

Future Worlds Impact Assessment

Stakeholder event

Energy Networks Association – Open Networks Project

1 November 2018



Purpose of Today

To gather your views to help inform the Impact Assessment

- ▲ Your chance to share your thoughts on the impact of each of the Worlds on your business

- ▲ The outputs will feed directly into our impact assessment

- ▲ We want to focus on the following areas
 - Ability to maximise participation in flexibility markets
 - Ease of implementation
 - Ease of operation
 - Risks and issues

- ▲ To facilitate this we will be running break-out sessions to discuss each World

- ▲ We will be capturing feedback throughout the session

Plan for today's session

To recap on the IA, the Future Worlds and seek your input

1. Introduction (5mins)
2. Background to the Impact Assessment and the Future Worlds (20mins)
3. Breakout session 1 (40mins)

Lunch

4. Breakout session 2 (50mins)
5. Wrap up (10mins)

1. Introduction to the Impact Assessment

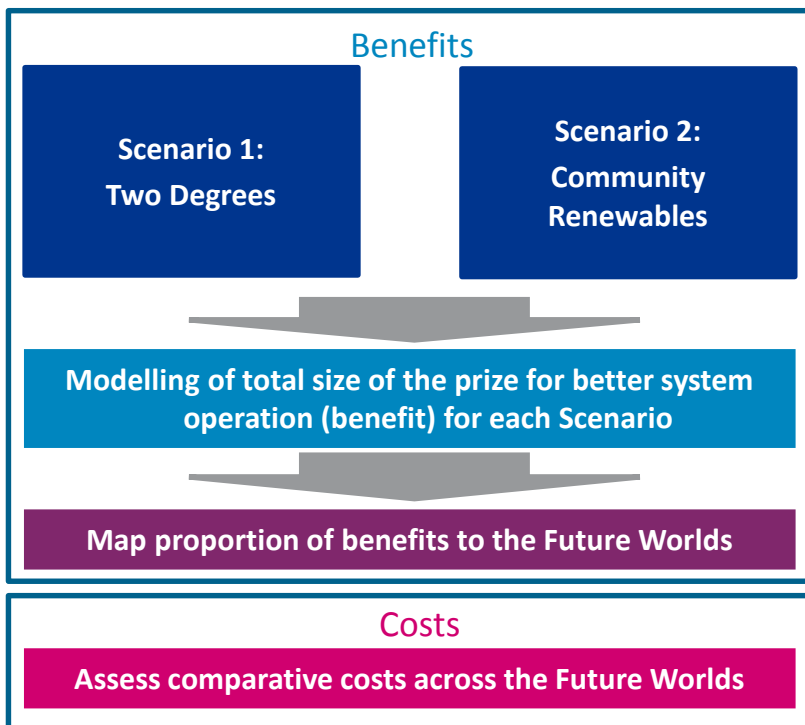
To assess the Future Worlds and understand their strengths and weaknesses

- ▲ We have been asked to undertake an **independent impact assessment of the Future Worlds defined by the ENA**
- ▲ This will combine **quantitative assessment of costs and benefits with a qualitative assessment** across wide ranging criteria, informed by stakeholder feedback
- ▲ We are **not looking to pick a particular World** but understand different strengths and weaknesses across a wide-ranging assessment
- ▲ The outputs of the work need to help with the following:
 - To provide an evidence base to inform the policy debate and support BEIS and Ofgem in its decisions
 - To identify current gaps in our understanding of the Future Worlds which may require further definition, trialling or investigation
 - To develop credible pathways, which may involve different combinations of Worlds and transitional stages
- ▲ Need to complete the analysis and draft report by **end of December**
- ▲ Where possible we are **incorporating responses to the Future World consultation** into the assessment

2. Recap on methodology

Recap on methodology approach

Quantitative assessment



Qualitative assessment

- Qualitative assessment of**
- Customer experience
 - Environmental sustainability
 - Whole system optimisation
 - Market viability
 - Technical performance
 - Regulatory funding
 - Implementation risks
 - Industry structure and organisation

Combined Impact Assessment

IA Cases	World A	World B	World C	World D	World E
Strategic case					
Criteria 1	Orange	Orange	Green	Yellow	Orange
Criteria [n]	Green	Orange	Red	Green	Orange
Quantitative					
Economic case					
Benefit 1	+ £m	+ £m	+ £m	+ £m	+ £m
Benefit [n]	+ £m	+ £m	+ £m	+ £m	+ £m
Cost 1	-£m	-£m	-£m	-£m	-£m
Cost [n]	-£m	-£m	-£m	-£m	-£m
Quantitative total (NPV)	+/-£m	+/-£m	+/-£m	+/-£m	+/-£m
Criteria 1	Orange	Orange	Green	Red	Red
Commercial case					
Criteria 1	Green	Yellow	Red	Green	Green
Criteria [n]	Orange	Yellow	Green	Orange	Red
Financial case					
Criteria 1	Green	Red	Red	Green	Green
Criteria [n]	Orange	Yellow	Green	Orange	Orange
Management case					
Criteria 1	Orange	Orange	Red	Green	Green
Criteria [n]	Orange	Yellow	Green	Orange	Red

- ▲ This will deliver a multi-criteria, relative assessment of the Future Worlds, under different scenarios out to the end of RII0-2 (2030), 2040 and 2050
- ▲ It will provide insights into where costs and benefits fall across the different models
- ▲ We will capture the results and insights gained in an accessible report, geared to a varied audience

Want stakeholder input to feed into the assessment

2. Considering consultation responses

Consultation responses

The Voice of the Networks

Aim 1 – Future Worlds feedback



1. Broad agreement for principle of neutral market facilitation
2. Mixed responses as to whether the worlds provided a good spread of options
3. World C is more a layer than a world in its own right
4. SGAM modelling work was thorough and useful for engagement and defining the worlds
5. Wide observation of SGAM's limitations including human behavior, cross-vector
6. Need to consider other actor data links in SGAM and complete lower level modelling
7. Potential for new actors including 'market facilitator', 'tech /platform provider', 'researcher', 'Flexibility Marketplace', 'Community Energy', 'HHDA management and associated providers'



How we have considered points in our assessment

Aim 1 feedback

- ▲ We are looking to use World C as baseline for all other Worlds
- ▲ Looking to define developmental stages for all Worlds to understand how they evolve which will drive a wider range of options
- ▲ The cost assessment is directly linked to the data within the SGAMs and previous ENA work
- ▲ Qualitative assessment will pick areas outside the SGAMs

The Voice of the Networks

Aim 2 – Inform the impact assessment



1. Wide support for the Impact Assessment approach with some comments on short timescales
2. Proposals to consider hybrid worlds and transition phases for each world
3. Numerous suggestions to clarify/ amend/ extend the assessment criteria in the four cases
4. More emphasis on range of customer types in the assessments
5. Wide support for joining data provision sub-group



Aim 2 feedback

- ▲ Hybrid worlds might blur the differences in the assessment and hence we propose to evaluate them in their pure form initially, before thinking how they might combine
- ▲ We are expanding the assessment criteria to take account of respondents' suggestions
- ▲ We are using today's session to get wider input – rather than detailed data groups

2. Recap on the Future Worlds

ENA sets out five Future Worlds in its consultation

- ▲ The Worlds are defined at a conceptual level and the potential data exchanges detailed within the SGAMs
- ▲ Still scope for interpretation on the Worlds – particularly Worlds A and E
- ▲ We are seeking to read into the Worlds to understand how they will perform over time – requires some expansion on the existing definitions

The 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.

Key assumptions being used for Impact Assessment

- ▲ We are looking at two stages of development for each World – the timing of the stages can be different in each World
- ▲ In World A, in the long term DSO will be responsible for managing the energy flows across the GSP, and aggregating flexibility on the distribution system to participate in balancing services/balancing mechanism.
- ▲ World C is based on price signals alone, which as a stand-alone world is hypothetical. Therefore it can be combined with all other Worlds (not just combined with World B).
- ▲ Some Worlds cannot reach full coverage of DER in Stage 1 – e.g. In World D we assume that the ESO is not dispatching flexibility on LV networks in Stage 1 (aligns with stakeholder feedback).
- ▲ Defining World E as having multiple FCs (rather than one) – in the long run these are likely to assume many of the SO functions, and may evolve towards the ISO model.

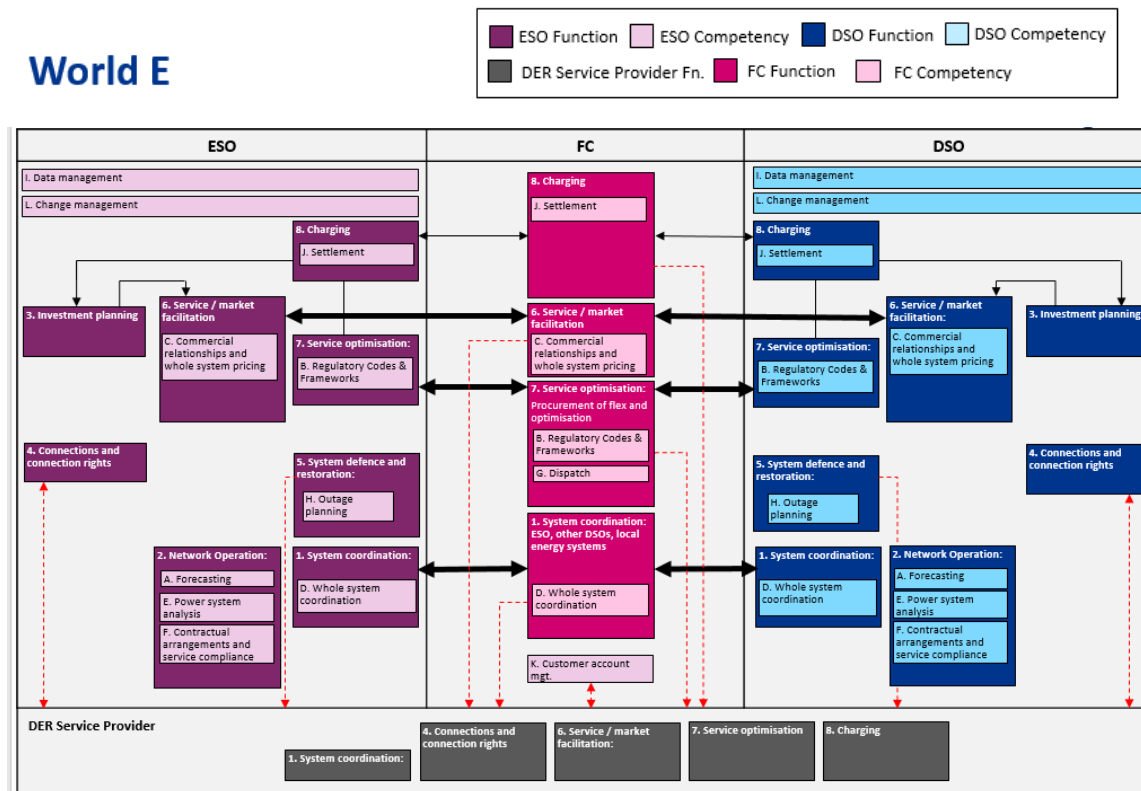
2. DSO Future World operating models

Building on the SGAMs

We wanted to try and summarise the detailed information set out in the SGAMs into a set of visuals diagrams which illustrate key differences:

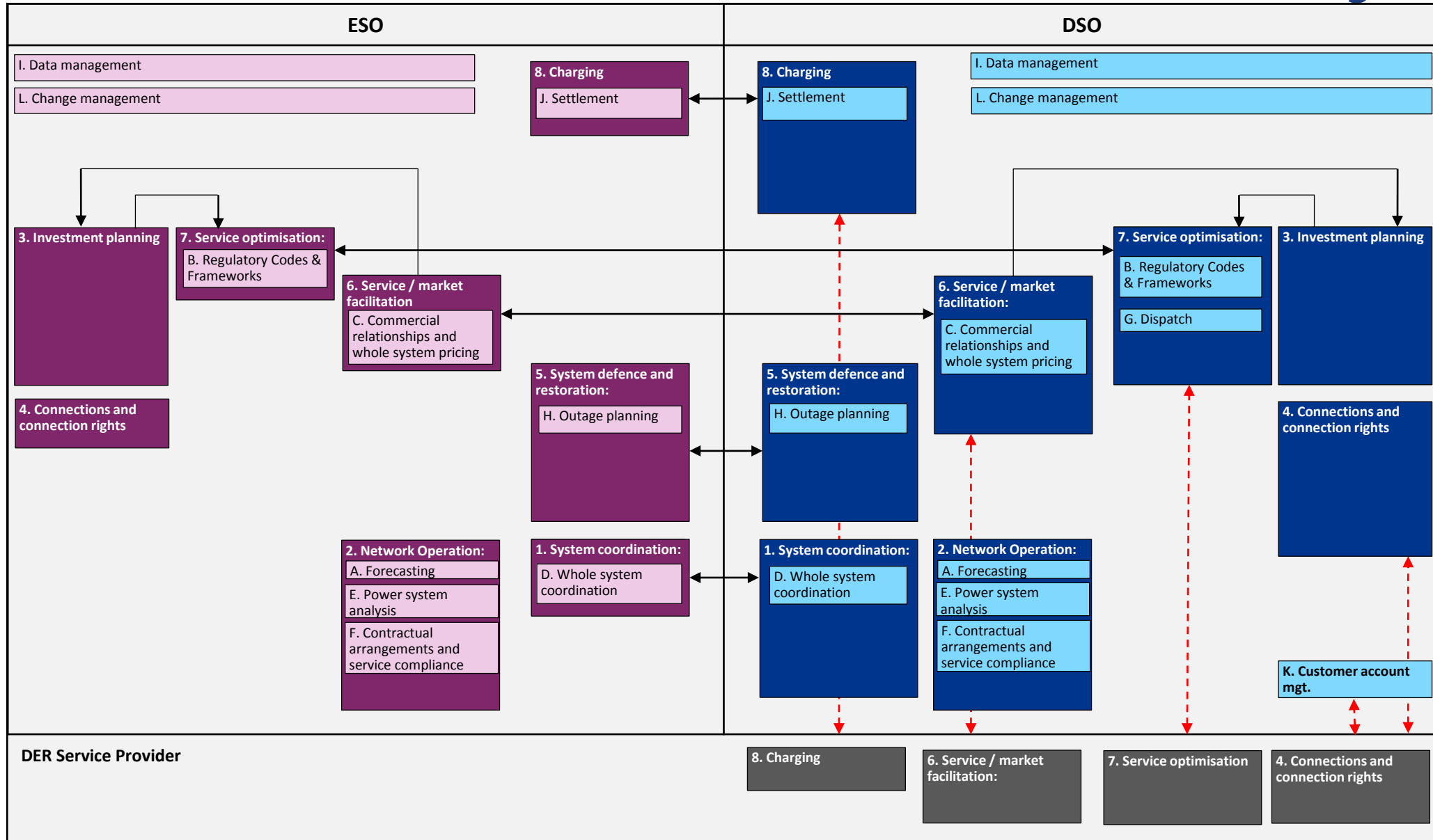
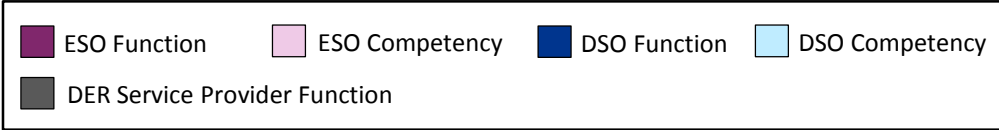
- ▲ Functions are “thick” or “thin” (which represents the scale of cost for technology and business capability)
- ▲ Functions move between actors across the Worlds
- ▲ Functions are duplicated across multiple actors in some Worlds
- ▲ The ownership and size of functions change throughout the different worlds
- ▲ Information exchanges significantly differ between the worlds e.g. volume or frequency (as informed by the communication type e.g. SCADA or contracts)

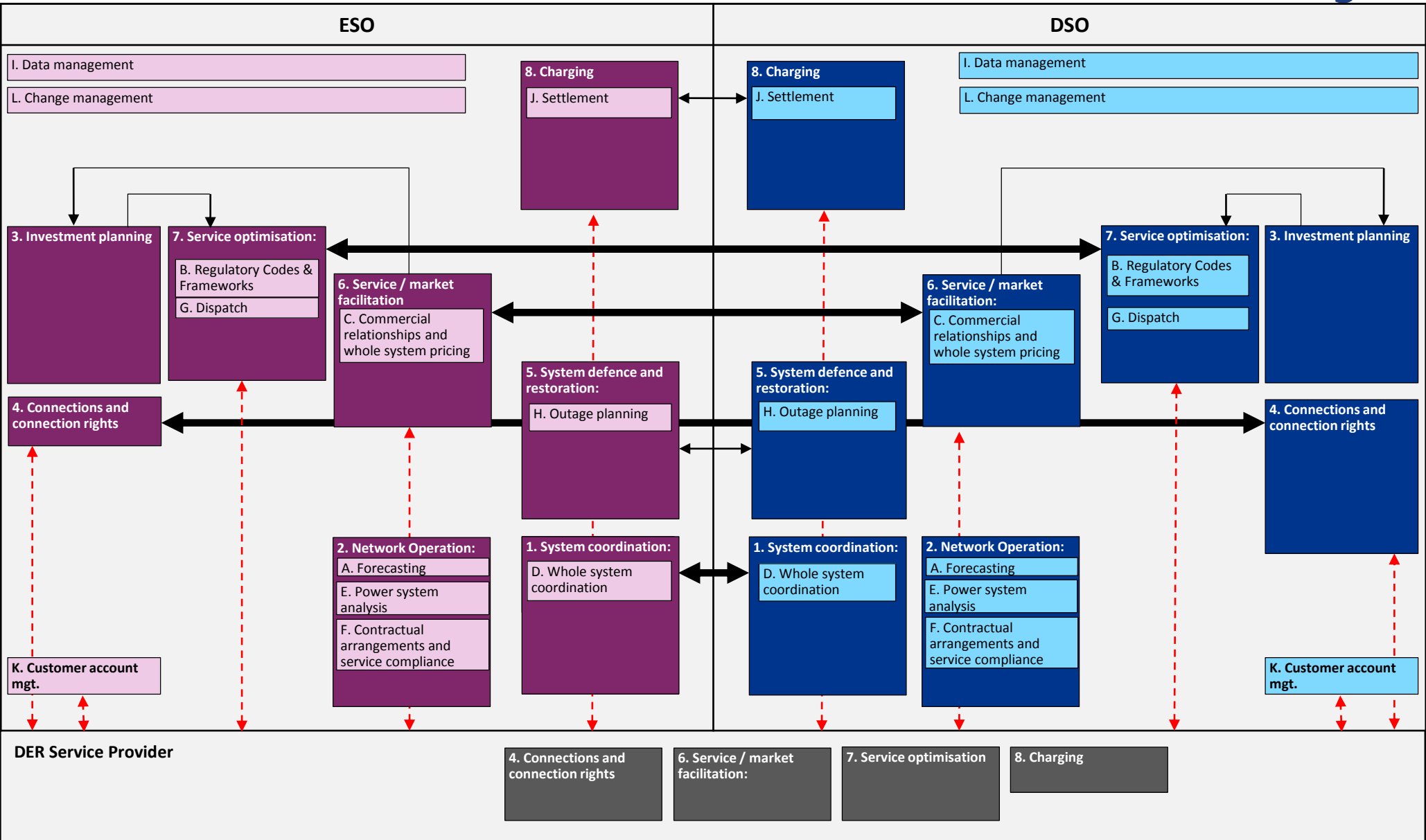
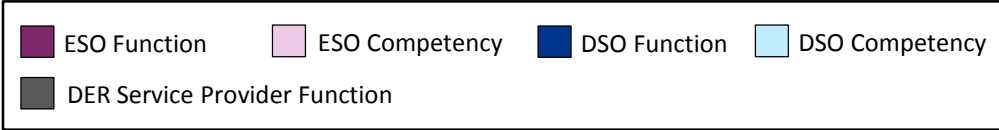
World E

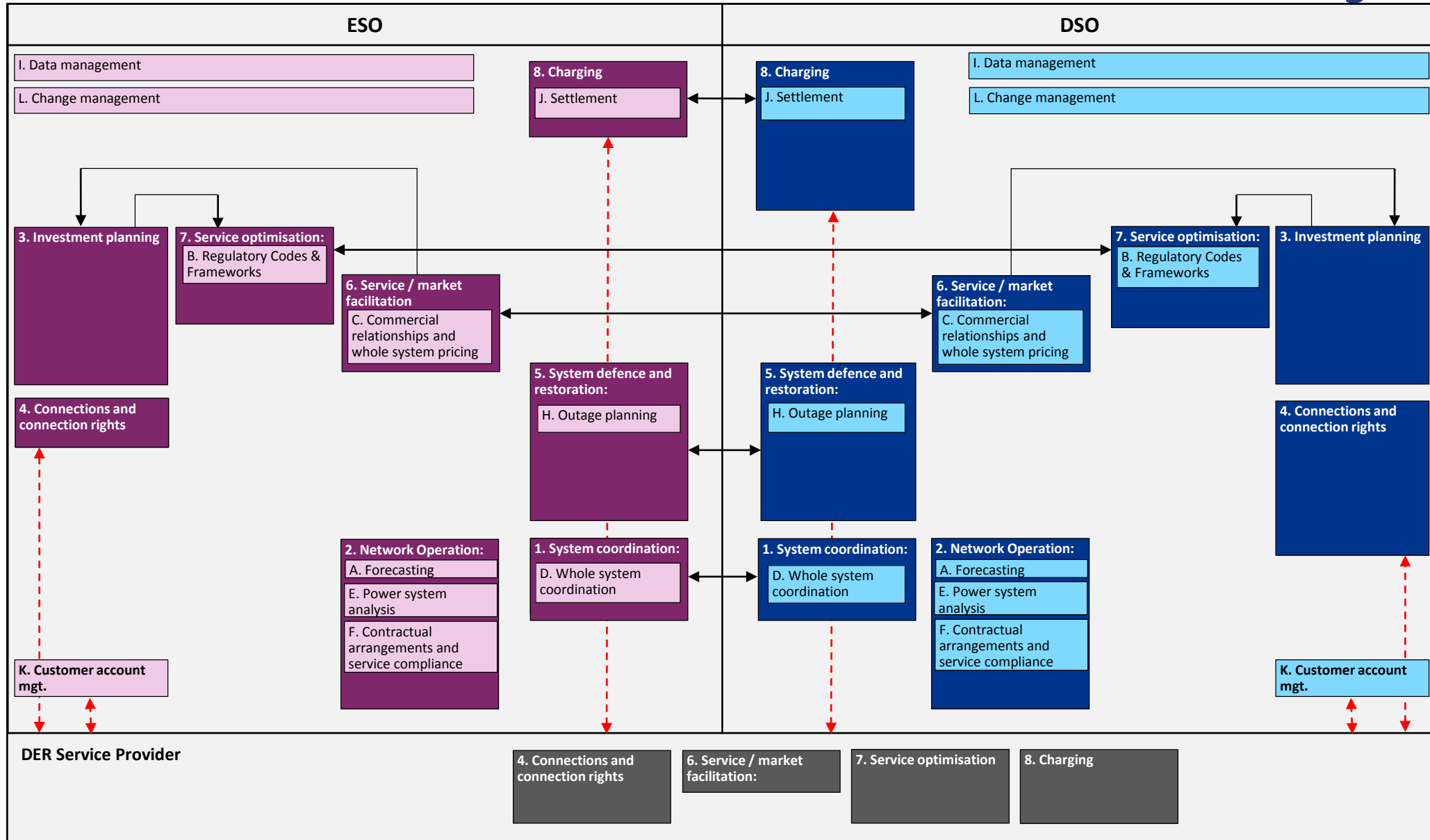


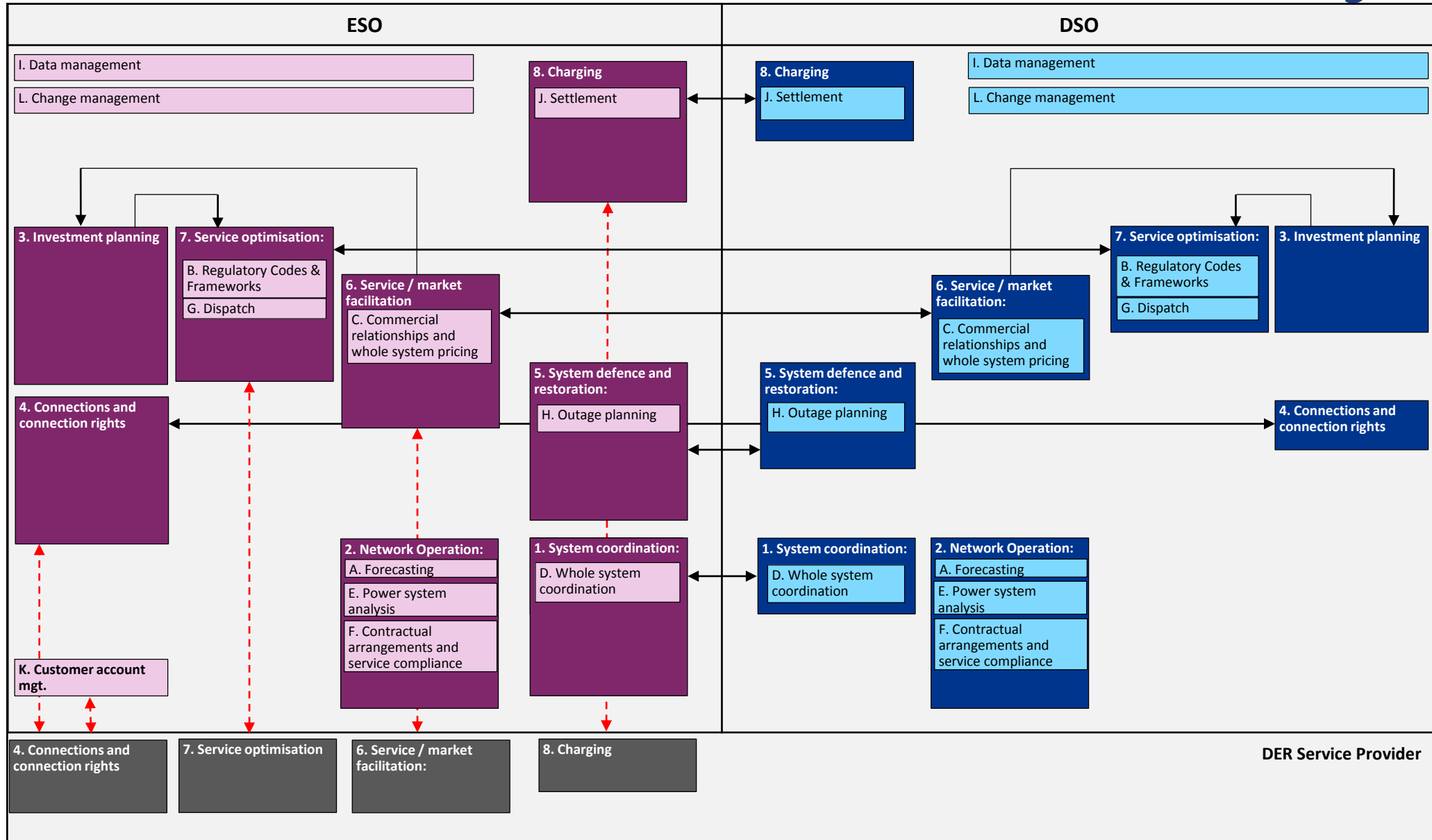
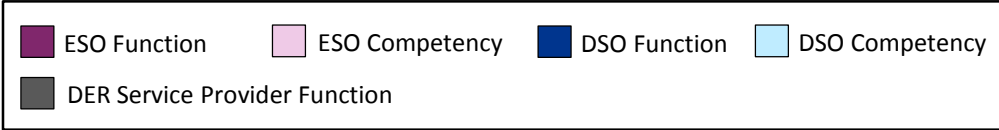
These diagrams are informed by the information in the SGAMs in terms of high level functions and information exchanges, they are not designed to capture the full suite of information and are more for visual comparison.

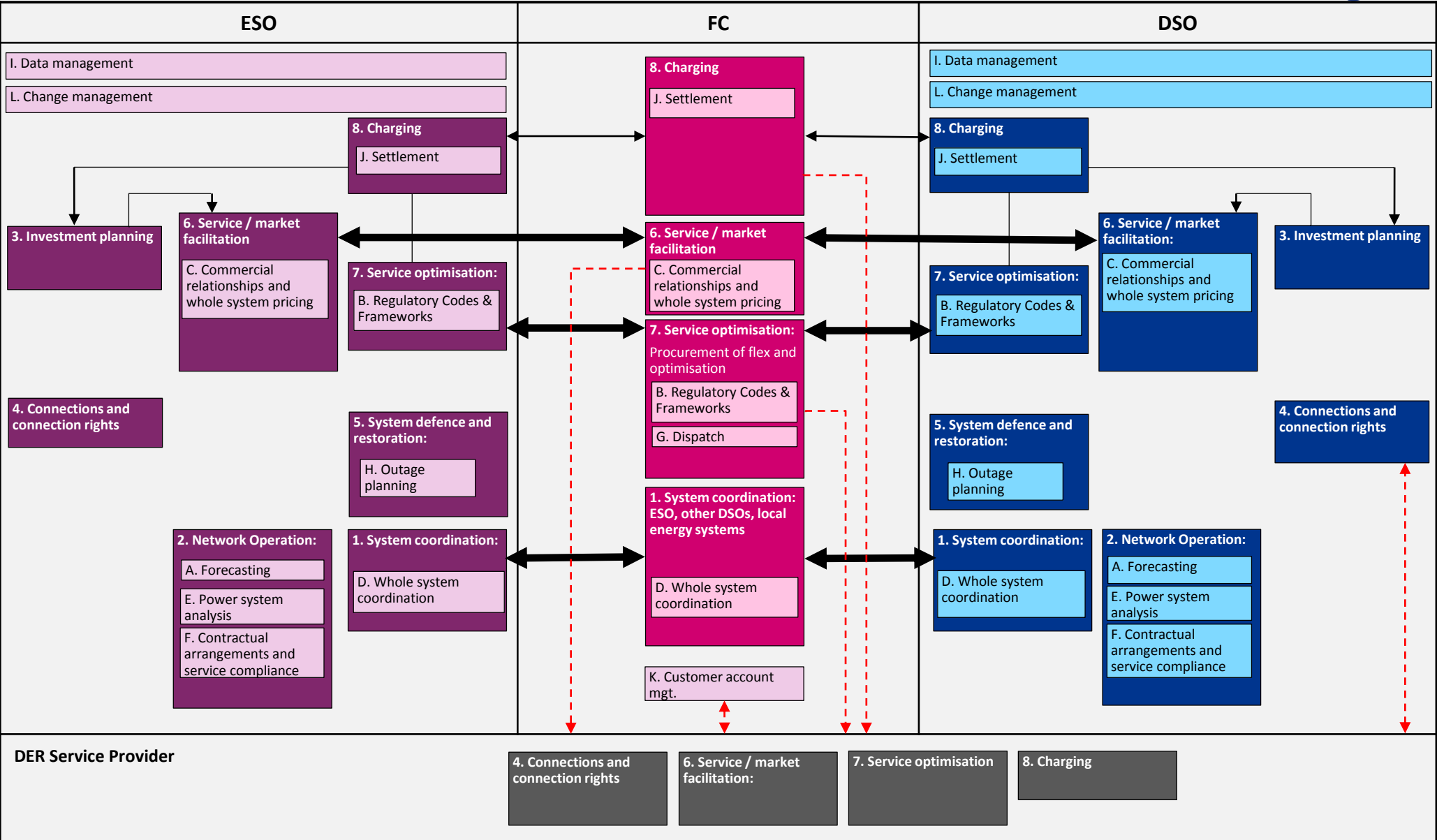
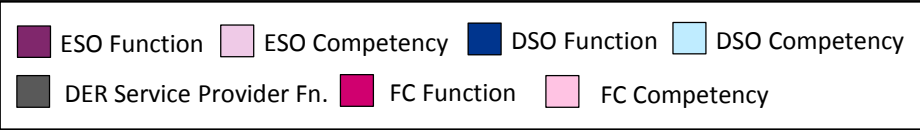
The functions have been informed by the WS3 Product 2 document and the defined competencies have been nested within functions where appropriate.











DER Service Provider



