ESO

Data & Technology Advisory Group

Meeting 1 Minutes

Date:	08/03/2023	**Location:**	Virtual
Start:	14:00	**End:**	16:00

Participants

Attendee	Organisation
Sebastiaan Van Dort (Chair)	BSI – British Standards Institute
Erwin Frank-Schultz	IBM - International Business Machines
Tom Pollock	Northern Gas Networks
Prof Gareth Taylor	Brunel Institute of Power Systems
Dr Priya Mothilal Bhagavathy	PNDC – Power Networks Demonstration Centre
Abbas Mahmood	ENA – Energy Networks Association
Bethan Winter	Wales & West Utilities
Simon Evans	Arup
Jonathan Barcroft	ESO
James Edwards-Tombs	ESO
Divya Mahalingam (Facilitator)	ESO

Agenda

1. **Apologies for absence**

2. **Introduction**

3. **Terms of reference and conflict of interest**

4. **Discussion of priority factor: Increasing data visibility and enabling sharing**

5. **Discussion of priority factor: Creating an interoperable tech-stack**

6. **Discussion of priority factor: Aligning models and taxonomies**

7. **Next meeting**

8. **AOB**

Discussion and details

1.	**Apologies for absence**

- The Technical Secretary confirmed that there were no apologies for absence.

2.	**Introduction**

- The Chair welcomed everyone to the meeting and led the introductions by the attendees.

3.	**Terms of reference and conflict of interest**

- The Chair explained the terms of reference and conflicts of interest review, none were declared by the attendees.

4. **Discussion of priority factor: Increasing data visibility and enabling sharing**

- Significant work has been completed to promote and support energy data sharing. This includes the recommendations from Energy Data Taskforce (EDTF) and Energy Digitalisation Taskforce (EDiT), and other initiatives such as Data Best Practice published by Ofgem, Modernising Energy Data Access (which led to the launch of Open Energy developed by Icebreaker One), the Energy Networks Association's Data and Digital Steering Group, ESO (Energy System Operator) Open Data Portal, and development of other energy data portals. Further work is needed to fully realise the Virtual Energy System (VirtualES) ambition for an ecosystem of connected digital twins representing the GB Energy System.

Reflection Point

- ***Is Open Energy a potential & suitable platform? Are there any additionalities that would be required?***

Discussion

- The Open Energy platform allows users to find and access openly shared energy data and information from various actors. Open Energy have also created trust frameworks for licensing and specifications for metadata. The group discussed they would need further information to conclude whether this could directly support VirtualES, including on commercial models and how Open Energy functionality might grow in the future.

- There were some thoughts shared on different ways to consider the benefits to data users of a single platform, while recognising that setting up this central platform is challenging and can be a high-cost activity.

- It was noted that standardisation is an important tool and particularly in relation to open energy data. The group discussed whether the focus should be on new standards to be created or should the focus be on applying and building on existing standards. It was concluded that building on existing standards will reduce duplication.

- In the developments of standards, standardisation bodies consider international work to understand their best practice in sharing and using energy data. Researchers in universities are already referring to European use cases for this type of work, e.g., the International Regulatory Cooperation (IRC) use cases.

- It was advised that engaging not just nationally, but internationally, particularly on the data model standards and technology standards will be beneficial.

- The group suggested that standardisation rarely leads innovation, but innovation can support standardisation through development and experimentation, leading to new learning for standards.

- It was agreed that standards will follow from innovation testing and will make multi data exchanges a lot easier and simpler, but lots of work can be done without standards to avoid complete dependency on them in order to start a project.

Reflection Point

- ***How can common data model standards be practically implemented and enforced?***

Discussion

- The Common Information Model (CIM) was discussed, which is an ontology for exchanging power system information. The group discussed current developments in applying this beyond power systems into gas.

- Ofgem is leading a CIM approach for distribution networks, the Long-Term Development Statements (LTDS) and are addressing the challenges for exchange of this long-term scenario data.

- It was mentioned that Ofgem in their consultation on Data Best Practice Guidance and Digitalisation Strategy and Action Plan Guidance, have issued a consultation to adopt standards and make it mandatory for certain data sharing process, specifically around metadata.

- ENA and specifically ENA DDSG are looking at how to collaborate and drive interoperability using consistent data standards.

- It was agreed that certain open projects effectively embody standards. The Egeria Project is one such example which is all about sharing metadata and the idea is that it integrates with the product tools that people use to capture their data catalogues and allows data sharing between them.

- It was explained that Egeria defines the open metadata standard schema for over 800 types of metadata needed by enterprises to manage their digital resources. It implements open APIs, frameworks, connectors and interchange protocols for these standard types to allow tools and metadata repositories to share and exchange metadata using these open standards.

Reflection Point

- ***Are existing data portals complete and consistent enough for data sharing currently?***

Discussion

- The group agreed that data portals are relevant and in use, additional initiatives introduced included:
  - Data item explorer which is used by gas transmission (National Gas Transmission) to share daily demands, daily offtakes, daily temperatures, broken down geographically and by user type.
  - National Energy System Map which is a geospatial portal that has been developed and sponsored by the ENA DDSG for mapping energy networks and assets. The project is a pilot study and considering their next phase of development.

5. **Discussion of priority factor: Creating an interoperable tech-stack**

- The implementation of an interoperable VirtualES will provide the energy sector with the ability to cooperate with other stakeholders and their systems, enabling more flexible transmission, distribution, and consumer services. However, there is no "interoperability" industry standard definition across the energy sector. Therefore, delivering a data-sharing fabric and a digital spine for the energy system are essential components to underpin the digital interoperability of the sector and, consequently, of the VirtualES.

Reflection Point

- ***What incentives would be needed to engage in the development of such a digital spine and data sharing fabric?***

Discussion

- It was mentioned that a major incentive or funding method from a regulated network point of view could be regulatory funding allowances. Specifically, organisations who develop and provide digital infrastructure and data sharing tools will need identified sources of funding.

- The group discussed that today internet has a range of open data and standardisation tools to use. The method of accessing data is standardised in some cases through data portals, but the format of the data is less standardised. It was agreed that standardising data format can be useful for digital spine and data sharing.
- It was agreed that the biggest value would be that both organisations and individual users will participate in VirtualES to share data, have a central point to go, search for it and share the metadata.
- The group then discussed common functionality requirements in the digital spine proposal from Energy Digitalisation Taskforce Report. It was mentioned that the requirements for an interoperable tech-stack and the digital spine are developed around layered approach.
- A well-defined set of rules to ensure a clear understanding of which tasks need to be performed at each layer is important in the development of digital spine. Developing appropriate architecture that will help with the digital spine approach is essential.

Reflection Point

- ***What tools would be needed to support this process in your organisation or experience?***

Discussion

- It was mentioned that there needs to be a spread of processes, tools and skills that exist either within organisations or within the marketplace that organisations can procure to lean onto.
- Players in regulatory, enforcement, compliance and licensing are seen in support of open data standards. It was discussed that in Europe some enforcements are already supporting open data standards.
- The Common Grid Model Exchange Standard (CGMES) implementation of CIM is already in use by the European Network of Transmission System Operators for Electricity (ENTSO-E).
- It was agreed that a step-by-step process with appropriate strategic planning and policy in place will lead in right direction for sharing data.
- To support this process in organisations, these tools can be useful:
    o Cataloguing tool for managing metadata
    o Object oriented design methodology
    o Use cases
- It was explained that the key thing is to operate and keep the systems running. And tools required to do that are not always easy, there are quite strict procedures to install some software within an organisation.
- It was discussed that we have systems for exchanging information and data, but are they appropriate, and how to make them available for people to use are some issues which need more detailing and attention.
- The group agreed that wider digitalisation is interesting, but it can slow down things if major IT issues are not addressed accurately and in time.
- It was shared that the European Network of Transmission System Operators for Electricity (ENTSO-E) are proactive, and they are developing the common grid model exchange standard approach to share information and data between TSO's and beyond.
- It was concluded that a clear plan in place for the whole energy system (including gas) by sharing information and data is possible.

Reflection Point

- ***Any other initiatives?***

Discussion

- Discussion moved to open banking where few standards were made mandatory by the regulators, but it was discussed that banking and energy are two different problems and whether using a banking standards approach will help energy systems is a big question.

- It was agreed that energy is more innovative and needs to probably settle on additional use cases which will have the societal benefits on energy open data and listing them centrally would be a good step forward.

6. **Discussion of priority factor: Aligning models and taxonomies**

- There is currently no tailored ontology for the energy systems that would accurately describe all the relevant data and the characteristics and elements of the modelling approaches. The Common Information Model (CIM) has been developed over many years and is widely in use in the UK and EU as a common vocabulary and basic ontology to describe what data is being exchanged among a utilities business system. It has been officially adopted by the International Electrotechnical Commission (IEC). The broad range of terminologies needed for the energy domain is not covered in full by any of the existing approaches. These approaches are also lacking a suitable structure for the system requirements.

Reflection Point

- ***What emergent standards could VirtualES promote through adoption/prioritising specific use cases in the future?***

Discussion

- The Common Information Model (CIM) is one example of a standard which is growing in its adoption globally and within various modelling tools to read and write. However, this only covers the physical network aspect, and it is still not consistently extended; therefore, not all modelling tools support the data format.

- It was discussed that use cases are the long-term development statements to reform common purpose and grant greater access. It is important to keep the use case programme as open as possible to fully understand what they are, their scope and purpose and how they fit into the whole energy system.

- It was recommended to look at other use cases that are relevant to the energy sector in general, for example, gas can be an initial drive to set up standardisation or interoperability requirements.

- It was mentioned that other energy type use cases (in addition to electricity) need to be identified to reflect ESO's future role, such as: hydrogen, CO_2, storage, transport and electric vehicle.

- It was proposed that building on existing work should be welcomed rather than reinventing new standards and processes which can lead to duplication. And lot of work is going into both domestic standards and international standards.

Reflection Point

- ***What is the governance of standards adoption and how could the VirtualES align with that structure?***

Discussion

- It was mentioned that the Government could encourage standards with collective agreement between the main actors in the system, who will then, by virtue of adopting it, encourage the rest of the system to adopt it.

- The Ofgem Data Best Practice is in place, and it is a great opportunity to discuss data assets, their associated metadata and software scripts used to process data assets that are made available for anyone to use, modify and distribute with limited restrictions.

- Ofgem have developed the use of CIM as a data model using existing standards; the Common Grid Model Exchange Standard (CGMES) for the long-term development statements.

- There are many options and profiles available listed below, and developing that appropriate profile is something needed to be decided upon and implemented:
  - o Common grid model exchange
  - o Information exchange
  - o Market profile – European style

- It was suggested that reusing the common elements of standards from other industries like gas and liquid is a good idea and can be used to structure standards to fit with electricity.

- The Common Grid Model Exchange Standard (CGMES) is a potential starting point, it might not fit straight away, but by extending and enhancement of the standards so they are fit for purpose, it can then contribute to organisations that use it.

Reflection Point

- ***Any other initiatives?***

Discussion

- ESO mentioned that gas, carbon capture storage, hydrogen, electric vehicle and solar energy topics are welcomed to this session as they support the future systems operator pathway that the ESO is going through.

- It was suggested that Europe's gas and electricity markets with their dependencies, data exchange and information exchange can support the transition to UK Net Zero.

- It was advised to include any European and International projects related to VirtualES programme.

- ESO mentioned that they have been involved in some projects globally:
  - o The Global Power System Transformation consortium. A collection of transmission system operators looking at one of their pillars around open software and open tools.
  - o Engaging with the Australian system operator through use cases to learn about what capabilities they are building their projects.

7. Next meeting

- The next meeting will be held on Wednesday 3rd May from 13:00 to 15:00.

8. AOB

- The Chair thanked the group for their attendance and contribution.