofgem, leveraging existing investments in NGET's Data Platform and avoiding parallel platforms for data exposure. Addressing these points will provide a clearer understanding of the timeline, future use cases, and integration opportunities, ensuring effective collaboration and optimised DSI delivery.

Section 3

A1.4 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?

No, we think that a supplemented governance model, would better deliver Ofgem's strategic aims, by resolving the stated strategic gaps between the SO and Ofgem. Please refer to our answer in section A1.9 Q9 for more information.

While the proposed governance structure for the Interim DSI Coordinator aligns with established frameworks, a more digitally aligned model would better support inclusivity, flexibility, and adaptability. A governance approach that embraces digital principles can enhance collaboration and enable agile decision-making, ensuring the DSI evolves to meet future demands effectively.

The concept of a DSI Coordinator is sound. The scope of its accountabilities reveals that the opportunities of a Digital, Product led approach to realising the benefits of a DSI require further research. The proposed Governance Model appears to have been influenced by existing governance frameworks for the Industry Codes; the requirements of DSI Governance are much different. A poorly developed code change could have potentially significant industry wide commercial or operational impacts with long term consequences. Conversely, a poorly developed data item or data product would be frustrating for users, but with the right governance process to raise an issue, it can be easily improved within an Agile delivery methodology.

A1.5 Q5. If not, state your reasons and propose an alternative governance model or improvements to our proposed solution.

The DSI approach, being a centralised governance model, may sometimes be perceived as bureaucratic and rigid, which is something the consultation paper suggests Ofgem aims to avoid through initiatives like the 'trust framework'. The current approach limits access to the DSI only to participants of the DSI, restricting access to data and appearing contrary to Open Data principles.

A central governing body cannot cater to every unique use case of all participants. Additionally, participants who are not part of the core governance function might feel less ownership and accountability towards the DSI. The rigidity of the model may also lead data practitioners to seek workarounds instead of being burdened by bureaucracy, which could potentially conflict with data privacy, security, and compliance measures that are in place.

The current governance approach seems to primarily focus on building the DSI, without sufficient consideration for developing new data sharing use-cases and ensuring their accessibility and interoperability within and outside the sector. It is unclear how changes to data format standardisation or Common Information Model (CIM) would be managed, agreed upon, and coordinated to ensure that organisations align their processing with the upcoming updates. Additionally, there is a lack of clarity regarding the governance, version control, and rollout process for schema changes during the assurance process.

The governance approach also does not address how design decisions for a live cross-sector version of the data preparation node would impact organisations, as each would be required to upgrade their DPN simultaneously when updates are needed. The coordination of this, along with the cross-sector synchronised testing required, presents complexities that have not been outlined in this consultation.

Furthermore, the governance and ownership of other organisations' data that has been copied in via the DSI remain unclear. As NGET operates as a data mesh, it is likely that a new business area and governance structure will be necessary to address these aspects effectively.

We would suggest adopting a non-invasive federated governance model, which better aligns to modern digital development. This approach is already in use to great success within NGET. There is a standard industry approach to this "Data Mesh", popularised in Zhamak Dehghani's book Data Mesh: Delivering at Scale, which is a socio-technical approach to the governance of data development and sharing, which would allow Ofgem to deliver on the benefits of the data sharing use cases without investing a complex sharing infrastructure. This would reduce the time taken to deliver the value of the use cases to the consumer, facilitate innovation within the partners, reduce barriers to access of data, and be inclusive to non-industry participants.

If Ofgem decides to proceed with the proposed governance model, it is crucial to ensure that the DSI architecture and technology choices truly reflect the needs and concerns of stakeholders across the industry. To achieve this, we recommend incorporating the following elements into the governance model:

1. Stakeholder Engagement: Establish regularly scheduled forums and workshops where stakeholders can directly voice their needs and concerns to the Interim DSI Coordinator, fostering open communication and collaboration.

2. Transparent Decision-Making: Provide clear documentation that outlines the rationale behind architecture and technology choices. Make this information easily accessible to all stakeholders, promoting transparency and understanding.

3. Feedback Mechanism: Implement a structured process for stakeholders to submit feedback and challenge key design decisions and technology choices. This allows for constructive input and ensures that diverse perspectives are considered.

4. Advisory Panels: Form panels comprising representatives from various industry sectors to provide diverse perspectives on the development of the DSI. Their insights and expertise can enrich decision-making and ensure a well-rounded approach.

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5. Iterative Review: Conduct periodic reviews of the DSI's architecture and technology to ensure they remain aligned with evolving industry needs. This iterative approach allows for adjustments and enhancements as necessary.

By incorporating these elements into the governance model, we can foster a collaborative environment that actively involves stakeholders, promotes transparency, encourages feedback, and ensures the DSI's continuous alignment with industry requirements.

A1.6 Q6. Are there any additional governance roles that are not covered by the proposed governance model? If so, what are these?

The proposed governance could benefit from a greater emphasis on data sharing standards and interoperability. This focus might allow Ofgem and the System Operator to leverage network licensees' existing data systems more effectively, facilitating the delivery of use cases while the DSI is under development. To realise this potential, a concerted effort towards federated governance is essential, along with clearly defining the roles necessary to support this initiative.

A1.7 Q7. Do you agree with the responsibilities of the interim DSI Coordinator? Are there any additional responsibilities that it should undertake?

Due to the proposed design and governance approach, it is important to focus on effectively managing the backlog of use cases within the DSI. This involves establishing processes that allow all participants to contribute ideas, develop use cases, prioritise them, and provide funding. The DSI Coordinator will need to determine how the portfolio of use cases will be assessed, prioritised, and how trade-offs will be managed.

Another important responsibility is to focus on data sharing, particularly regarding the model and ontology layer rather than specific data formats. The DSI Coordinator will need to understand best practices for shared data, especially when one network licensee produces, owns, and shares data with a receiving partner who becomes the data owner and steward for the receiving organisation.

A1.8 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?

The DSI controller will need to develop a service operating model for the distributed infrastructures within the network licensees' environments. This poses challenges related to security, service management, and overall management for these organisations. For instance, we need to address how upgrades will be managed and ensure consistent Application Programming Interface (API) versions across the DSI. Additionally, it is crucial to determine how variable ingress and egress charges will be effectively managed. The DSI Coordinator should also create a federated governance group to agree and manage an industry wide Ontology and business model, to allow for interoperability.

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Section 4

A1.9 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.

No, we do not think that the System Operator is the best option for the DSI Coordinator. The proposed governance approach is delivery focused and lacks the wider strategic alignment that Ofgem requires to fulfil strategic aims "*Our overall aim is to ensure a regulatory framework that drives innovation, supports the transformation to a low carbon energy system and delivers the sustainable, resilient, and affordable services that all consumers need.*"   Ofgem and the ESO have different strategic outcomes (as set out in their respective strategies), so the System Operators remit is different to Ofgem's with different drivers and goals in fulfilling consumer's needs.

We would recommend supplementing the proposed governance model, to allow Ofgem to provide strategic oversight, and the ability to ensure all parties are able to participate, whilst allowing the SO to manage the delivery of the programme. Ofgem, would create and chair a Programme Steering Group. Ofgem would create the terms of reference for the group, to make sure that its aims are correctly aligned with Ofgem's strategic goals.

The Steering Group will have representatives from all elements of the licenced energy sector, plus wider interested parties, such as Non-Governmental Organisations, National Cyber Security Centre (NCSC), universities, and consumer groups. This group will assess the design option recommendations from the Delivery Management Group (see the table below) to assure that they align to Ofgem's strategic goals, the needs of the energy community, and consumers.

The Delivery Management Group manages and funds the delivery of the DSI. It creates design options and recommendations which it takes to the Steering Group for review, direction, and approval. The Delivery Group commissions and manages subcontractors, it deals with the participation of DSI to ensure that they adhere to the standards, and it proposes additional governance groups where required. This approach enables a body to manage the DSI, and funding through existing structures.

Supplemental Strategic Governance	Chair	Ofgem	Ensures alignment to Ofgem strategy, creates steering group and sets terms of reference
	Steering Group	SO, Generators, Suppliers, Grid Service Suppliers, DNO/DSO's, TO's, NCSC, 3rd Parties (NGOs/tertiary education)	Ensure alignment for wider sector, business, technical and consumer needs. Reviews/approves options and recommendations from the delivery group
	Delivery Management Group	SO	Provides project delivery, procurement, design, security, service design and funding
	Delivery Group	SO & Network Partners	Implements and supports the capabilities required for the DSI

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The System Operator currently focuses on balancing the Grid, which may result in consumer-based use cases struggling to gain priority on the backlog if controlled by the NESO. For example, the initial use case for the MVP is specific to the NESO and may not be the most beneficial MVP use case for the industry or consumers. We believe that Ofgem running a working group bringing together cross-sector viewpoints as the interim DSI coordinator would be a better option to ensure that prioritisation remains balanced between the needs of the system operator and consumer-based needs.

Additionally, the consultation references potential challenges in attracting suitable participants with skilled expertise from across the industry. We would be interested to view the evidence that has been gathered so far regarding the skills gap risk to inform the decision-making process for selecting the best option for the DSI coordinator role.

A1.10 Q10. What assessment criteria do you foresee being required when transitioning from short-term governance to an enduring governance model?

The end-to-end governance process should cover not just the DSI, but also the responsibilities of the organisations preparing and receiving data. This ensures that data products are appropriately versioned, with plans in place for coordinating schema changes. Additionally, this enduring governance should ensure alignment with Ofgem Data Best Practices and the industry-wide Ontology and business model.

A1.11 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?

The governance assessment criteria are designed around a centralised governance approach with a single lead organisation managing the process. The consultation paper does not clearly articulate the requirements and challenges in digitalisation within the energy sector, nor the outcomes that the DSI governance and technical solution aim to solve. This lack of clarity makes it difficult to refine the assessment criteria, as there is no clear benchmark to assess them against.

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