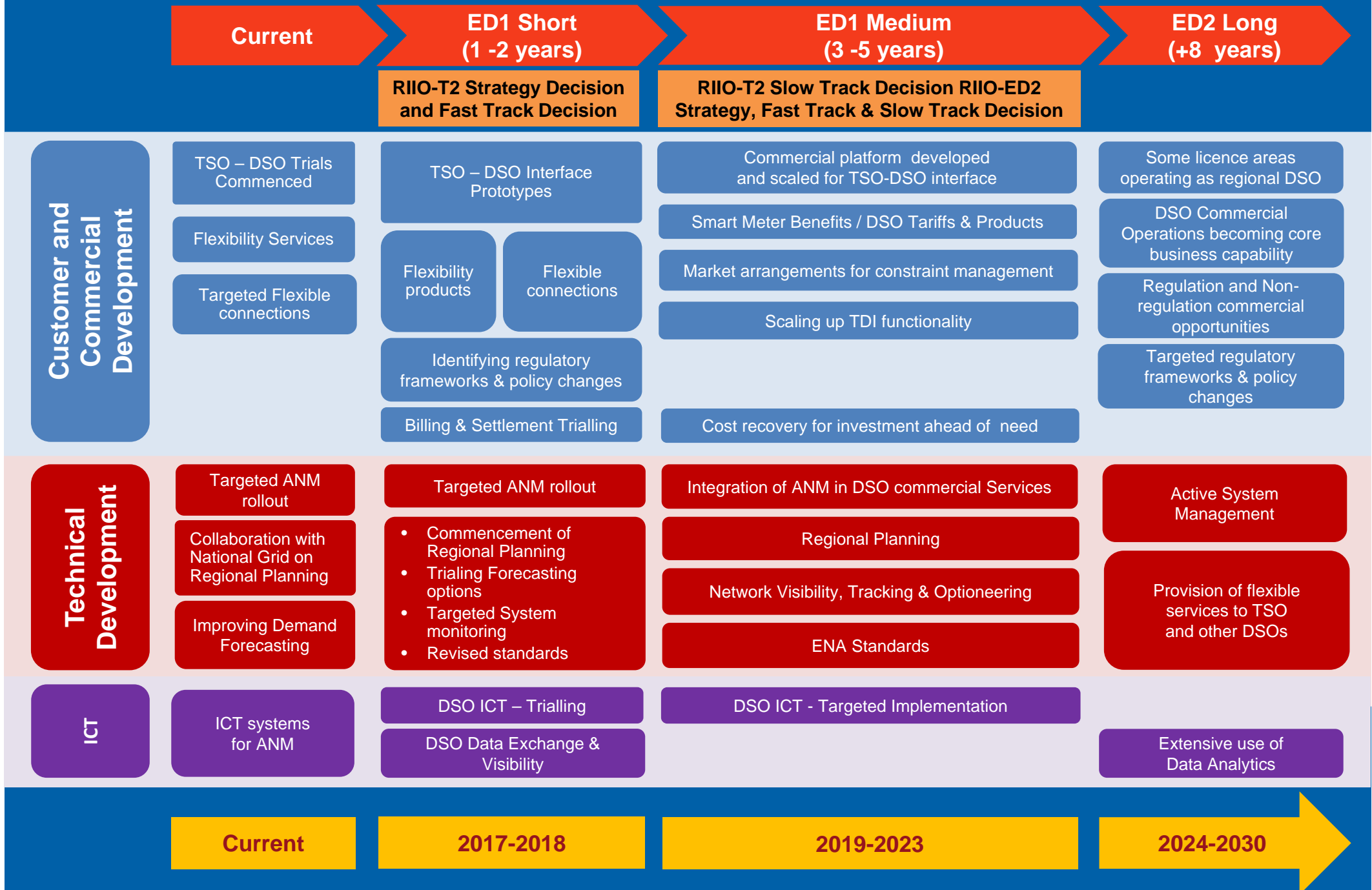


Open Networks Project – DSO Transition: Roadmap to 2030

Purpose

Provide a starting point for the development of the DSO that will help guide us along our journey. It will evolve over time as the knowledge of networks increases and the industry develops. This roadmap provides a range of potential paths but is not intended to be an exhaustive, closed at this stage.

DSO Roadmap to 2030 (Tier 1)



Current

Customer and Commercial Development	TSO – DSO Trials Commenced	Flexibility Services	Targeted Flexible Connections
	Trials are currently underway to test elements of TSO/DSO Functionality	Pilot tenders underway to trial flexibility services such as DSR, DG and storage to overcome locational network constraints	All DNOs offering flexible connections to mitigate constraint as needed - Export Limitation, Timed Connections, ANM etc.
	Targeted ANM Rollout	Collaboration with SO	Improving Demand Forecasting
Technical Development	ANM Functionality to mitigate constraints as needed. Enhanced LV network monitoring and design approaches	Trials currently underway in some DNOs on Regional Planning in collaboration with National Grid.	DNOs working on forecasting models to more accurately predict LCT uptake and load growth at GSP, Primary and Secondary Substations
	Targeted ANM Rollout		
Information and communication technology	Flexible connections driving requirements for information and Communication Technology, for example, International Electrotechnical Committee Common Information Model (IEC CIM) , Open Automated Demand Response (OpenADR), etc.		

ED1 Short (1-2yrs)

Customer and Commercial Development

TSO – DSO Interface Prototypes

Prototypes based on trials of TSO/DSO functionality implemented at the DNOs

- The sharing of service provider customer and commercial information from TSO to DSO
- Use of existing interfaces to GBSO
- Testing of more complex local energy markets and TDI data sharing arrangements

Flexibility Products

Development of constraint management products for balancing services

- Network needs visible to support market based solutions
- Resolving locational network issues such as voltage and developing constraint management services such as demand turn up/down and generation turn up/down
- Develop routes for service procurement (incl. coordination with TSO)

Flexible Connections

Growing penetration of established flexible connections

- For example: Timed Connections, Export Limitation, Inter-Trip, Single-Party ANM, Third-Party ANM, ANM Zone

Identifying regulatory frameworks & policy changes

Trials are currently underway to test elements of TSO/DSO Functionality

Billing & Settlement Training

Trials underway to test elements of TSO/DSO pricing

- Trials of solutions to undertake billing and settlements
- Metering systems and standards for DER DSR developed.
- Approved methodologies for calculating load change deltas

ED1 Short (1-2yrs)

Technical Development

Commencement of Regional Planning

Needs driven practical trials in selected regions driven by pace of DER deployment

- Co-ordination of planning across whole system in specific regions where there are issues on T or D network
- Wider rollout of regional planning work in constrained areas

Trialling Forecasting Options

Rolling out existing work already trialled by DNOs on forecasts

- Co-ordination of planning across whole system in specific regions where there are issues on T or D network
- Wider rollout of regional planning work in constrained areas

Targeted System Monitoring

Needs driven practical trials in selected regions driven by DER deployment

- Multiple DNO R&D projects looking at monitoring of fault level, current and voltage constraints etc.
- Monitoring targeted areas of the whole system where issues are arising to identify how issue can be resolved

Revised Standards

Establishing threshold requirements and update standards as required

- Review of policy and frameworks to identify change requirements, and raise relevant documentation

ED1 Short (1-2yrs)

Information and communication
technology

DSO ICT - Trialling

Establishing threshold requirements for DSO ICT through trials:

- Trial of ICT platform between T and D for the technical developments above.
- Trialling in conjunction with innovation projects (e.g. Forecasting systems, local energy markets, GBSO/DSO interfaces, etc.)

DSO Data Exchange & Visibility

Establishing threshold requirements for data exchange and visibility through trials:

- Development of process for market participants to exchange customer/technical data to enable the smooth operation of the whole system

ED1 Medium (3-5yrs)

Customer and Commercial Development

Commercial platform developed and scaled for TSO-DSO interface

Regional planning rolled out with clearly defined commercial framework

- Identification of key overlapping areas of SO, TO and DNO/DSO price controls and consistent approach applied.

Smart Meter Benefits/DSO Tariffs & Products

Customer pricing and tariffs driving DSO behaviours through DER opportunities

- Utilising SMETS 2 data to inform DSO pricing strategies

Market arrangements for constraint management

Visibility of dispatchable DER opportunities and defined/consistent tender process

- The process for managing constraints across the whole system
- Develop an enduring constraints market model . Consideration to regulatory treatment in the case of constraint payments. To be based on system value pricing principles. Provides a price trigger for construction of conventional capacity
- Develop and enhance flexible connection arrangements to ensure they remain efficient

Scaling up TDI functionality

Increasing the number of geographical areas using the TDI functionality

- Investment planning horizon, operational planning (2 week to 1 month), day ahead and real time management teams in DSO and GBSO have agreed processes to coordinate the system.

Targeted regulatory frameworks & policy changes

Progressing those regulatory changes and policy changes required to facilitate TSO/DSO

- Change requirements identified for license, industry codes and policies will go through relevant change governance

Cost recovery for investment ahead of need

Defined process for network investment identified as part of the planning process

- Identification of how costs can be recovered for the investment and the benefits to connecting and existing customers

ED1 Medium (3-5yrs)

Technical Development

Integration of ANM in DSO commercial Services

Utilisation of ANM for despatch of DER as well as constraint management

- Implementation of ANM as part of the DSO commercial services

Regional Planning

Standardised approach to regional planning based on previous trials

- Regional plans in place for all current and forecast constrained areas. This planning is being undertaken across both the Transmission-Distribution interface and between Distribution regions

Network Visibility, Tracking & Optioneering

Increased network visibility

- Threshold standards of LCT monitoring and control providing opportunities for DER
- Technical requirements to enable the visibility of network and their operation.

ENA Standards

Approach formalised through ENA

- Review and update of ENA standards to include DSO role and activities

ED1 Medium (3-5yrs)

Information and communication
technology

DSO ICT – Targeted Implementation

Agreed threshold standards rolled out based on DER deployment. Increasing use of data analytics to define network management requirements:

- Installation of DSO functionality covering initial capacity constrained areas including full technical and commercial system monitoring and dispatch

ED2 Long (+8yrs)

Customer and Commercial Development

Some licence areas operating as regional DSO

DSO's operating as a separate market participant from the licensed DNO regionally rather than in a GSP group area.

- Based on level of DER deployment. In this period, the regional CMZ's will likely transition to functional DSO areas
- Regional energy forecasting, procurement of full suite of balancing services within a region, Full coordination with GBSO system needs

DSO Commercial Operations becoming core business capability

Standard operating model for DSO in place:

- A DSO could access services on behalf of others, or provide services to others, where doing so is necessary to maximise whole system efficiency, and protects competition

Regulation and Non-regulation commercial opportunities

Defined commercial framework with visible opportunities for DER and consistent tender process

- Evaluation and exploitation of non-regulated (or regulated) opportunities. E.g.. Smart city management, data analytics, LCT infrastructure

Technical Development

Active System Management

DSO manages technical balancing services and despatch as well as constraint management

- TSO and DSO have access to data to manage the whole system efficiently

Provision of flexible products to TSO and other DSOs

Enable the release of flexible services for TSO and DSO to resolve network issues

- Enterprise scale interfaces and messaging hubs in place

Information and communication technology

Extensive use of Data Analytics

Extensive use of data analytics to define network management requirements. Increasing use of Artificial Intelligence (AI) to assist in operating and maintaining the network in a smart, safe and efficient manner

- Data analytics used to identify locational and whole system issues.