Virtual Energy System

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VIRTUAL ENERGY SYSTEM

ADVANCE DISPATCH OPTIMISER

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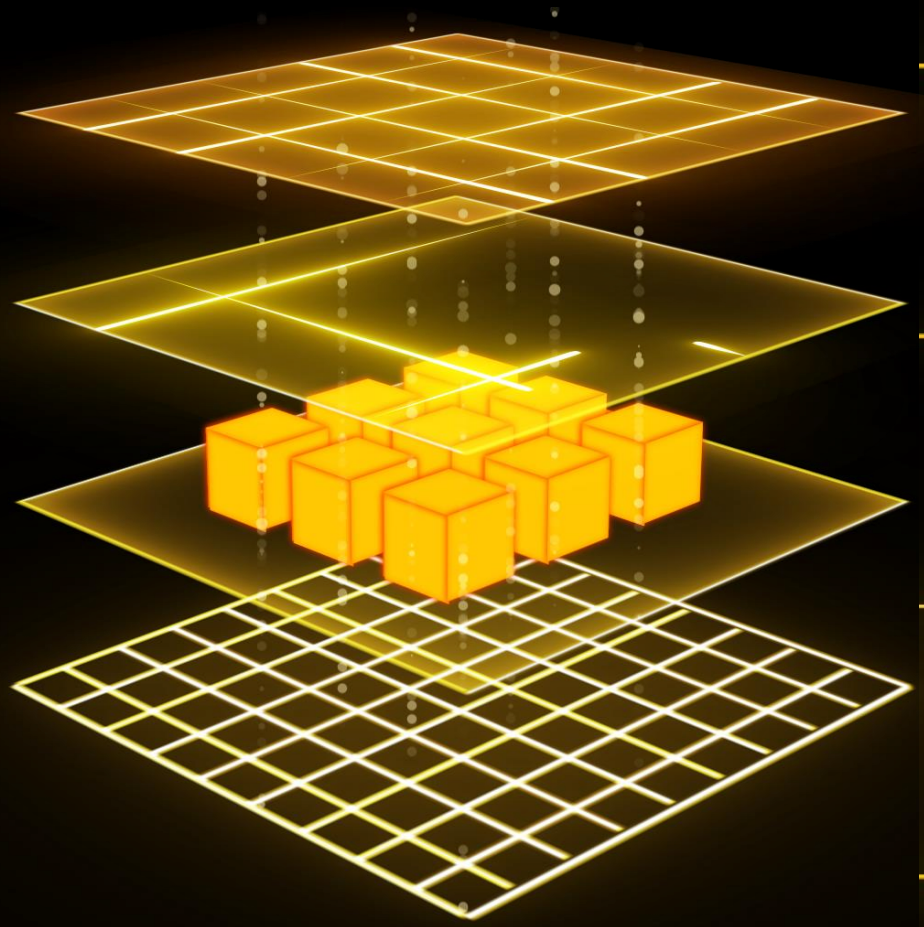
OUR BACKGROUND TO THE VIRTUAL ENERGY SYSTEM

The energy landscape is changing

- Net-zero power system by 2035
- Decarbonisation of energy system – less predictable
- Democratisation and Decentralisation – rise of the consumer
- Increasingly digitised and interconnected

HOW IT WORKS



4. The data becomes more layered, creating valuable insight to help guide and govern our transition to net zero and how we generate, manage and consume energy.

3. Each digital twin will contribute to and access real-time data on the status and operation of other elements of the system.

2. Populated by digital twins - replicas of physical components of our energy system.

1. An open framework, with agreed access, operations and security protocols.

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WIDESPREAD BENEFITS FOR ALL STAKEHOLDERS

Consumers

- Understand their energy carbon footprint and options to reduce it
- Actively contribute through domestic energy flexibility

Energy Companies

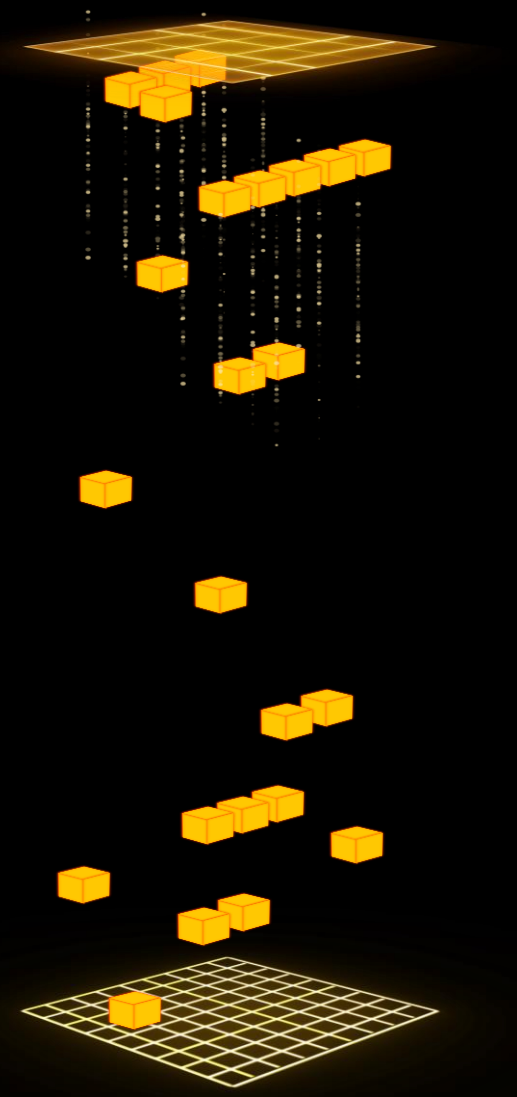
- Better simulate and model
- Improve understanding of complexities, ensuring compatibility and interoperability
- Drive the digitisation of GB energy system

Energy Innovators

- Transparency
- Open new markets, business models and innovations
- Identify opportunities by modelling

ESO - USE CASE JOURNEY

- The challenge: integrate models and data to simulate a complex energy system
- 3 initial ESO Use Cases to build enhanced digital twin capabilities
- Integrating digital twins - the whole is greater than the sum of its parts
- **By connecting Use Cases** we can **build the VirtualES**



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ADVANCE DISPATCH OPTIMISER

Balancing the electricity supply and demand

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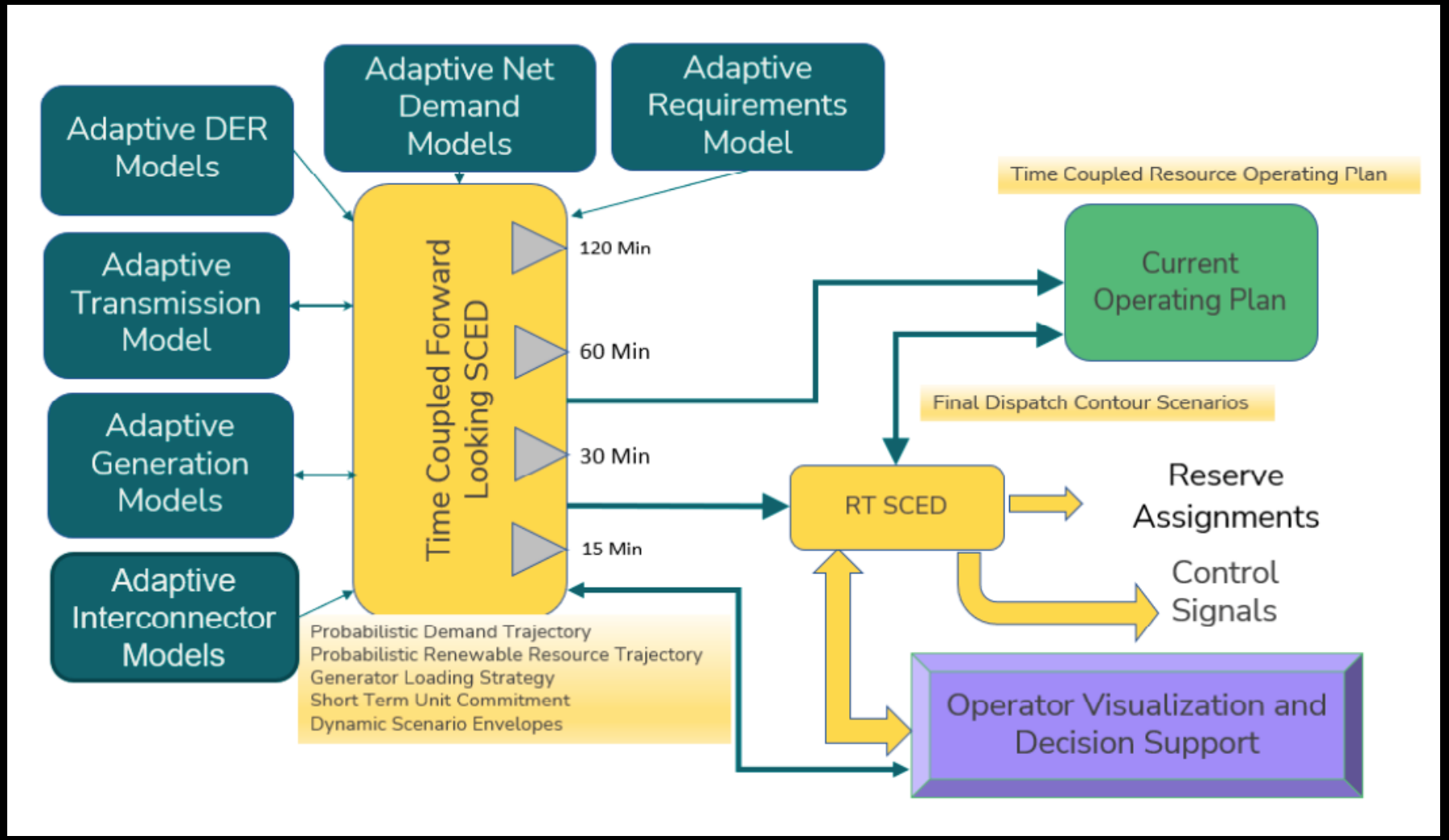
ESO & TAPESTRY
ADVANCED DISPATCH OPTIMIZER SYSTEM ROADMAP REPORT



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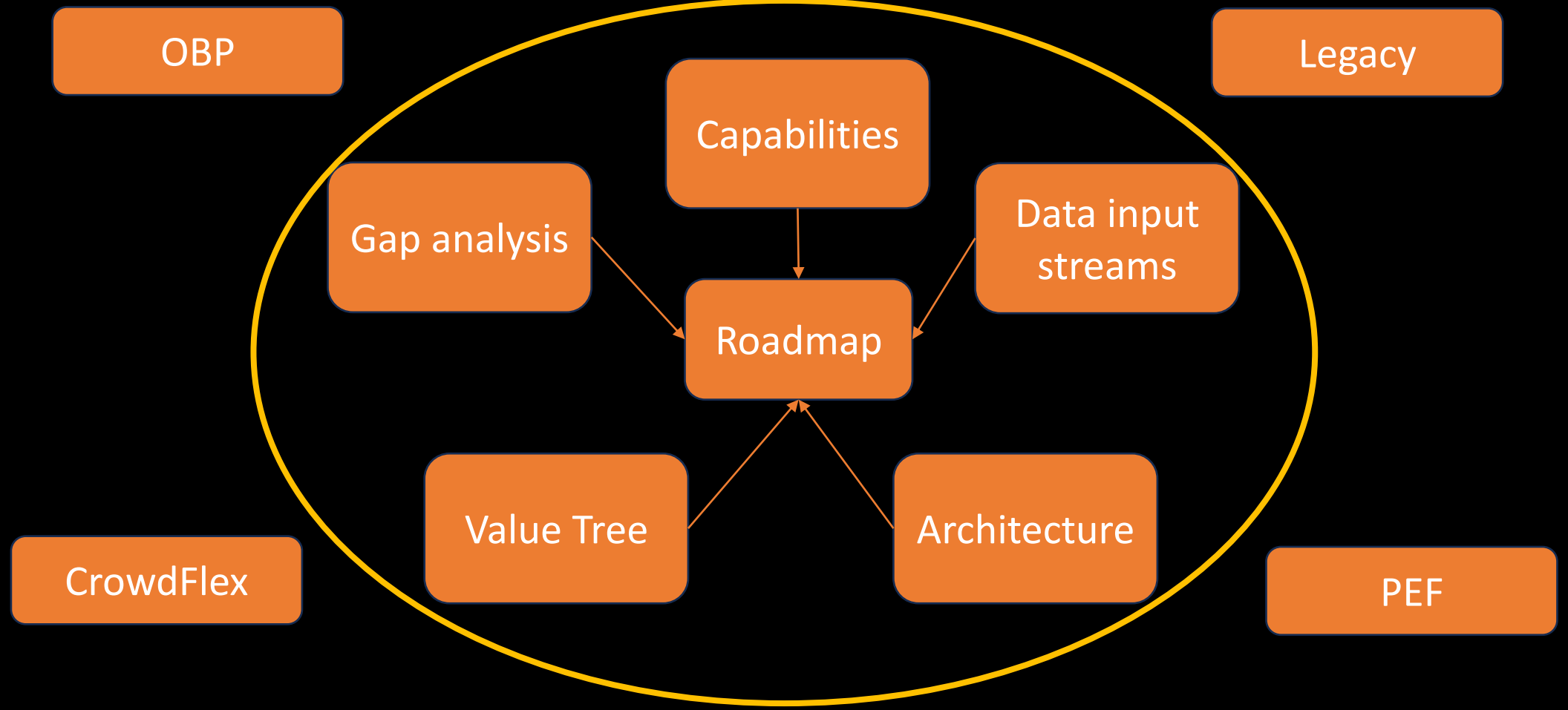
ESO & IBM – DISPATCH OPTIMISATION TRANSFORMATION



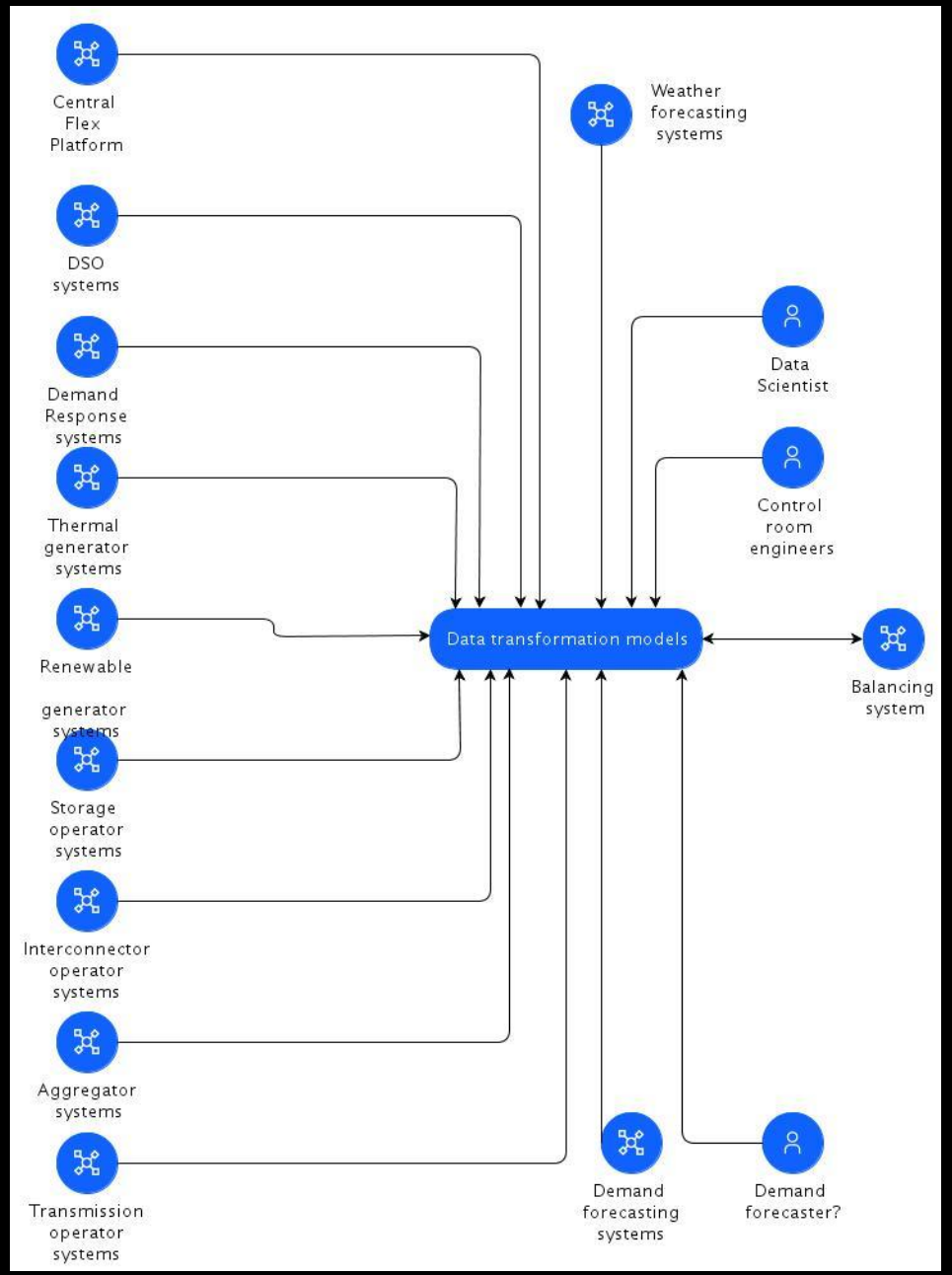
DISPATCH OPTIMISATION

Operates in an ecosystem

Generators

Interconnectors & markets

Networks



Weather

Demand

Flexibility

Storage

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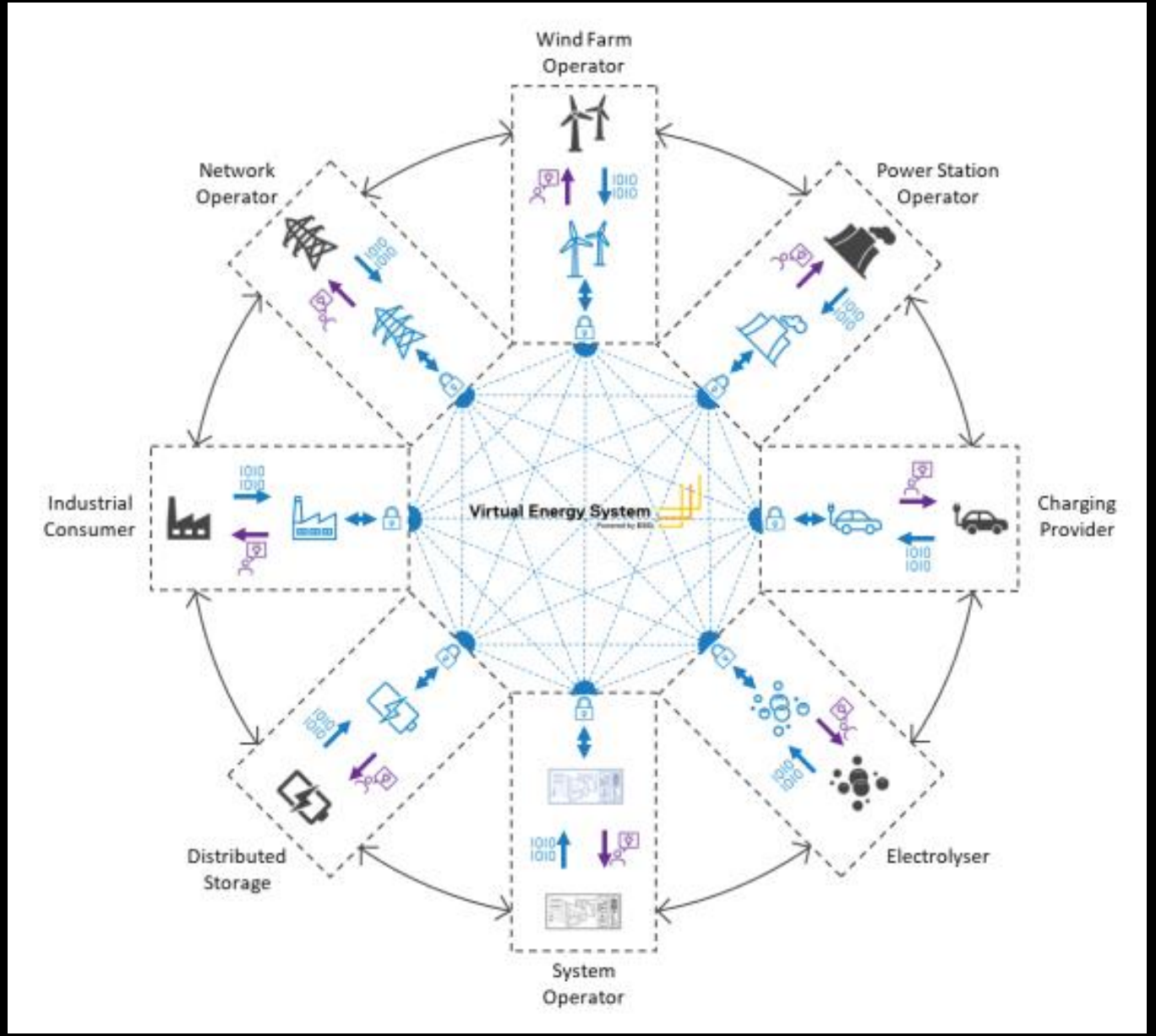
CONNECTING THE DOT

The VirtualES can play a vital role in simplifying and homogenising the extensive data sharing interfaces that advanced dispatch optimisation will require to balance the increasingly complex system.



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Find out more:

www.NationalGridESO.com/Virtual-Energy-System

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