

UK Experience of Evaluating DSO Models

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Key Drivers to Pursue UK Open Networks Project

Ambitious decarbonization goals pushed renewable growth and retirement of fossil assets; also necessitated renewable integration capabilities from demand side resources

Export constraints on distribution networks caused by concentrated pockets of grid connected generation exacerbated integration needs

Strong regulatory engagement encouraged pro-active approach from network operators and consideration of cost-efficient low-carbon investment looking at flexibility as an alternative to traditional asset investment

Enable the uptake of DER technologies by allowing customers to take advantage of these new technologies to lower their costs and provide flexibility for the grid.

Provide common services and processes to DER participants encourages DER service providers to meet needs .

Regulatory encouragement but no firm regulation or licence conditions to initiate

Industry-led project through network trade association – Energy Networks Association (ENA)

UK Open Network was underpinned by the “RIIO” regulatory framework

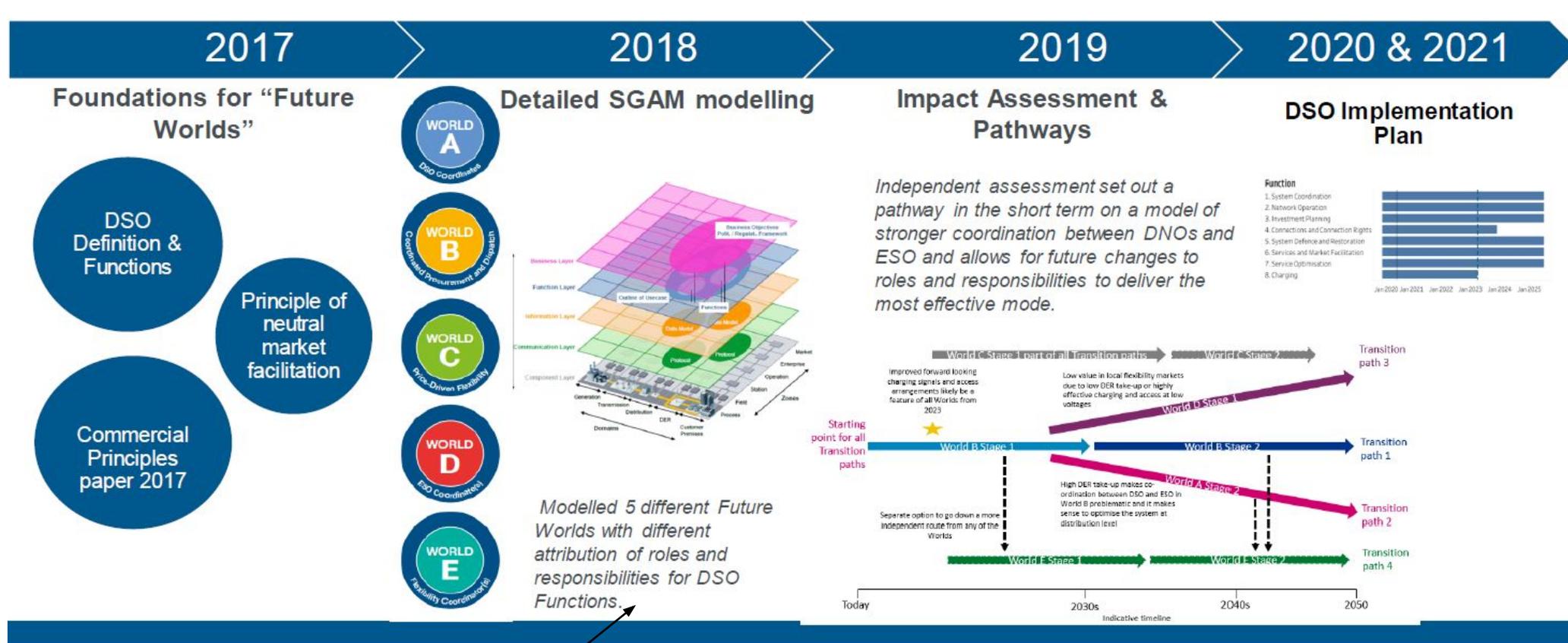


- + Networks are unbundled
 - + Distribution companies totally separated from retail companies
 - + Metering a retail responsibility
- + Gas and Electricity Networks are governed by the ‘RIIO’ model
 - + Multi Year Rate Plan
 - + Totex: Diminishes incentive for utilities to invest in CAPEX
 - + Performance Incentives
 - + Innovation Fund

R = I + I + O			
Revenue	Incentives	Innovation	Outputs
	Deliver improvements in areas that customers value	Reduce risk while improving technology that can deliver benefits	Create value: Safety <ul style="list-style-type: none"> • Environment • Reliability • Availability • Satisfaction

Totex model rewards efficiencies delivering customer benefits – it’s not all about spending \$ on infrastructure

Process to Establish, Evaluate & Choose DSO Model

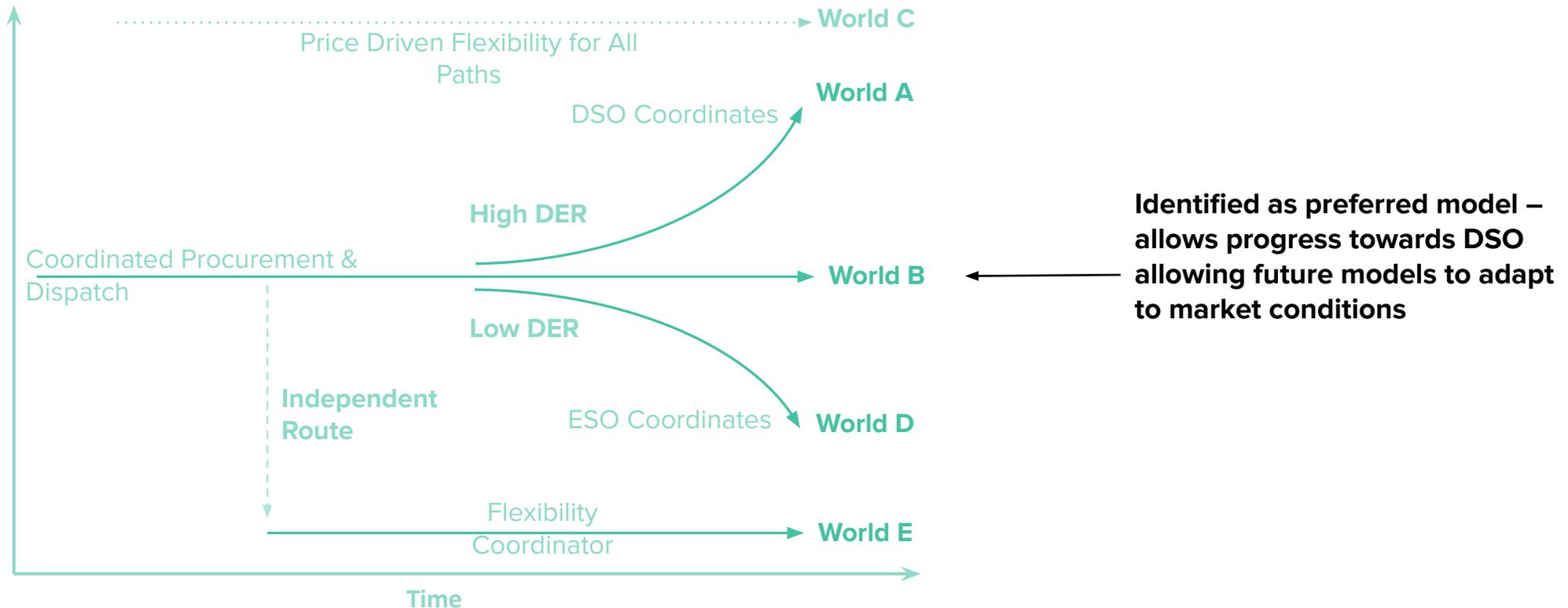


Identified common “Least Regrets” initiatives to progress early

“World B” (Coordinated) selected as preferred pathway in 2019, allowing transition to implementation

ENA Future worlds approach was used to understand ESO & DSO coordination framework

The UK considered five potential Future Worlds with detailed economic analysis to choose the optimum model



It's not just all about DSO...

Longer term focus.

Taking ownership of the overarching DSO Implementation Plan.



Each workstream had multiple sub-tasks called products that were expected to deliver results by year end

Progressing short to medium term developments for DSO



Overseeing stakeholder engagement and comms across the project.

6 Workstreams established to deliver enhancements and facilitate flexibility markets for DER

Data transparency & standardisation key to encouraging DER participation; T-D Coordination key

Key Takeaways

1. Be clear on your drivers, objectives and desired outcomes
2. Future DSO state vision was important to set direction, but you don't need to wait for it
3. Identify quick wins early to build momentum for change
4. Mobilizing a project took time, but set a very clear framework for successful delivery – setting a clear scope and mechanism to deliver it
5. Central project resources were key to driving delivery
6. Adaptability is key – market dynamics, opportunities and technologies change and projects need to ensure they are adaptable to make the most of opportunities
 1. We started out with T-D coordination, then DSO delivery, then facilitating flexibility markets
7. Invest in stakeholder engagement to make the most of opportunities for everyone or the risk is you are left with an academic/technical exercise no-one buys into.
8. Be open and transparent

What we might have done differently?

1. Regulation to drive change, rather than industry consensus

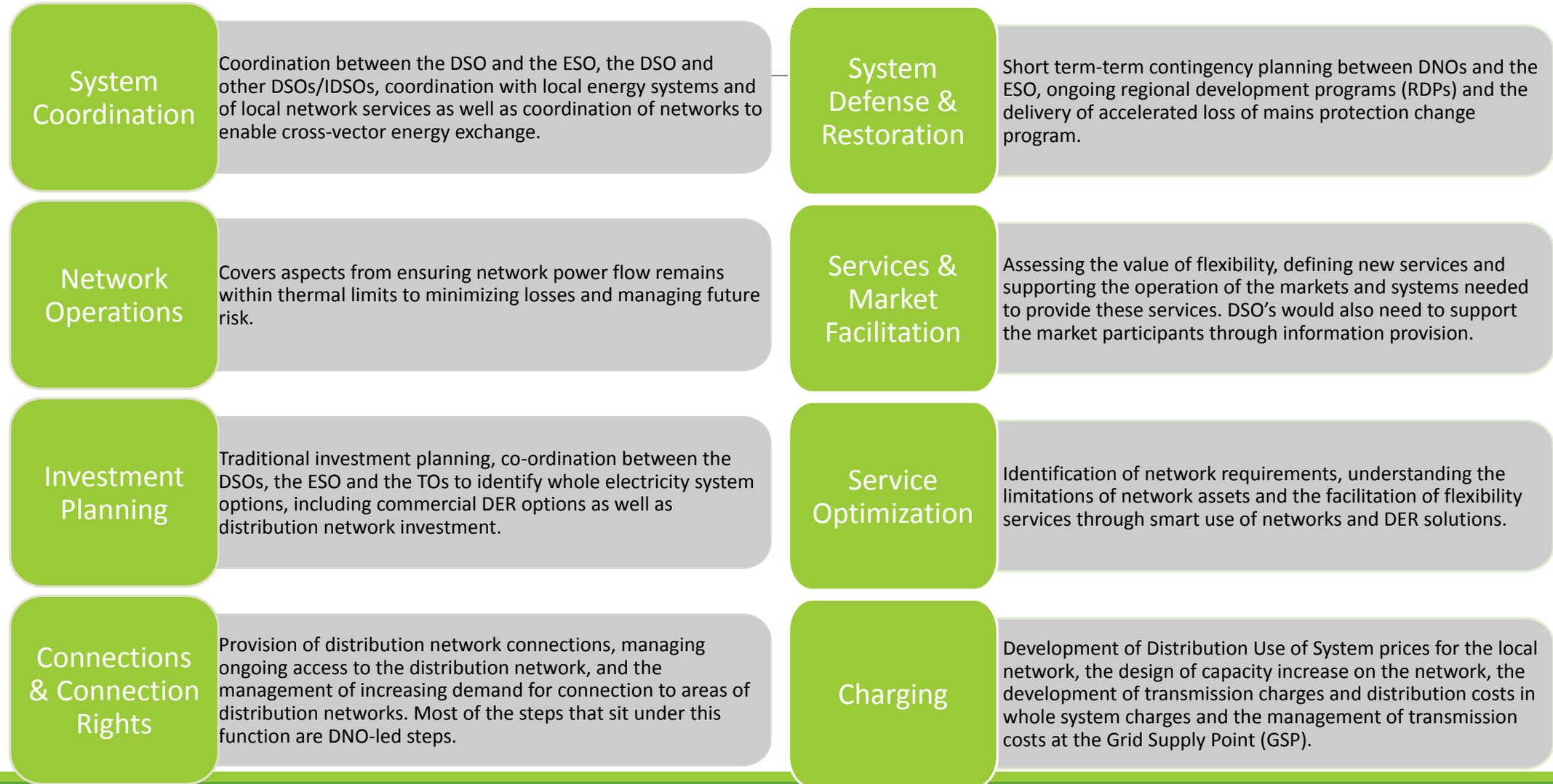
- Regulator/Government set expectations of change for industry, but it was down to industry to deliver
- Made it impossible for the project to enforce change, but delivery through consensus which takes time & effort
- Regulatory incentives in Totex help to realise benefits for network companies

2. Set project phases longer than a year and commit to long term project

1. We reviewed and reset the project annually and that always cost us months in scope setting and mobilisation
2. Need to retain adaptability, but set out, say, 2 years and ensure it is part of longer term project

Appendix with Further Information

UK Established 8 Key DSO Functions



UK established six workstreams to enable open networks

Workstream 1A – Flexibility Services	Workstream 1A – Flexibility Services will continue work to define and develop transparency and standardized approaches across DNOs in their procurement of flexibility services, as well as delivering consistency with the ESO. We will continue to design changes to enable and encourage new markets and platforms for flexibility (e.g. peer-to-peer trading).
Workstream 1B – Whole Electricity System Planning & T-D Data Exchange	Workstream 1B – Whole Electricity System Planning & T-D Data Exchange will monitor industry developments to maintain processes on investment planning, FES and data exchange that were delivered in 2020. In addition, this workstream will support new areas of work on visibility of DER on the networks and will also support new license requirements to make planning and operational data available to non-network stakeholders.
Workstream 2 – Customer Information Provision & Connections	Workstream 2 – Customer Information Provision & Connections will roll out queue management and interactivity processes developed in 2020 and will continue to support and ensure the implementation of the Embedded Capacity Register and future enhancements. In addition this work stream will undertake a review of connection agreements with a focus on curtailment rights and obligations and will also kick off work to review the user commitment methodology to ensure that it does not disadvantage smaller connectees.
Workstream 3 – DSO Transition	Workstream 3 – DSO Transition will monitor and coordinate DSO developments across ON and the industry. WS3 will provide transparency on DSO implementation activities through the DSO Implementation Plan and particularly at an individual DNO level from Q3 2021. Workstream 3 will continue to drive and inform DSO related actions and outcomes across other areas of Open Networks and industry and will ensure progress to mitigate risks of Unintended Consequences and Conflicts of Interest.
Workstream 4 – Whole Energy System	Workstream 4 – Whole Energy System will take forward recommendations from 2020 to optimize existing investment planning processes and data gathering processes. WS4 will take forward further developments on the Whole System CBA model. Additionally, WS4 will undertake a scoping activity to explore how Electricity and Gas networks can support local area energy planning.
Workstream 5 – Comms & Stakeholder Engagement	Workstream 5 – Communications and Stakeholder Engagement will continue to promote stakeholder engagement and communications for the Open Networks Project.