

Whole System's Approach to System Resilience

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Introduction to Energy Networks Association

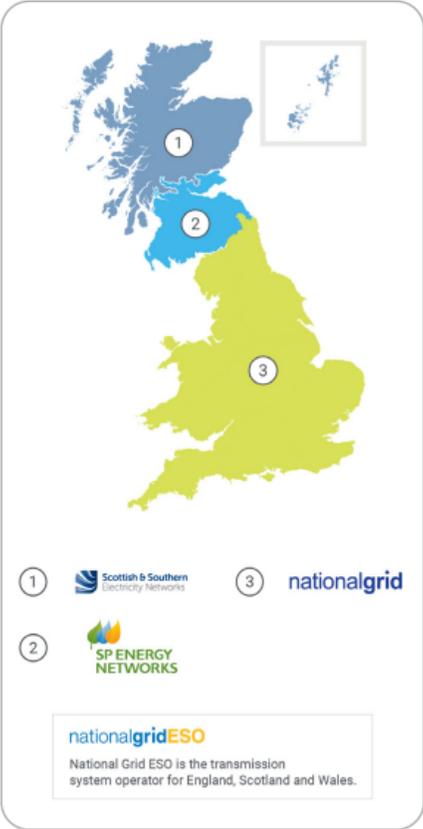
The voice of the networks

- 29 million electricity customers
- 21.5 million gas customers
- 180,000 miles of gas network
- 519,304 miles of electricity network
- £60bn invested 2015-23

Electricity Distribution



Electricity Transmission



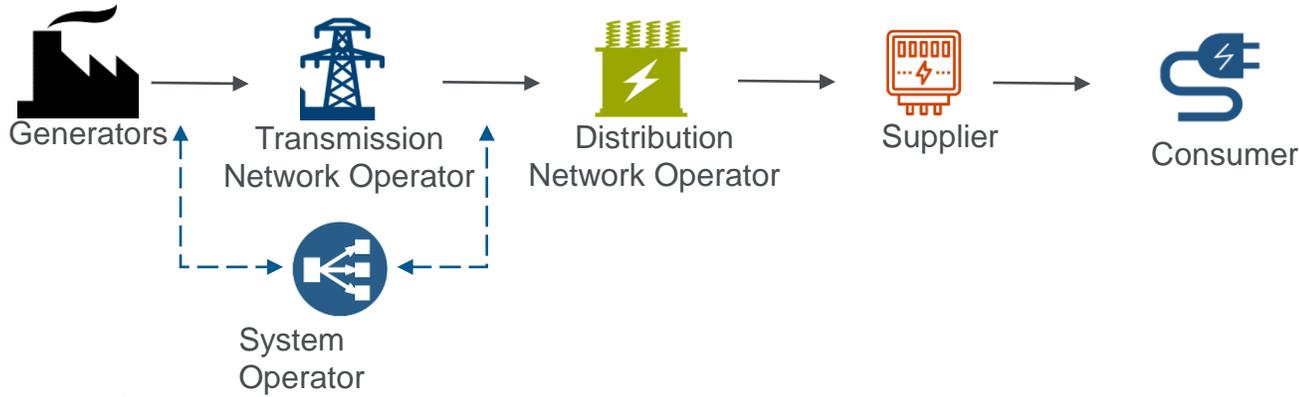
Gas Distribution



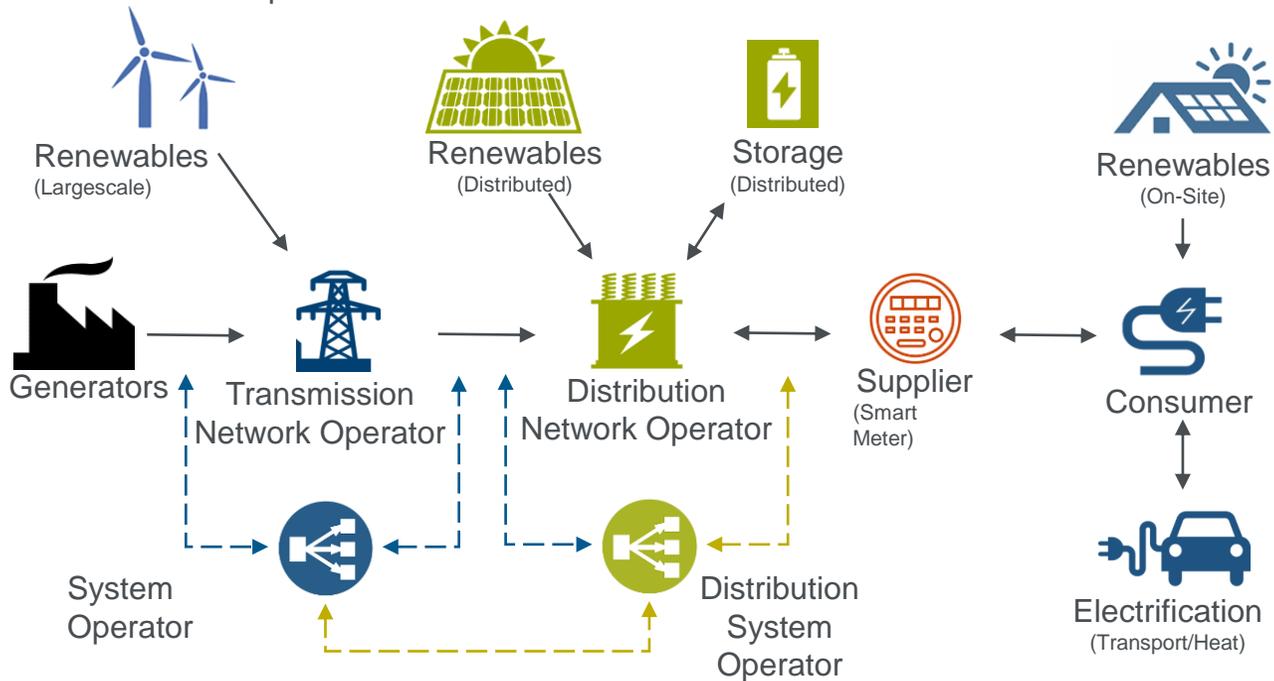
Gas Transmission



Old Vs New

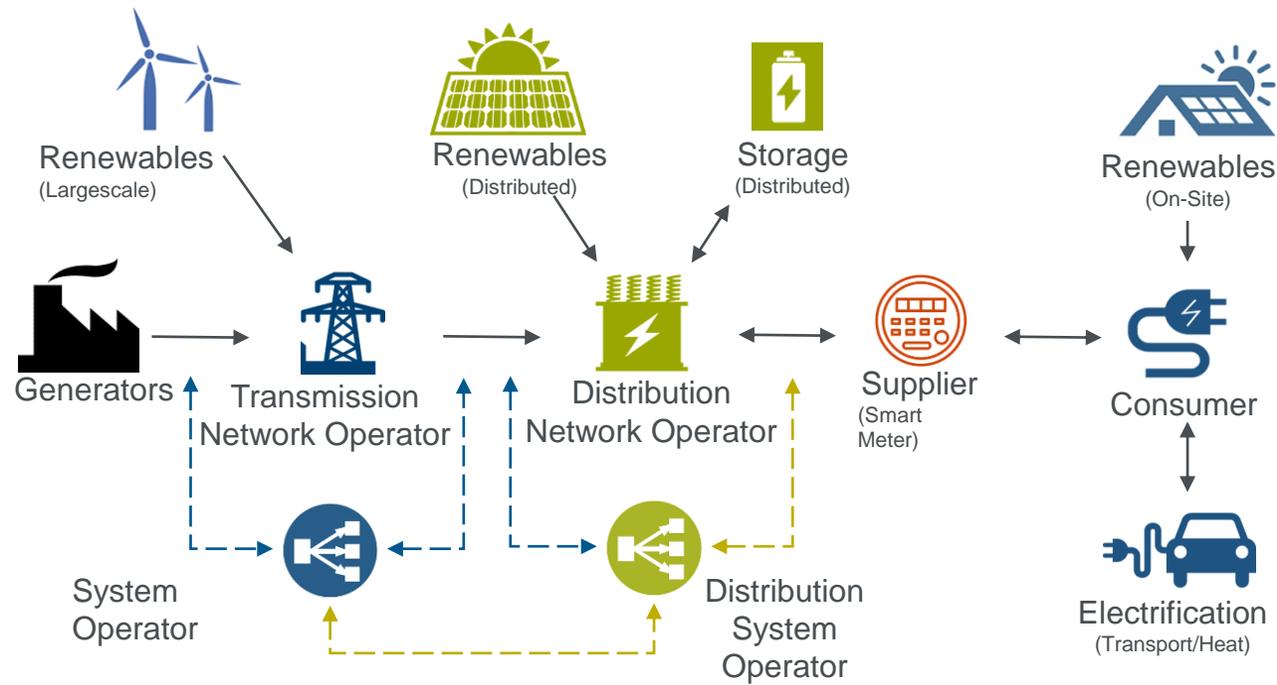


- Centralized
- Unidirectional energy flow
- Carbon-intensive
- Value is upstream
- Not digitalised



- Distributed
- Multidirectional energy flows (flexible)
- Low(er) carbon
- Multiple value streams
- Digitalised

Open Networks



Future Grid challenges

Optimal use of Network

Co-ordination between T-D

Connection of new customers

Transition to Distribution System Operation

Whole energy system operation

Open Networks mapping

WS1A-Flexibility Services

WS1B-Electricity System Planning

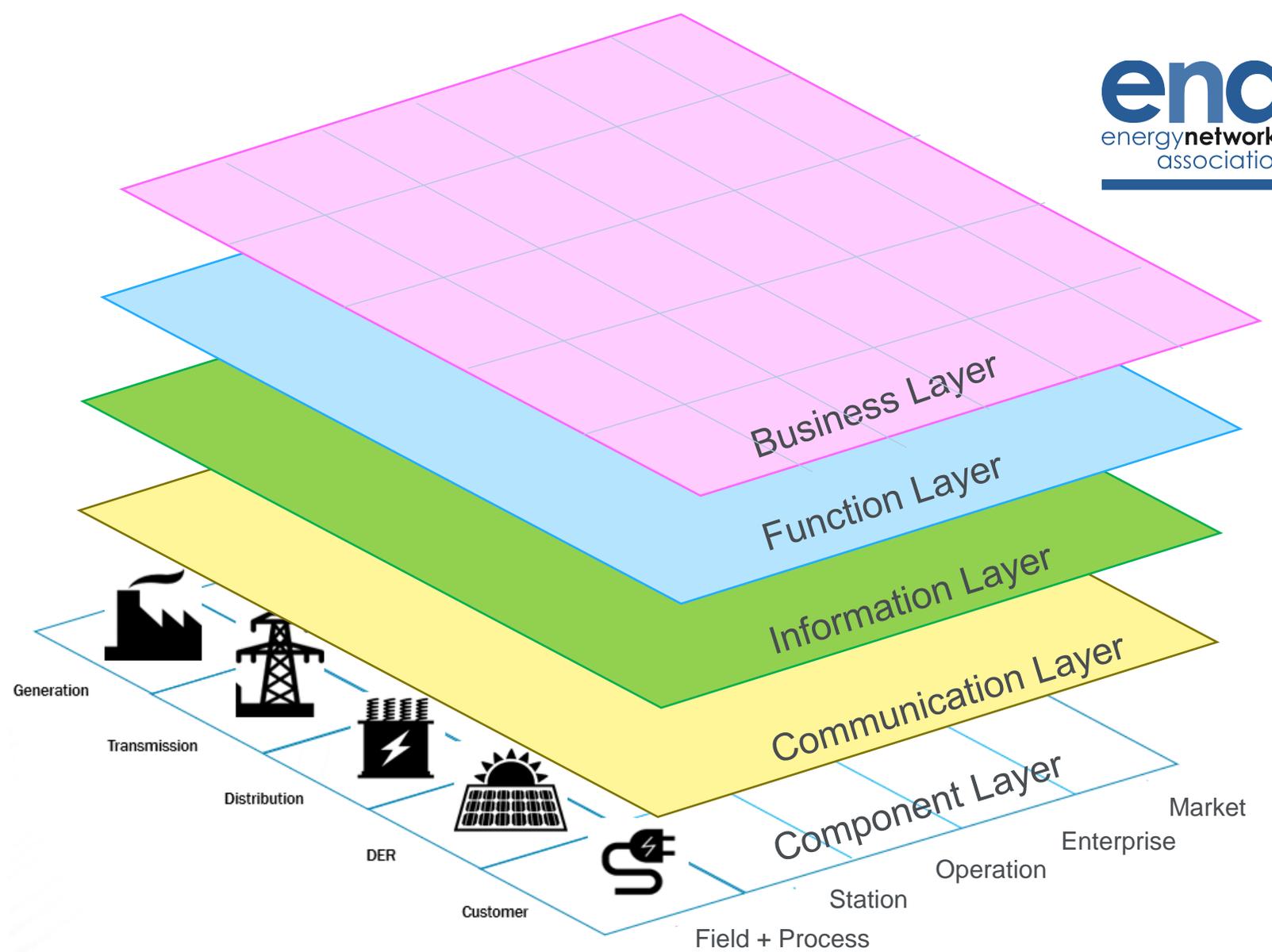
WS2-Customer Information & Connection

WS3-DSO Transition

WS4- Whole Energy System

Smart Grid

- The SGAM is a holistic framework for describing smart grid systems from their functional specification right through to their architectural design.

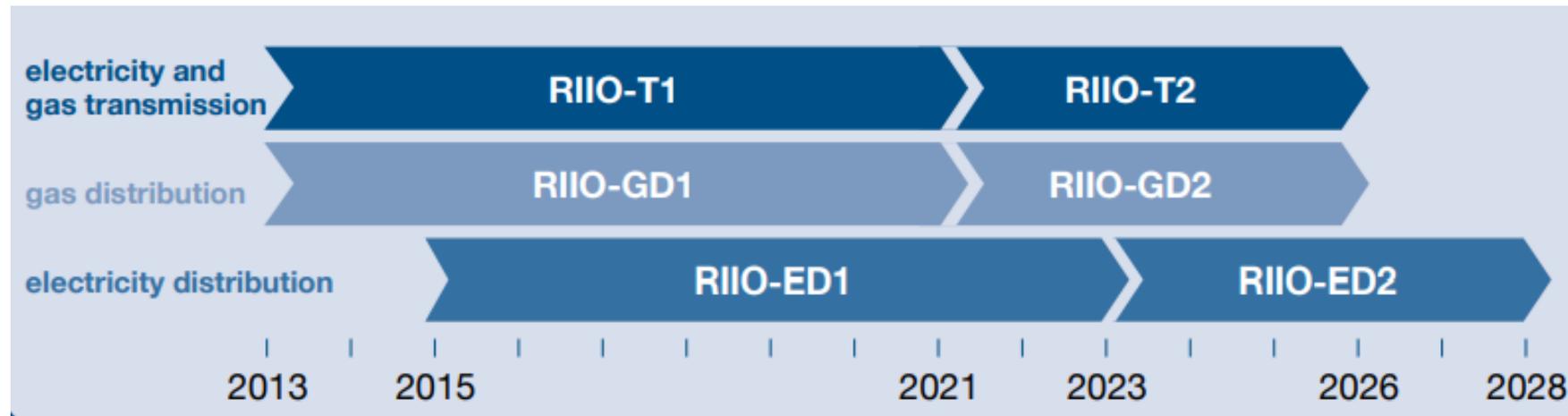


Energy Transition Signpost

- RIIO framework

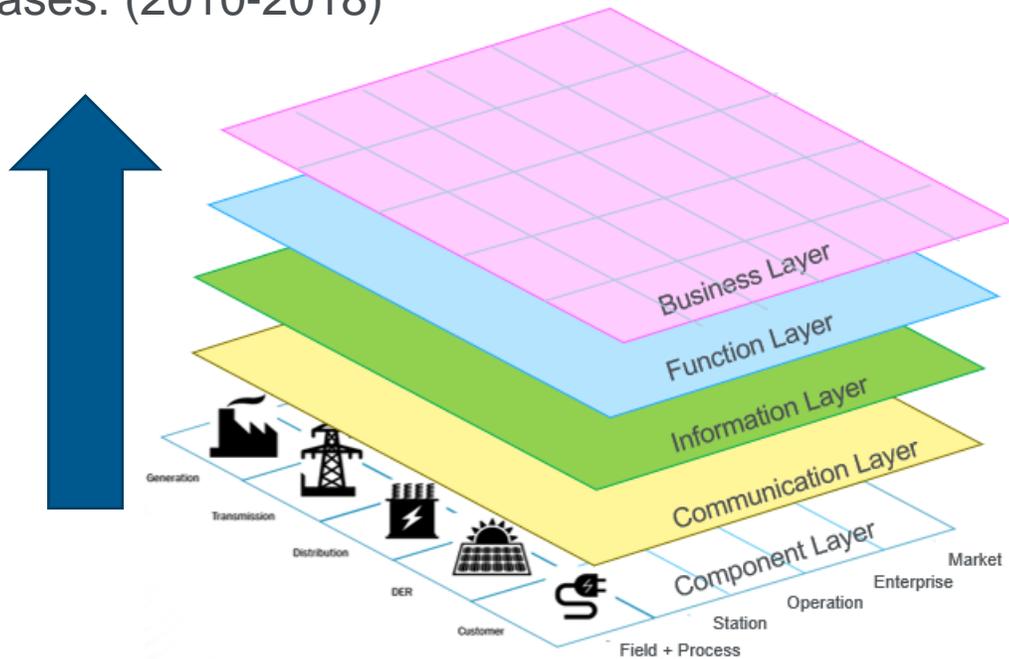
RIIO ; **Revenue** = **incentives** + **innovation** + **output**

- Low Carbon network fund (LCNF) -2010-2015
- NIA/NIC
- SIF



Energy Transition Signpost

Use Cases: (2010-2018)



Use Cases: (2019-beyond) **Component layer(Grid)**

Business layer: Policy and business case:

Use Case: SCR (Significant code review)
REMA (Review of electricity market arrangements)

Functional:

Use case: DER participation in energy markets

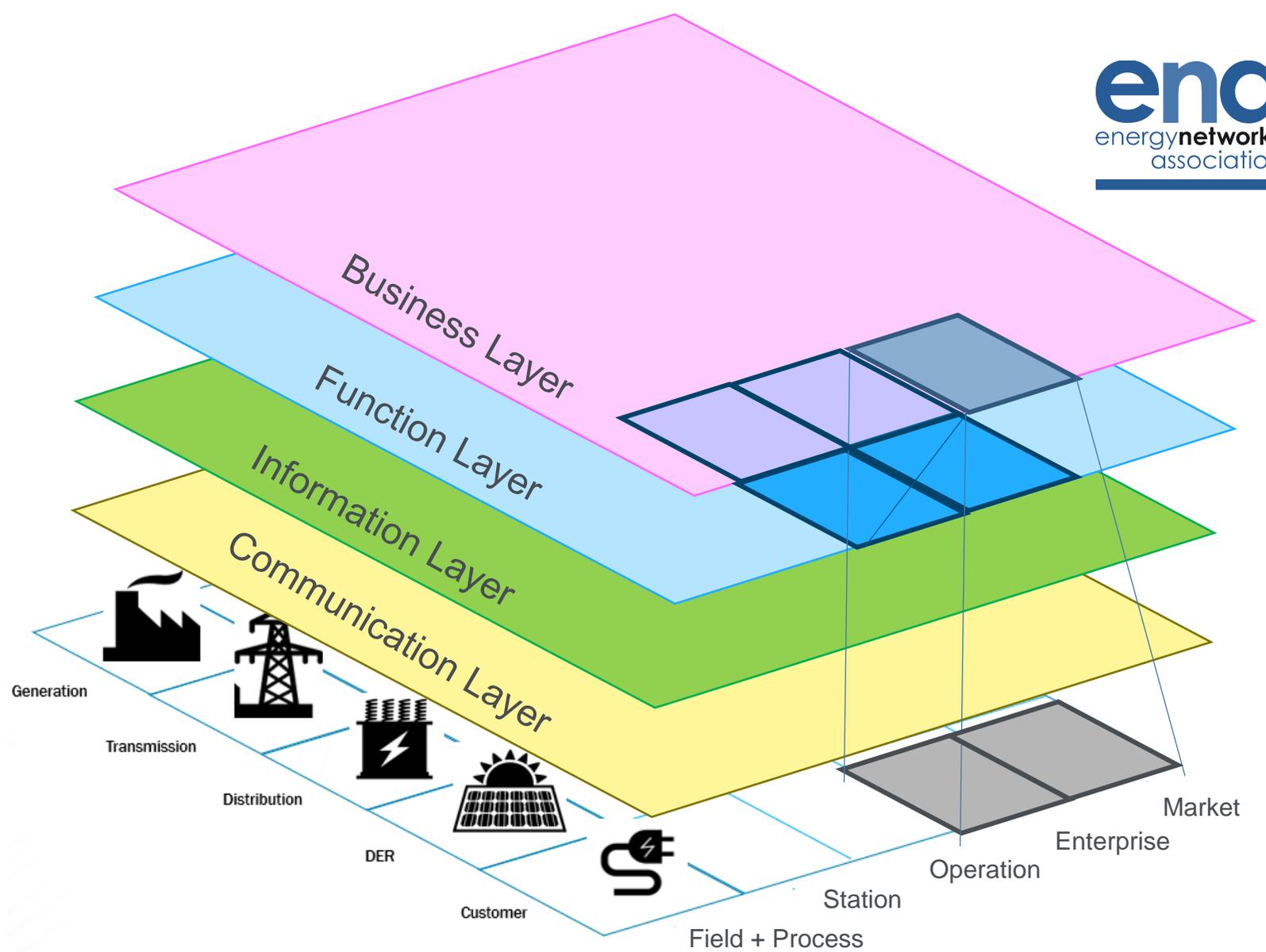
Information + Communication Layer :

Information + Accessibility of information =Building blocks in the digitalization of the grid (Underpinned by -Data Analytics)

Example

Use Cases:

- EV Charging infrastructure
- Flexibility market
- Peer-to-Peer trading (Prosumers)



Energy Landscape and how ENA fits in

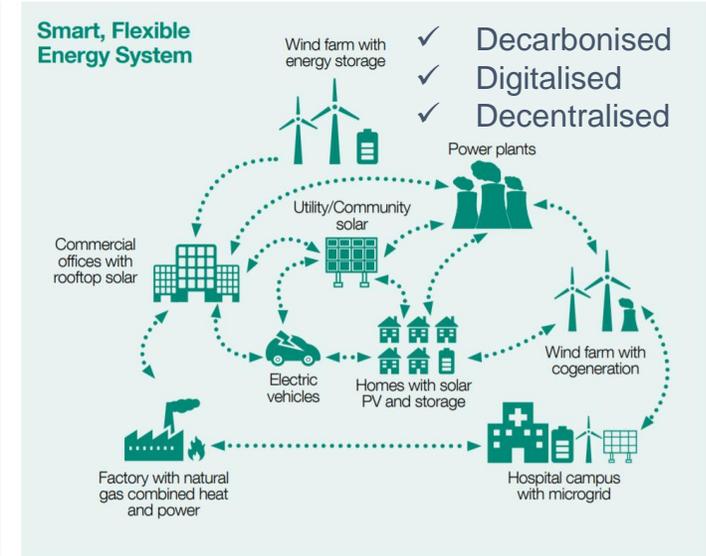
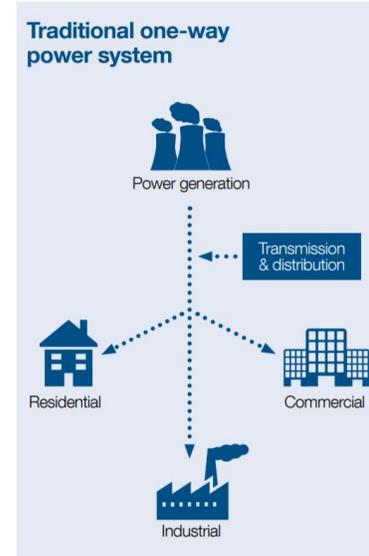
The UK has world-leading climate change targets that require a fundamental change across the energy system.



Net Zero

Decarbonised power system by 2035, underpinned by LCTs and flexibility.

On behalf of its members, ENA leads a number of areas of work to inform and implement the changes that are required to deliver Net Zero ready networks.



Gov and Ofgem

Broader industry



Useful Links

Programme
Scope for 2022

2021 End of Year
report

Stakeholder
events &
supporting
material

DSO Roadmap

Dissemination
Forum
applications

We welcome feedback and your input

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The voice of the networks