

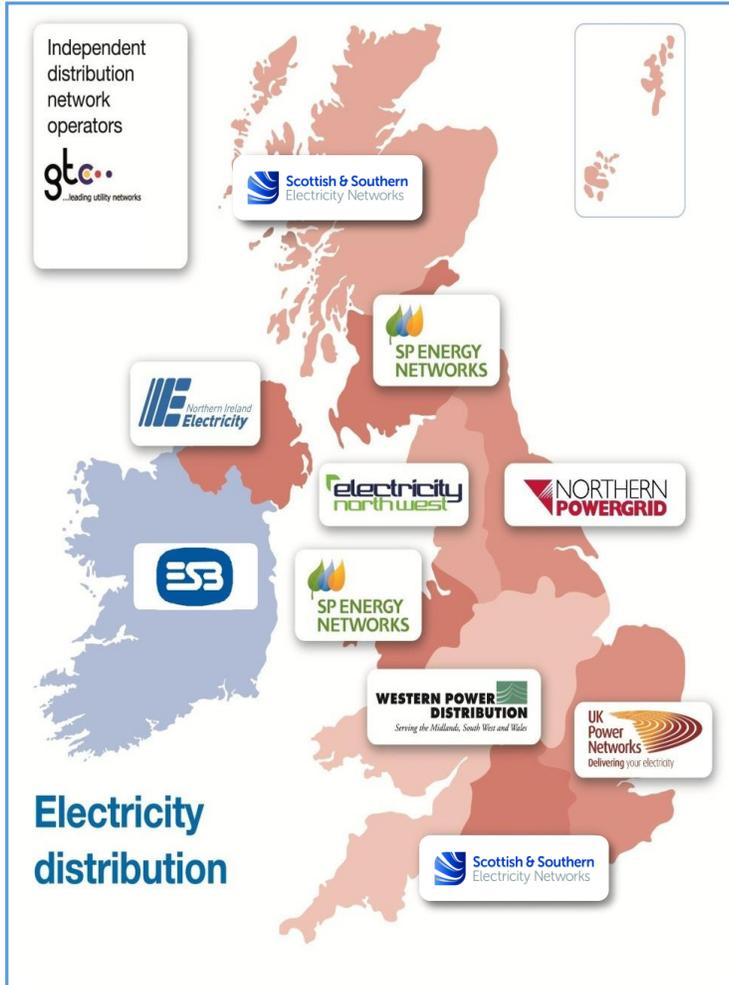
Energy Networks Association

Open Networks Project – Overview & Update

JRC Autumn Seminar

Randolph Brazier – Head of Innovation, ENA
4th October 2018

Collaborating ENA Electricity Members



Open Networks – Delivering a Smart Grid



ENA's Open Networks Project is a major energy industry initiative that will transform the way that both local Distribution Networks and national Transmission Networks will operate and work for customers. This is being driven by the 3D's; digitisation, decentralisation and decarbonisation



The Open Networks Project will help customers connect and realise value; as well as reducing cost for consumers through more cost effective planning

ofgem

Making a positive difference
for energy consumers



HM Government

The Open Networks Project is a key initiative to deliver Government policy set out in the Ofgem and BEIS Smart Systems and Flexibility Plan, the Government's Industrial Strategy and the Clean Growth Plan



We are taking a 'learn-by-doing' approach; we are using innovation funding to trial and test aspects of the various future electricity system options

Short Animation that can be found at: <https://www.youtube.com/watch?v=8GxeWspmmBl>

What is a DSO?

“

A Distribution Operator (DSO) securely operates and develops an active distribution system comprising networks, demand, generation and other flexible distributed energy resources (DER).

As a neutral facilitator of an open and accessible market, it will enable competitive access to markets and the optimal use of DER on distribution networks to deliver security, sustainability and affordability in the support of whole system optimisation.

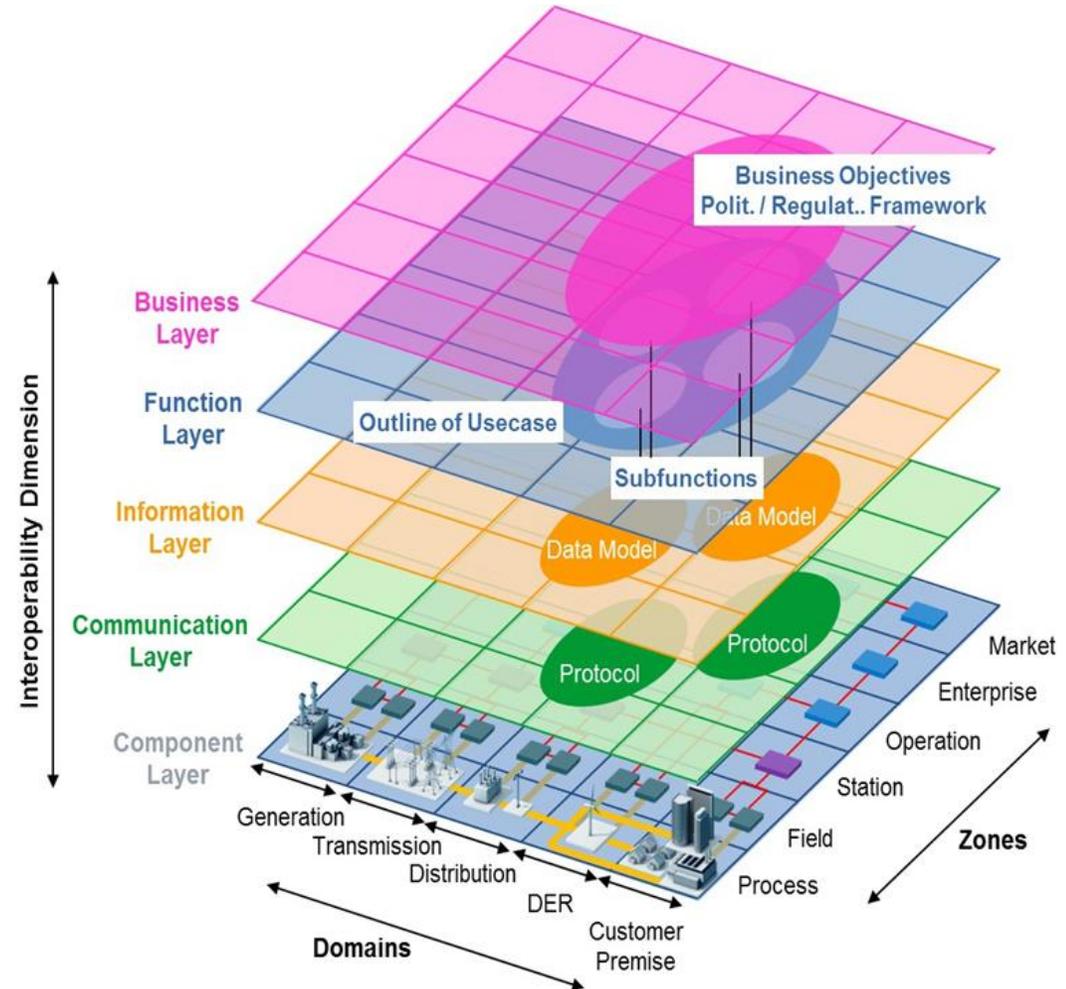
A DSO enable customers to be both producers and consumers; enabling customer access, customer choice and great customer service.

”

- As a cross-industry effort, the Open Networks Project is mindful of the fact there is more to learn and that this is a fast moving picture.
- The definition provides a starting point for the development of the DSO with a range of potential paths.
- It is not an exhaustive, or closed definition, but will evolve over time as the knowledge of the networks increases and the industry develops.

What does the DSO look like?

- We are capturing these through using the **Smart Grid Architecture Model (SGAM)**



Five 'Future Worlds'



World A

DSO Coordinates – a World where the DSO acts as the neutral market facilitator for all DER and provides services on a locational basis to National Grid in its role as the Electricity System Operator (ESO).



World B

Coordinated DSO-ESO procurement and dispatch – a World where the DSO and ESO work together to efficiently manage networks through coordinated procurement and dispatch of flexibility resource.



World C

Price-Driven Flexibility – a World where changes developed through Ofgem's reform of electricity network access and forward-looking charges have improved access arrangements and forward-looking signals for Customers.



World D

ESO Coordinate(s) – a World where the ESO is the counterparty for DER with DSO's informing the ESO of their requirements.



World E

Flexibility Coordinator(s) – a World where a new national (or potentially regional) third-party acts as the neutral market facilitator for DER providing efficient services to the ESO and/or DSO as required.

How did we capture the info?

- The model was built using a top down approach through a series of industry workshops, starting with the main functions of a DSO as a neutral market facilitator

1. Who is communicating with whom?

Communications-driven actor-relationship

DSO world: **B. Joint Procurement and Dispatch**
 DSO function: **Network Operation**
 DSO activity: **Operate Network within Thermal Limits**

2. What are they saying? 3. How are they communicating?

Definition of communication exchange links

DSO world: **B. Joint Procurement and Dispatch**
 DSO function: **Network Operation**
 DSO activity: **Operate Network within Thermal Limits**

No.	From actor	To actor	Content	Type
	DSO	NETSO	D. Reliability Thermal Reserves DSO Weekly Looking in how Assets? Daily time sensitive Regional/Market based boundaries Electric @ Strategic Assets?	
	DSO	DER-25 LES A11	Abandon Contract settlement Demand Side Flex. Trade	
	DER-25 LES A11	DSO	Availability capability frequency control compliance with M3 Service Delivery	

DSO Functions

System Coordination

Network Operation

Investment Planning

Connections & Connections Rights

System Defence and Restoration

Service/Market Facilitation

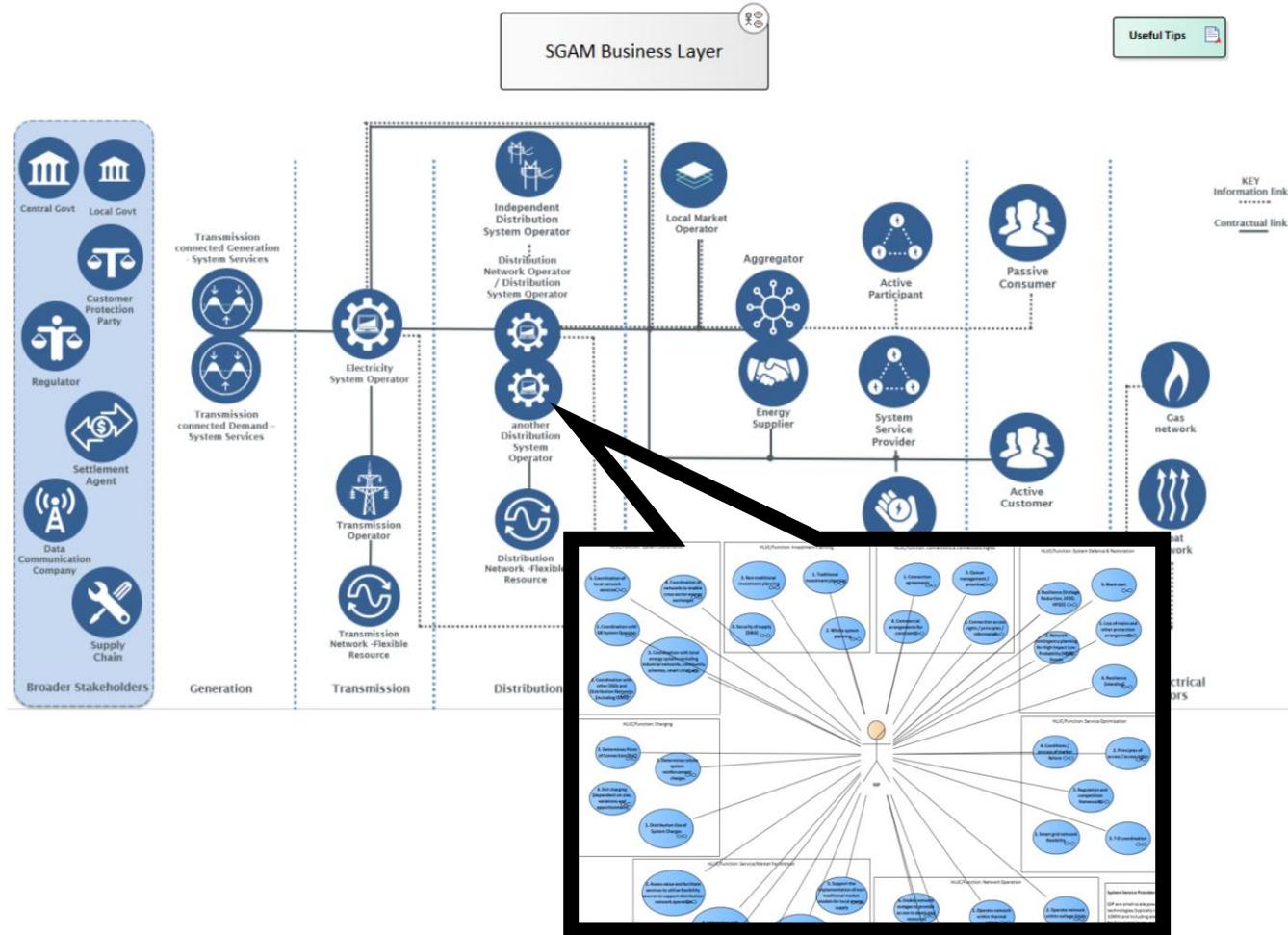
Service Optimisation

Charging

How are they presented?

- Full models available online as interactive webpages
- Can navigate by function or by actor
- Understand data flows and interactions between different actors in different worlds

World B: Coordinated Procurement and Dispatch

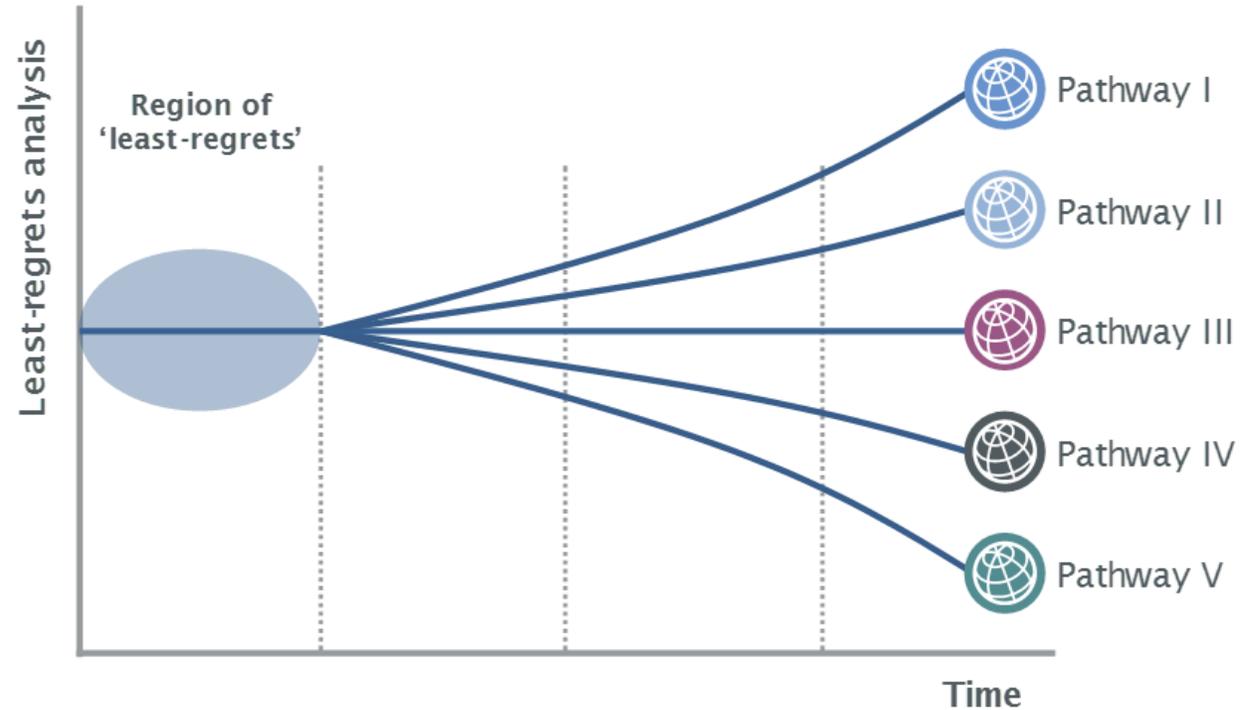


What about Telecommunications??



What are the least-regrets and key enablers?

- Assessment of the five future worlds has identified areas of common functionality between the worlds
- We have identified a number of key enablers to facilitate the Future Worlds. These enablers are required regardless of the world developed
- These areas could present opportunities to implement aspects of smart grid now



Key Enablers

Changes to industry structure:

- Regulatory changes
- Organisational changes

Developing a market-based approach:

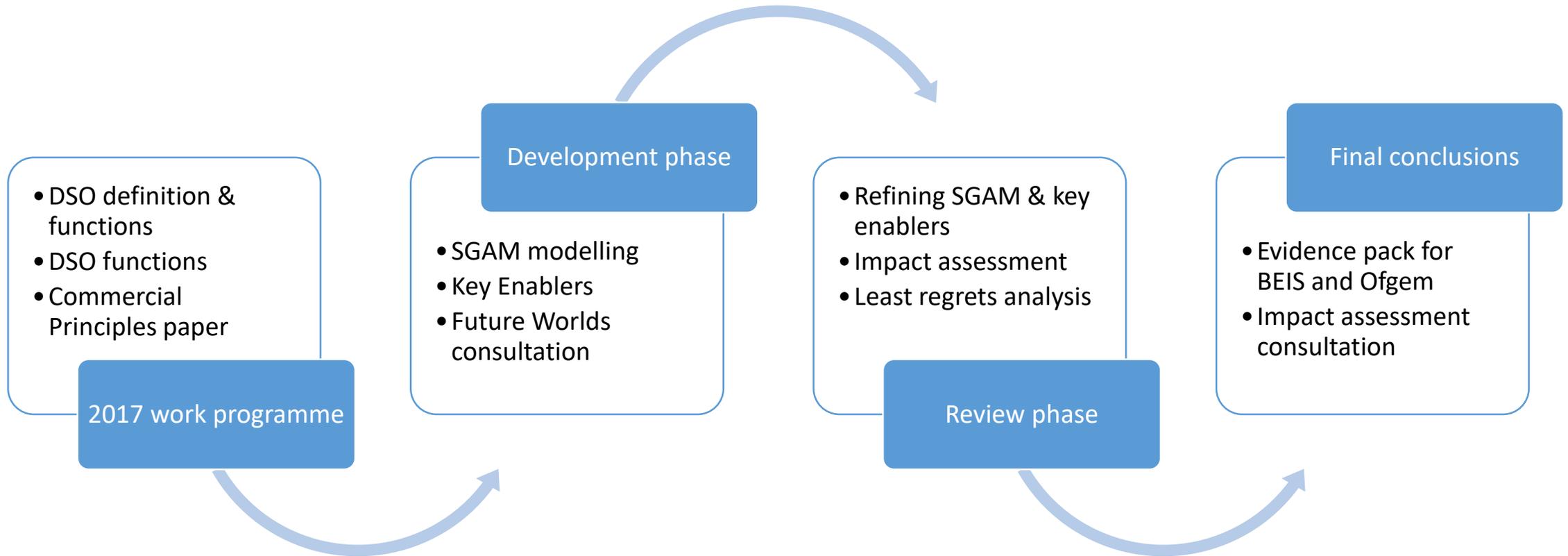
- Market engagement
- Contract requirements
- Funding

Facilitating information and data exchange

- Communications infrastructure
- IT systems
- Network visibility and control

- Communications & IT Systems
 - More data, faster, reliable, quality
 - Internal, External, Public
 - Integrated solutions
 - Cyber security
 - Data analytics, forecasting
- Network Visibility & Control
 - Monitoring of the secondary (LV) network
 - Smart meter data
 - Network automation, remote control

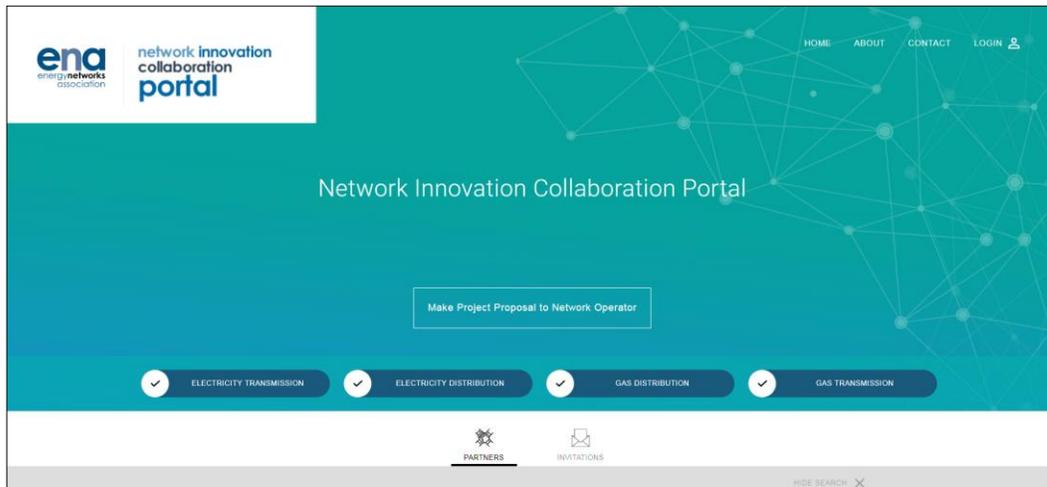
Next Steps - 2018



- Implementation of least regrets elements and progressing key enablers
- Models:
 - Hybrids?
 - Telecoms SGAM layer
 - Systems will be similar between worlds but differences will be who does/owns what
 - Utilise the ENA Strategic Telecoms Group
- Innovation Trials:
 - We want to take a learn-by-doing approach
 - This includes telecoms trials
 - Eg: WPD's Next Generation Wireless Telecoms Analysis:
http://www.smarternetworks.org/project/na_wpd_034

How can you get involved?

- Join our mailing list: opennetworks@energynetworks.org
- Provide feedback via you Open Networks Advisory Group representative (eg: JRC)



- Network Innovation Collaboration Portal
 - Pitch your innovation project to the networks
 - Receive notifications when the networks are looking for ideas
 - <http://www.nicollaborationportal.org/>
 - Joint NIC Call for Ideas now open (up to £90million available)

- LCNI Conference 2018
 - 16-17th October in Telford
 - <http://www.lcniconference.org/>
 - Includes Dragon's Den Session



Energy Networks Association

Any Questions?

randolph.brazier@energynetworks.org