ESO

ESO Technology Advisory Council

TAC-13

Date:	01/12/2023	**Location:**	Virtual
Start:	09:00	**End:**	12:30

All material from the meeting can be found on the ESO Technology Advisory Council website: https://www.nationalgrideso.com/who-we-are/stakeholder-groups/technology-advisory-council

Participants

Attendee	Organisation
Chris Dent (Delegate Chair)	University of Edinburgh
Andy Hadland	Independent
Fred Drewitt	Limejump
Alvaro Sanchez Mirales	STEMY Energy
Alastair Martin	Flexitricity
Kate Garth	RWE Renewables
Shubhi Rajnish	ESO
Cameron Shade (Facilitator)	ESO
Joseph Stepney	ESO
James Houlton	Amazon Web Services
Anthony Riding	Elexon
Simon Pearson	Independent
Naomi Baker	Energy UK
David Sykes	Octopus Energy

For specific agenda items

Attendee	Organisation
Brendan Lyons	ESO
Alexi Reynolds	ESO
Richard Thomas	ESO
Jonathan Barcroft	ESO

Mark Limpkin	ESO
Divya Mahalingham	ESO
Ian Dytham	ESO
Steven Parenzee	ESO

Apologies

Attendee	Organisation
Teodora Kaneva	TechUK
Randolph Brazier	Energy Networks Association
Jo-Jo Hubbard	Electron
Natalia Kroutikova	BP
Jim McOmish	Scottish Power Energy Networks

Agenda

#	
1.	Welcome & Apologies
2.	Minutes of last meeting and matters arising
3.	Feedback from the last meeting
4.	Innovation: Horizon Scanning
5.	Network Control Management System
6.	Common Data Framework
7.	Open Balancing Platform Update & Roadmap
8.	Subgroups update
9.	Next meeting
10.	AOB

Discussion and details

#	Topics discussed
1.	**Welcome and Apologies** • The delegate chair explained ESO are interviewing for the Chair position and he would be facilitating today. • Everyone introduced themselves for first time attendees
2.	**Minutes of last meeting and matters arising** • The minutes from the last meeting were circulation and uploaded to the ESO website prior to this session.
3.	**Feedback from the last meeting**

The feedback received at the last meeting was on Crowdflex, Customer centric ESO and the Open balancing platform after in person attendee's had a tour of the ESO control room Gallery.

- There was a question as to whether the customer centric ESO would transition to the FSO.
  - The ESO replied that it would be as its an ESO initiative and will stay with the FSO.

4. Innovation: Horizon Scanning

Alexi Reynolds presented the purpose of the innovation horizon scanning team, the Data and Digital technology Radar plus the priorities for 2024 for feedback.

Discussion

- The Horizon Scanning team has been in place for just over a year.
  - To practice open innovation and be as aware as possible of the external technology environment.
  - To capture ideas for future innovation and identify the right collaborators.
- Internal stakeholder sessions are held to challenge innovation priorities which was the purpose of attending the TAC.
  - Also advice on which technologies to track, which events to go to and which deep dives should be looked into.
    - Have completed one on Quantum computing and doing one on Gen AI currently.
    - Allowing innovation to choose where to do internal knowledge transfers on emerging tech via webinars and staff engagement. To identify the right projects at the right times.
- TAC pointed out Telecoms isn't massively on the radar but is featured in the preread. Considering the massive changes in the last 15 years it should be more visible.
- TAC suggested having innovation teams is concerning as it implies teams are not allowed to innovate but recognised the ESO is not a startup and wanted to understand more of what the innovation team does and how it interacts with the other teams.
  - The innovation team is not the only ESO area that innovates as examples architecture do as well as the cyber security teams.
  - The team are tasked with assessing pitches that come in for innovation and work with the business teams to develop those ideas.
- The TAC commented that almost all DSO/DNO's created innovation teams and for a long time what you heard in conferences were not what you were told on the ground as the innovation and delivery teams were not in great communication.
- A counter point was made by the TAC in regards to supporting similar views on innovations in the past but having changed their opinion after witnessing innovation teams support the business area's which are too busy to do horizon scanning and with the right interactions this can work really well.
  - Request from the ESO for specific examples of how this worked well to learn from.
- Further comment from the TAC that innovation needs to be throughout the organisation and needs a mechanism to be tried quick and in a simple way.
  - Agree for the need to horizon scanning but would be interested in seeing the next level down on the radar. Gen AI for instance is too high level.
  - Advanced connectivity should be in the central circle before 2035 as it is important to do it now
  - Data fabric should also be in the next few years.
- The TAC suggested if this was to be done it is better to do it the other way around, what problems are we trying to resolve rather than identifying things and looking for opportunities to use them.
- TAC offered to put the innovation team in contact with the Global power system transformation consortium.
- Further feedback that a conversation at a lower level would be more beneficial as some of the technologies have very different applications.

- TAC asked how much of this is pulled from large tech organisations that do this as a day job
  - ESO responded that we utilise big ones such as Gartner and Bloomberg to understand where to look as well as events and conferences so its not restricted to one place to look.
  - TAC asked if there were additional people ESO had access to such as Google, Nvidia, Microsoft who are at the forefront of this.
    - ESO said part of innovation is eco system building, contacting people we have relationships with for this type interaction.
- ESO asked questions from the pack preread.
  - There was a conversation on Gen AI and identifying the problem not the solution. Various applications are being thought of including simulation environments and simulating of training data.
  - TAC concerned about simulated data as all applications of it could cause a trap where utilising real world information would give better results.
  - Be wary of building bad products because of lack of knowledge in the limitations of the technology.
  - ESO agreed it's important to avoid hype and myth bust.
  - TAC suggested to watch out for snake oil sales men when it comes to GenAI and that its main purpose is bespoke solutions built on similar solutions but with necessary robustness.
- The discussion moved to priorities of innovation
  - ESO needs to understand where Gen AI helps you not having to be unique. Its not a thing on its own but can support or be a mechanism of delivering a lot of the other priorities not just Gen AI in its own right.
  - Resilience and scalability is missed from the priorities
    - As we see an increase in the footprint of the energy system in the UK there is a need for high levels of resilience but a quicker way of delivering it and scalability as we see more actors.
- ESO reflected on how Gen AI can solve a multitude of challenges, give a lot of solutions and how it can be applied to different parts of the organisation changes every day.
- TAC noticed Data engineering is not explicitly in the priorities and should be as nothing succeeds without top class data engineering.
  - ESO explained that the Data Analytics Platform is doing that and we recognise Gen AI will only make decisions based on the quality of the data. It's not something that is nailed down for the ESO yet but it is on a journey to adopt and adapt.
  - TAC said data science is not a mature science but it is maturing fast.
- TAC suggested Gen AI could move planning horizons for both the ESO and the wider market from a day ahead. It was driven previously by the need for human planning and inaccuracy of estimates. Forecasting accuracy is constantly improving and this is something to consider to shift that time horizon which could have a massive impact on the pricing of the market.
  - How can we use tech to break the status quo and make it better?
- TAC mentioned that it's hard to predict REMA, we don't know when it will come out but it will change some things in broad brushstrokes and the FSO will have to react quickly as priority may change swiftly.
- Further agreement on TAC that with renewables playing a greater role better forecasting is needed.
  - A human/machine interface for the FSO could be really helpful. Investing in improving training and passing on of knowledge would be a valuable use of time and resources to plug gaps.
- On closing the topic the ESO asked for any further feedback.
  - TAC commented that it was a great job pulling some threads together but using genAI as a silver bullet is too high level to simulate debate. Going to lower levels of detail would be a greater use of the people on the call who have a lot of knowledge to share.
    - Suggestion to bring Gen AI back to TAC with 5 examples of use cases to be talked about in more detail.

- ESO highlighted this level works for some external stakeholders but can come back with extra detail in the future.
- TAC said it would be great to see how these priorities will be realised, tested or experimented with across the business.
  - TAC said this industry and ESO is not fast enough at doing this, the priorities for 2024 have a risk of not being delivered in 2025. Utilising the MVP of what might be useful for the business might be a way forward.
  - Final TAC comment on utilising the right thing for the right reason and not being afraid of saying no, just because there is a lot of hype it might not mean it's ready and it can be parked and investigated in the future. – There are benefits of sorting the wheat from the chaff.

5. Network Control Management System

- Ian Dytham presented the latest on NCMS and the pivot to GridOS.

Discussion

- The presentation started with a summary of the existing product IEMS and the new product NCMS. Followed by the GridOS platform and the delivery timeline.
  - The current product has had its life extended to provide a solid platform to build on until the new product is ready.
    - The progress to date was explained including the previous attendance to TAC on the architecture, POC's that have taken place with multiple vendors, working with National Grid Electricity Transmission regarding separation and the build timelines of the necessary environments for both GE and AWS Cloud.
- Integration is a massive part of this work with 10's of interfaces across the ESO estate, testing and training will be another big element and the tool will be ready ahead of go live to ensure the change goes smoothly.
- TAC asked how dependent this was on the Virtual energy System.
  - It is a piece of VES with the network control tool being for the operator to control the system, the data will flow from it ultimately into DAP (data analytics platform) to become available for VES to create simulations.
    - Future work in this space is for training simulators for the control room.
    - ESO happy present at a later date how these programmes intertwin.
- TAC offered assistance on NCMS as they have worked with ESO in the past and are happy to add further insight.
  - ESO are happy to explore this further as long as it is CNI compliant.
- ESO went further into the options explored before coming to GridOS as the scenario of choice and explained the development / rollout plan.
- TAC had a question regarding any issues this would cause, having 2 systems to keep aligned which is complicated enough while also separating from National grid / NG electricity transmission.
  - ESO answered NGET are taking care of the separation themselves. ESO will connect to them via protocols similar to how they do today.
  - TAC explained issues in the past with separation leading to employee's laptops not being able to access correct systems which needs to be considered and dealt with.
- TAC asked whether there were any interfaces that could be removed as the more interfaces you have the more complicated it becomes.
  - The plan is to minimise integration using integration layers as there is currently a lot of point to point which is complicated the change.
  - Recommendation from the TAC is to get as close to the core data as possible to allow user applications in the future and remove the need for constant third part development.

- The heart of the ESO's integration approach is to make this data transferable, the data historian project is looking at technologies to enable this which is all part of the wider ESO Open Data Initiative.

Various TAC members happy to assist further offline.

6. Common Data Framework

Jonathan Barcroft presented on the VES and the common data framework.

Discussion

- A summary was given on the presentation based on the changing energy system, the wide range of assets and equipment not owned or maintained by the ESO and a need for data sharing between organisations.
  - VES enables this sharing, an ecosystem of connected digital twins.
  - This is delivered by building a trust framework, building user confidence and reducing friction within an agreed data format with security controls and meta data.
    - This can be detailed on customers data portal as the ESO does today and combined into a catalogue of who is sharing, what they are sharing and where.
  - Once identifying the data the next step is based on its sensitivity, open data is easy to share but other forms can have 2 routes, preapproved based on matching security requirements or by request from the data provider.
- Question from the TAC as to whether VES was dependent on the Digital Spine.
  - ESO identified there are needs for the same functionality and have engaged with the National Digital Twin to understand what they are doing that can be applied, the investigation has been concluded and is currently with Desnz.
  - TAC mentioned it'd be great to move forward without having to wait for any dependency.
- How will any data going into VES be validated to ensure it is accurate as data is inaccurate or incomplete all the time? Ensuring this is almost more important for the TAC than sharing the data.
  - There is no technical solution at this point in time, ESO is looking at organisation to indicate their level of confidence in the data but recognise that is only their perspective so not necessarily correct.
  - Feedback loops from consumer to producer.
  - TAC - The truth is data quality will improve over time as organisations improve the data they provide, this is something that machine learning would be well suited to help with. If there are gaps from some providers but not others you could end up utilising the lowest common denominator which isn't useful but Gen AI could help fill those blanks with the correct supervision.
  - TAC thanked the ESO for the first real articulation of what VES is, the previous assumption based on the name was that it's a centralised system which may have caused confusion. In reality this is a data sharing framework which the TAC feel could be a lot more lightweight such as an identify management framework with rest APIs such as Open Banking.
  - TAC recommendation is to remove a lot of this and get it running with the minimum technology overhead as quickly as possible rather than investing in more technology.
    - Investment in more technology is not necessarily good value for the consumer.
    - Some DNO's are currently producing really good APIs and this risks stalling them making their data available.
- To enable this the governance needs to be effective with a clear decision making process.
  - TAC are concerned the suggested governance is not the way to achieve anything quickly.
- TAC identified a clear need for algorithmic architecture for the rules of the game and will follow up offline.
- TAC concerned we're starting to 'build something and they will come' rather than starting on use cases to solve and then working out how to solve them with sharing data. We should boil it back

to the problems we're trying to solve, how we solve them, who needs the data and where can it be found?

A counter argument from the TAC was no one should assume they know all the use cases as innovators will come up with those outside of our organisations. What's exciting about something like this is seeing what fun things people will do once the data is available.

- ESO agreed that they are working on use cases but not a complete list and are excited to see what happens after sharing the information is made lower friction.

7. Open Balancing Platform Update & Roadmap

- Brendan Lyons gave an overview of the Open Balancing Platform (OBP) vision and timeline for the next 2 years.

Discussion

- There was an industry event earlier in the week where the go live for OBP was confirmed as the 12th December. There was a summary of the testing and an issue that impacts 5% of instructions but a manual solution has been put in place to enable the release to continue.
  - The event was well received by the industry and had the highest scoring engagement since the programme had began.
- The roadmap was explained detailing how OBP moves to become the strategic platform over time building interfaces into other platforms while decommissioning the old systems.
- TAC fed back they had people at the event and the teams said it was great.
  - A discussion was had on the bug that led to a manual intervention with solutions being thought through and an answer expected by the end of the year.
  - More good TAC feedback on EAC with the only negative being work being diverted from other things.
    - Analysis was done on the SMP delays but the feedback was the ESO were talking internally but hadn't shared it and recognised there should be more visibility.

9. Subgroups

- Both Digital and Data Strategy and Control Room of the Future held meetings since the last TAC.
- Good discussions held in both, helpful advice.
- Next Digital and Data Strategy Sub group 12th January 2024.
- Next Control Room of the Future date TBC.
- Chair raised some possible topics for the future sessions.
  - Transition to the FSO.
    - ESO agreed this could be covered including new roles and how technology will support them as well as the equally important fundamental technology building blocks transitioning from NG to the FSO.
    - Plans will be more firm for next TAC.
  - How the innovation teams engage with the wider ESO teams.
    - As discussed in agenda point 4.
- TAC members suggested a further topic.
  - The efficacy of the TAC over the last 3 years
    - Which advice has been utilised and which hasn't. Examples being recommended products and creating use cases first.
    - Ask to be candid from the TAC about what has been recommended and what was implemented.
    - Want to feel the time at the TAC is worthwhile.

- In regards to use cases the ESO replied this happens in some instances and not in others but as we usually discuss 1 particular investment at the TAC at a time you only see what happens in that one area not over all.
- The TAC wants to understand the best way of being effective as a group.
- Agreement from the ESO to demonstrate what we have done.

A question from the TAC on meeting in person

- The last session was in person but ESO will discuss whether this could be an annual event or some of the sub groups could meeting in person too.

10. Next meeting

- 1st March 2024, 09:00 – 12:30.

11. AOB

- Thanks given to the Delegate Chair while ESO interview for the position.
- No further AOB.