

## RIIO-ED2 position paper: a flexible energy system requires flexible operating models

*This position paper sets out our vision for RIIO ED2 and that to achieve a flexible energy system a shift in approach to digital services is needed. At the heart of the ecosystem, DNOs have a key role to play in securing many of the important benefits of the energy transition and have a large number of varying roles and responsibilities. As a result, third parties are key enablers of the benefits that DNOs must deliver at the scale and pace needed. As DNOs transform to become DSOs, a transition to agile and flexible operating models must occur.*

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### Context

DNOs lie at the heart of creating a smart, clean and flexible energy system and are key to capturing many of the benefits of the transition to net zero. Already, impressive leaps forward have been made across DSO flexibility markets since 2018, with a continuous stream of exciting new firsts and interesting announcements. To name a few from 2021 alone, £30million worth of contracts were awarded by UKPN with two-thirds of the capacity coming from EV batteries and smart charging, WPD contracted flexibility surpassed 450MW and SPEN awarded 555MW in their Spring competition round.

However, there's much more that needs to happen to deliver the flexibility needed for net zero, with an estimated 60GW of flexible capacity being required by 2050. There is a seismic change required in every role across the economy, with distribution networks at the heart of the ecosystem.

RIIO-ED2 will serve as a core foundation from which the benefits DSOs must deliver can be captured. The next price control period is responsible for laying the tracks determining the course for the approach, design, pace, and scale of change we can expect during 2023-2028 for flexibility and beyond. During this period, all DSO and ESO flexibility markets must transform and mature to widen participation, facilitate short- and long-term services and much more. Equally, to secure the flexibility required in the right locations and for the right kind of services, Flexibility Service Providers (FSPs) must be able to build a business case by easily finding, qualifying, and participating in multiple markets, stacking revenue streams.

Ultimately, the benefits a DSO can secure, such as through competitive, coordinated and accessible flexibility markets, is dependent on the structural decisions made for RIIO ED2. The investment and

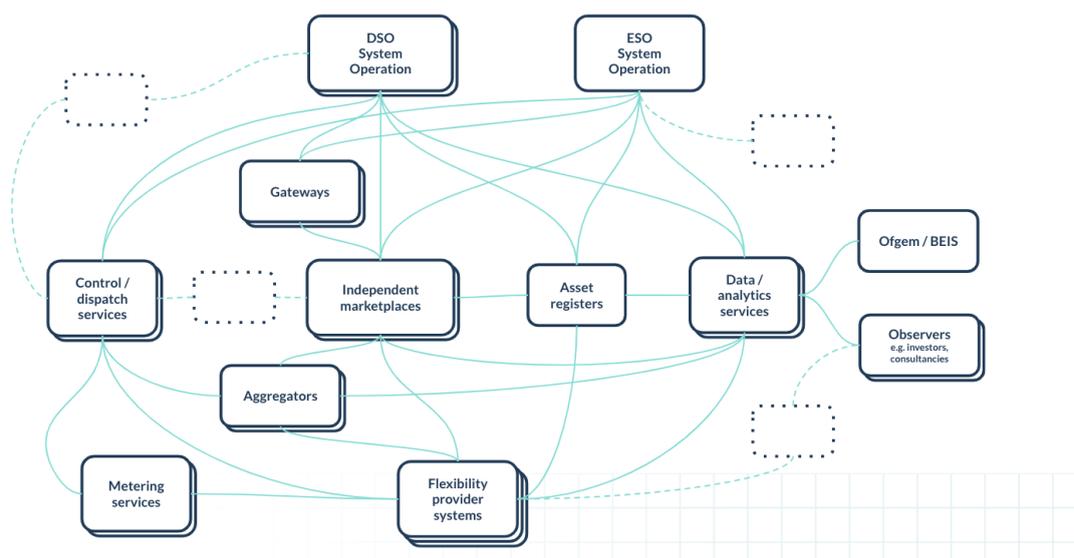
development of services required to deliver this at the pace and scale needed are beyond the capability of any single entity. RIIO-ED2 must lay the groundwork for DSOs to use third parties to deliver services that can accelerate the transition and capture this value.

### Digital monolith systems vs. flexible operating models

System and network operators must shift from designing and implementing closed monolith systems. Instead, flexible operating models can be developed by system operators using their position to create a competitive landscape and to lay the foundations for the development, integration or provision of digital services by a network of providers.

This conceptual architecture, visualised in Image 1 below, is based on defined open interoperability standards and application programming interfaces (APIs) between each service or function. This architecture does not preclude individual organisations (such as DSOs) in managing multiple services in the value chain, but fundamentally does not lock out others in providing a competitive solution.

Image 1: example of digital services under a flexible operating model



### Why are flexible operating models needed?

#### RIIO-ED2: there’s too much to do alone

New DSO roles form the crux of RIIO-ED2 and will fundamentally alter the shape of flexibility markets moving forward. For instance, Ofgem has outlined expectations with regards to:

- **Neutral facilitator:** The DNO must act as a neutral facilitator of markets. Network users should be able to simply identify opportunities to participate in markets, understand how the markets interact, be able to trade with other network users, and offer network and system services to the ESO and the DNO, and for those services to be coordinated to result in whole

system efficiencies.

- **Forecasting and monitoring:** DNOs to define and develop enhanced forecasting, simulation and network modelling capabilities, with processes in place to drive continual improvement to meet network and user needs. We expect increased monitoring equipment to be rolled out across their network where it has demonstrable net value
- **Operational data:** DNOs to make available operational data that supports network users and other relevant stakeholders to make better decisions about how to use the network. Data should be readily available in agreed and common data formats. This could include, but is not limited to: Utilisation and curtailment of areas under the control of capacity management systems such as Active Network Management systems
- **Short- and long-term markets:** DNOs should identify the optimum combination of longer- and shorter-term lengths of markets and contract lengths reflecting the network need. Needs should be neutrally defined, to allow for a range of FSPs to participate
- **Secondary trading:** The DNOs shall facilitate secondary trading of distribution flexibility services and curtailment obligations. In this context, facilitating means providing the relevant operational data, ensuring the DNO has processes in place to collect the relevant data about the trade, and making the operational parameters clear (and justified in the context of network reliability and efficiency). This also should include peer to peer and capacity trading.
- **Connections:** For smaller connections work, DNOs will need to turn around quotes and complete projects in a timely fashion. DNOs will be exposed to penalties if standards start to decline. Larger connections customers have more complex requirements, and DNOs will need to have in place and then deliver a strategy aligned to our baseline expectations.
- **Participation and contract stacking:** The widest reasonable range of distributed energy resources (DER) should be able to simply engage with the DNO's distribution flexibility services markets and stack value across multiple flexibility markets. DER should be able to access revenues where they provide value to the DNO via simple market processes.
- **ESO coordination:** DNOs should consider arrangements to support DERs to provide services that meet both DNO and ESO needs.
- **DER information:** DNOs to gather sufficient information on DER characteristics and parameters to provide information and inform decisions to secure against events that could lead to disconnection of DER.
- **Market support services:** market support services, such as pre-qualification, credit-checking and settlement must enable simple and cost-efficient participation in markets. DNOs should enable, and never prevent, the opportunity for third parties to provide these services where they could do so more efficiently

From the snapshots of some of the RIIO ED2 expectations shown above, delivering these new roles (on top of existing responsibilities) is too enormous a challenge for any one entity to achieve alone efficiently and effectively.

### **One size does not fit all: Flex Service Providers**

At the same time, RIIO ED2 also fits in within the wider context of a growing, evolving, and diverse suite of flexibility markets, all adapting in the face of the transition to Net Zero.

To secure RIIO ED2's flexibility requirements and for whole system efficiencies to be optimised, the experience of Flex Service Providers (FSPs) must be central to every decision. Empowering the businesses, communities, and homes within this ecosystem to participate requires centering the experience of existing, new, or potential FSPs in all aspects of flexibility market development.

FSPs come in all shapes and sizes. They range from those new to participating in flexibility markets, for which DSO flexibility services could be their first experience of earning revenue from assets such as electric vehicles (EVs). Alternatively, FSPs might be well-established in participation in flexibility markets, such as an aggregator providing ESO ancillary services.

To participate in any market, FSPs need to invest in a wide range of aspects including but not limited to:

- **Understanding:** market rules and regulations are often complicated. FSPs must invest to understand potential revenue opportunities, qualification and participation requirements plus the interactions or stacking ability with other markets
- **Capabilities:** entering a new market requires investment in the companies' capabilities, including the skills or personnel required
- **Technologies, systems, and tools such as APIs:** new markets may have different requirements such as new operating and dispatch systems or API-interfaces that require FSP investment, time, and development
- **Necessary contracts with owners and assets:** new revenue streams require clarifying or implementing necessary contracts with owners and assets, in some cases

For any FSP, this is a considerable undertaking. As the landscape of opportunities for FSPs grows, it is essential that DSOs make the experience of FSPs central when making decisions regarding the development of processes, portals, systems, and services, to ensure access, participation and engagement is as streamlined as possible within their own markets and across broader opportunities.

### **Benefits of a flexible operating model**

There are numerous benefits to this market design including:

- **Competition and cost:** introducing competition to as many parts of the energy sector and SO roles as possible through commercial tendering will drive down costs and deliver the most

cost-effective solutions, the savings of which can ultimately be passed on to customers.

- **Resources:** A system operator with numerous and wide-ranging responsibilities that are contending for attention from new and existing team members, which have competing responsibilities across several functions. Comparatively, a third party can bring an already-established and experienced team behind both product and customer service, which can be laser-focused on delivering the specific service and enabling the benefits of the SO at the pace needed.
- **Quality:** A key benefit third parties bring is that they can be selected as experts in the field with a reputation for delivering high quality services in that area. By bringing an already-established and experienced team they can bring wider-experience, creativity and innovation from their field of expertise or other industries that might otherwise be missed, to deliver a high-quality service in one area of focus.
- **Pace:** for the same reasons as above, the speed of development can also be faster with entire teams dedicated to delivering a particular feature or service. Additionally, for networks under the same regulatory framework, the requirements and roles will be similar across the board. Consequently, using third parties that already have developed the foundations of the services desired will also prevent the need for huge, costly, in-house projects that develop the service from scratch at each network.
- **User-centred design:** the use of third parties to provide services enables the development of services as uniquely user-centred and tailored to the needs of any wide variety of users (e.g FSPs with varying degrees of experience in participating in flexibility markets and SOs), without bias or preconditions that might exist if developing in a centralised manner.
- **Market trust:** the structures implemented behind the new roles and responsibilities of SOs may lead to conflicts or perceived conflicts of interest, which in turn can have a detrimental impact on participation and market trust. Independent third parties are well-positioned within the energy sector to build market trust and enable SOs to be truly neutral market facilitators.

### Example: user interfaces (UIs) within a flexible operating model

One key example highlighting the benefits under a flexible operating model are UIs. Expanding flexibility markets means more opportunities for FSPs to participate and provide different services. However, their engagement across these will depend on a variety of factors including how easy it is to access and participate across markets. Consequently, fit for purpose UIs have a pivotal role in shaping the development of flexibility markets during RIIO ED2.

Currently, DSO and ESO flexibility markets have their own UIs enabling FSPs to have access, qualify, and participate. Consequently, the number of UIs has tended to increase with each flexibility market a FSP wants to participate in. The effect of this is that an FSP will have to use multiple operating systems and UIs to provide flexibility services across different markets. This reality adds complexity, time and investment required from FSPs and serves as a deterrent to participation.

A RIIO ED2 that incentivises DSOs to unlock and capture the opportunities of a flexible operating model would define and deliver open interoperability standards across key functions of SO systems, opening the possibility of new services and functions being developed. For example, open-APIs would enable an innovator to develop a "user-interface as a service" proposition that brings together multiple markets, lowering barriers to entry for FSPs.

**Image 2: UI experience example**

