ESO Technology Advisory Council

TAC-3

4 June 2021

Pre-read pack

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TAC-3 agenda – 4 June 2021

Item	Duration	Time	Topic	Presenter / lead	Notes
1	10 mins	09:00 – 09:10	Welcome and introductions	Vernon Everitt – Chair	• Opportunity for new members to introduce themselves • Conflict of interest review
2	5 mins	09:10 – 09:15	Minutes of last meeting and matters arising	Vernon Everitt – Chair	
3	15 mins	09:15 – 09:30	Feedback from the last meeting	David Bowman	
4	90 mins	09:30 – 11:00	Digital market enablement Single market platform Auction capability	Colm Murphy Joseph Donohoe Dave Preston Richard Hanson	• Introduction to areas • Interactive problem solving session
		11:00 – 11:15	BREAK		
5	45 mins	11:15 – 12:00	Balancing Programme	Sree Menon	• Update on progress since last meeting • Discussion, Q&A and TAC input
6	20 mins	12:00 – 12:20	Ways of working	Vernon Everitt – Chair	• Subgroups proposal
7	5 mins	12:20 – 12:25	Next meeting and calendar	Vernon Everitt – Chair	• Confirm date and agenda for next meeting • Agree calendar
8	5 mins	12:25 – 12:30	AOB	Vernon Everitt - Chair	
		12:30	Close		

Welcome and introductions

Item 1

TAC member introductions

Name: Fred Drewitt

Current role: Chief Technology Officer, Limejump

Minutes of last meeting and matters arising

Item 2

Minutes of last meeting and matters arising

- Minutes of TAC-2 were agreed via circulation and published online
- The feedback from the meeting has also been published

- This section will be used to discuss any matters arising

Feedback from the last meeting

Item 3

Feedback from TAC-2

- In TAC-2 (4 March 2021), we asked the group for the main considerations for our transformational Balancing and Network Control programmes
- By votes, the top issues were:
  - Transmission-Distribution collaboration
  - Technology and operations collaboration
  - Start-up mentality
  - Adaptability
  - Collaborative transformation
  - Leadership
  - Simulation and visualisation technology
  - Relationship between hardware, software, human-machine interface implementation and decision science

How we have used this feedback

- **Technology and Operations Collaboration/ Collaborative Transformation –** The ESO Ways of Working (WoW) initiative has been in the pipeline since February and was launched mid-March. The initiative is designed to implement a new way of working and create TechOps (technology and business operations) teams that are focused on the customer to deliver products that are of value to them. The WoW initiative will accelerate the ESO's journey to adopting a digital and product model.

  In addition, we are embracing the SAFe Agile delivery approach and tools to ensure that the delivery of our products are exactly in line with the customer's expectations through constant feedback loops.

- **Start-up mentality** – We are engaged with the group digital hub to run a few of Hack-a-Future sessions which embodies design thinking. These hack-a-future events will be fast and purpose driven events focused on the future (art of the possible) that will use observe, ideate and review loops to continuously improve on our previous best. We will be running such events across the ESO for all roles in order to ensure that start-up mentality is entrenched.

  - For example, within the Future Balancing Programme and Electricity Market Reform (EMR) workstreams, have worked, and are working, with the end-users to understand their needs and wants, plotting the user journey and prototyping solutions to provide tangible value-add outcomes.

Markets

Item 4

Session objectives and pre-read materials

Session Objectives

- Provide an update on the work we are undertaking
- Test our work in progress on the DEP and SMP and confirm:
  - They resonate
  - Identify opportunities for further refinement
- Receive feedback from the TAC and understand lessons learned from similar projects

Pre reading materials

To support this conversation, we are sharing this information pack with you as pre-read which outlines:

- The context, what we are specifically seeking feedback on and the key questions we would like to ask
- Strategic intent and vision
- Initial insights from user research
- Preliminary scope for the DEP and SMP
- Our draft digital design principles
- Key challenges associated with the change landscape

Overarching Context – The RIIO-2 Ask

As part of the Electricity System Owner's (ESO) mission to enable the transformation to a sustainable energy system and ensure the delivery of a reliable, affordable energy for all consumer, the ESO plans to deliver a Digital Engagement Platform (DEP) and Single Markets Platform (SMP) programmes as part of its RIIO-2 business plans.

What is the DEP?

The DEP will provide a single point of contact for all ESO data and services, including the markets, connections, digitalised Grid Code and data and analytics platform.

What is the SMP?

The SMP will provide a full end-to-end customer journey allowing market participants to access the data and services relating to all ESO markets.

These programmes sit at the heart of ESO's vision for digital capability, enabling a step change in data use and sharing across the industry, providing a common engagement experience for stakeholders.

Programme Context – Strategic definition and enablement

We are running a 16-week Foundational piece of work to ensure we have clarity on strategic direction and have the programmes set up for successful delivery. At the time of the June TAC we will be almost ten weeks in to the programme.

Activities undertaken in first 8 weeks

The first 8 week phase has focused on strategic definition including:

- Defining the strategic intent for digital engagement and Single Market Platform
- Mapping the user ecosystem and needs including user research
- Defining the scope and service blueprint for DEP and SMP and associated use cases
- Ensuring internal alignment

Upcoming activities for next 8 weeks

The second 8 week phase is focused on Enablement including:

- Deep dive into user journeys
- Mapping internal business impacts
- Understanding required technology capabilities
- Creating programme delivery approach, high level plan and roadmap
- Draft product backlog

Main document

A high-level version of the slides will be presented in the TAC meeting. As such, we ask that you familiarise yourself with the content of this main document ahead of the meeting.

ESO has clear strategic direction

ESO strategic goals

- An electricity system than can operate carbon free
- A whole system strategy that supports net zero by 2050
- Competition everywhere
- The ESO is a trusted partner

ESO Customer experience strategy

- We are seen as a long-term partner whose contributions (products, services, insights, processes, etc.), are viewed as value-adding and key to the customer's long-term success

DEP Digitalisation strategy

- Users will have one intuitive and user-friendly interface with the ESO for all of their needs
- Users can search, query, manipulate and export data and insight

DEP and SMP must drive us towards delivery of the ESO's strategic objectives

Customers and stakeholders have told us what we need to focus on

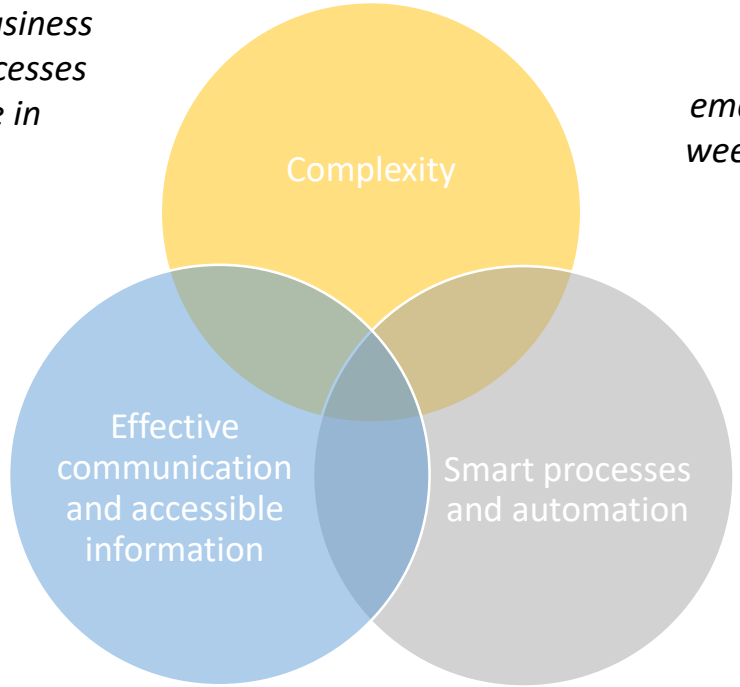
"It's very hard to build a business case and navigate the processes to enter and participate in markets"

"Different passwords, different logins, different emails, different communications, different days of the week… It takes a lot of administration to oversee that."

"One Account Manager is not enough if they merely route our questions to other people. We need direct access to SMEs"

"ESO doesn't really know how to partner effectively with startups. "

"One place to manage all your auctions for services, within that a list of the auctions you won… and live update of settlements (not monthly as today). "



"I don't know how to get an answer or who the right person to talk to is"

"I cant find/make sense of the data/information I need"

"We expect human interaction by exception - we don't expect to have to interact with it, it should be all automatable."

DEP and SMP must address customer and stakeholder needs

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Driving our digital engagement approach

DEP and SMP sit at the heart of ESO's vision for digital capability, enabling a step change in data use and sharing across the industry and providing a common engagement experience for stakeholders. The project has developed the below approach to digital engagement.

What we aim to do

Drive for zero friction

A need to significantly reduce the growing complexity of the energy system through a digital engagement approach across the market, that makes it harmonised, fully transparent and data homogenous.

Delivers speed of adoption and decision making confidence and investment

Agility at pace

Ensure we can stand up or adapt markets and services at pace with ease so customers can find the best fit of market and offer as quickly as possible, and drive liquidity in the market

Ensures ESO is constantly creating maximum liquidity in the market to the benefit of all

How we aim to do it

Design without constraints

Understand the necessary routes to get to Net Zero, design our digital engagement to act on these if/ when this becomes necessary due to slowness of transition.

Delivers speed of impact and flexible design

Deliver within them

Provide the services and experience within our boundaries that maximise the pace to Net Zero and builds confidence, as well as mapping change to our internal speed

Delivers confidence of ESO role and enhanced business performance. Creates a single digital business evolving at pace

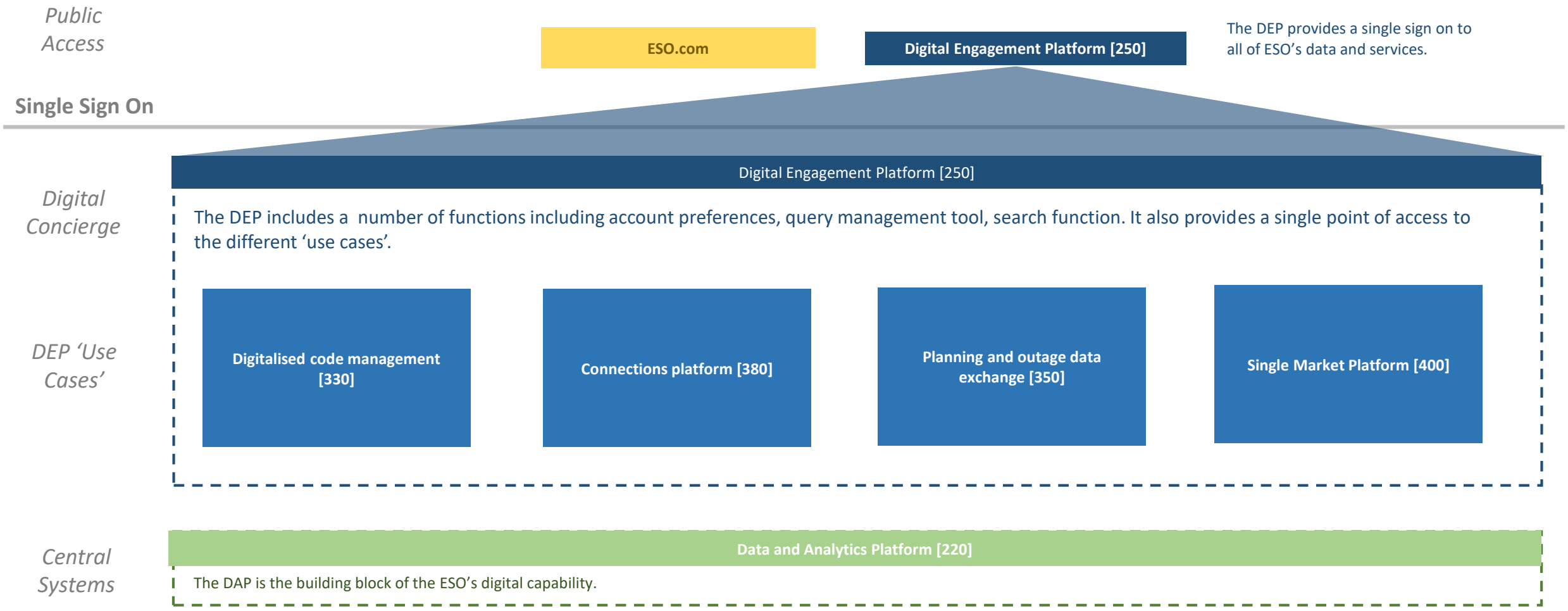
Digital Engagement Platform (DEP) and Single Market Platform (SMP) - Intention

The below provide a high-level view of the intention for DEP and SMP

Digital Engagement Platform (DEP)	Single Market Platform (SMP)
Making it easier to do business with the ESO	*Becoming a better buyer*
DEP will provide a single point of access into ESO systems and external-facing processes. It will make the experience of engaging with the ESO more intuitive and user friendly through providing a consistent and personalised user experience including access to information and data, codes, connections and market participation.	SMP will provide a one-stop shop for participation in ESO led markets. It will facilitate the end-to-end customer journey including becoming a provider, contract management, portfolio management, participation in tenders and auctions, performance monitoring and payment. It will include all ancillary service products plus EMR and CfD. This investment will enable us to enact new markets faster and more efficiently through the ability to integrate with the core systems.
This is where we want to make it fluent, easy and actively engaging to allow actors to build the understanding and requirements to take part in the energy market as well as using DEP to be an accelerator of awareness more broadly and a positive influencer.	*This is where we want new and existing energy providers to end up quicker, with more confidence and less hassle. And once there, they can act with confidence on future market potential, clarity of decisions and ease of use that minimises their need to actively enter each contractual opportunity.*

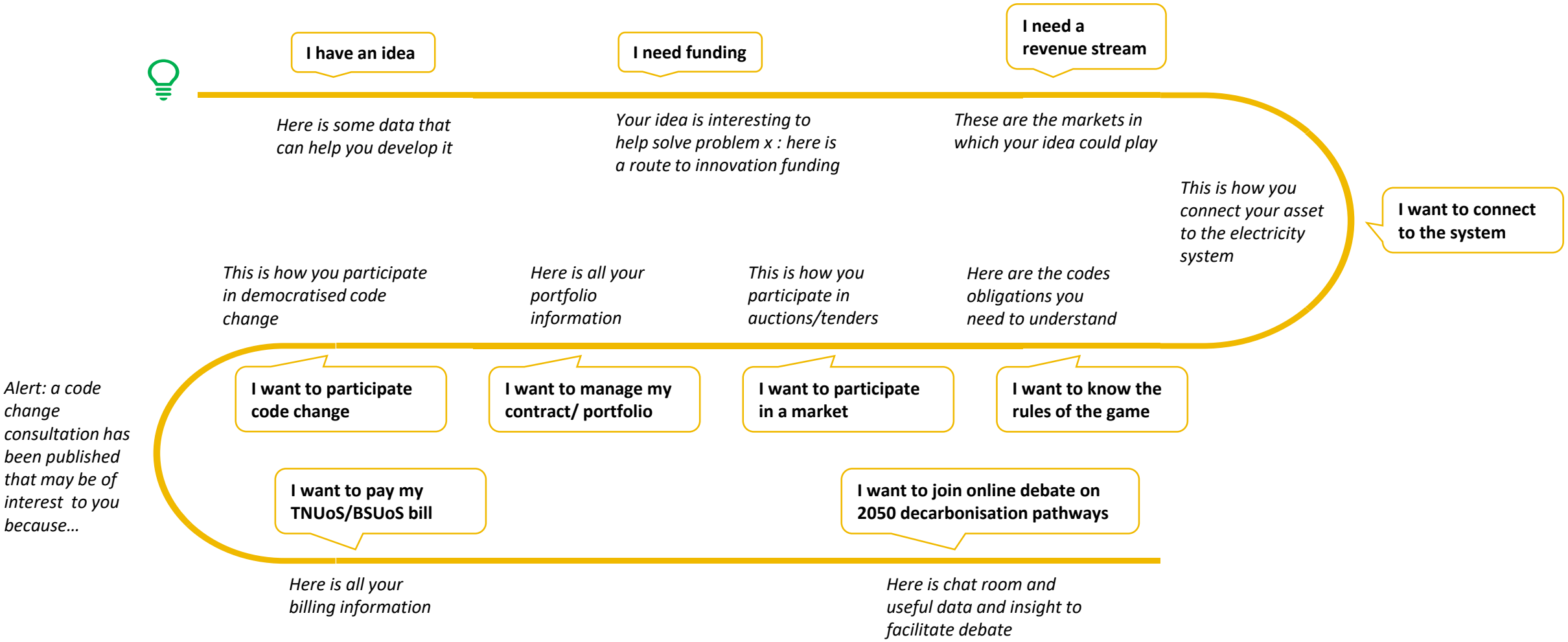
Defining the Scope of Digital Engagement Platform (DEP)

The scope of the DEP has been developed in line with the summary of each 'use case' agreed within the ESO RIIO-2 Business Plan. How these different 'use cases' interact with the scope of the DEP is shown below.



The destination for digital engagement

Stakeholders are guided through all digital interactions with ESO



Defining the Scope of Single Market Platform (SMP)

The Single Market Platform is one of the four RIIO-2 Use Cases that will be integrated into the DEP. SMP also includes a number of IT investments that were also outlined within the RIIO-2 Business Plan.

Single Market Platform

SMP 'Use Cases'

SMP is a framework that will drive consistency in approach cross a number of different ESO markets:

- Ancillary services
- Electricity Market Reform – Capacity Market and Contracts for Difference

Single Market Platform aims to provide an end-to-end customer journey allowing market participants to access the data and services relating to :

Functions and user features

On-boarding	Unit management	Participate in tender/ auction	Contract management	Scheduling and Dispatch	Performance monitoring	Payment
Obligations, sign up, test and application progression	Unit registration and change aggregation configurations	Submission	Contract status and manage contracts	Instructions	Reporting unit and contract performance	Billing and charging

There are also a number of separate IT investments included in the RIIO-2 Business Plan interact with the SMP; these are owned by different project teams:

IT Investments

- EMR [320]
- AS settlements refresh [410]
- Auction capability [420]
- Charging and Billing Refresh [290]
- Charging regime and CUSC changes [300]

Central Systems

Data and Analytics Platform [220]

The DAP is the building block of the ESO's digital capability.

Balancing Programme

Balancing Programme will transform scheduling and dispatch tools.

Digital Design Principles

In order to ensure a coordinated approach to the develop and implement of DEP and SMP, digital design principles were developed.

1. **Start and end with the user in mind** - what are they trying to achieve, how do we understand that and how does this evolve?
2. **Do less** – work with clear reusable and shareable approaches, allow others to build off what we have, don't reinvent every time.
3. **Prove it** – ensure every feature has value, so have a point of view on the value and show you are getting the impact you are after through some smart metrics not a hunch.
4. **Keeping it simple** – put in the effort to keep the tools simple, easy to understand and intuitive, it impacts speed of adoption and means the work done will have value
5. **Optimise for learning with early solutions** – get out early and adapt as you learn, find ways to test (sandbox) before scale up, and take risk out of the build, so that
6. **Design for everyone** –so that anyone can engage immediately. It will reduce the chance of mistakes increasing confidence, and drive efficiency and performance for everyone, regardless of what experience or expertise they have.
7. **Digital engagement not websites** – the digital engagement is part of a broader journey and so needs to be designed with that in mind not just the web interface.
8. **Let consistency and patterns build trust**– ensure that the look, feel and experience is harmonious, this drives confidence and intuitive interaction. Consistency drives trust through predictability of how things turn up.
9. **Bring to life the ambition** – ensure that the users can decode what we are trying to achieve and how we are helping them so our vision becomes a reality
10. **Design for the big picture** –our offers shouldn't be an aggregation of features, but rather a holistic, consistent experience. Separate tools are better than poor aggregation . The design should focus on getting to clear, known outcomes as quickly and effectively as possible.
11. **Use Plain English** – describe what's being done not a name that makes sense to you

TAC Discussion point

- Are there any other principles that should be considered?

Challenges of the changing landscape

SMP and DEP will not be developed in a bubble and we need to be conscious of associated developments with associated systems and services within NGESO but also the move to whole system integration across the electricity industry

Change across ESO offering

- Connections
- EMR
- Outage planning
- Charging and billing
- Single Market Platform
- Settlement
- Open data
- Balancing
- Code digitalisation
- Network control
- Auction capability
- Data and Analytics Platform

Change in balancing services

- Response
- Day Ahead
- Reserve
- Standardised
- Reactive
- Stacking
- Constraints
- Location
- Restoration
- Baselines

Changes in the wider landscape

TAC Discussion point

- What are some of the challenges and solutions to navigating this landscape?

Input sought from Technology Advisory Council

As we transition from strategic definition to enablement phases the following input is sought:

Reflections on the content shared from work to date	Considerations for the next phase
▪ Defining the strategic intent for digital engagement and Single Market Platform ▪ Mapping the user ecosystem and needs including user research ▪ Defining the scope and service blueprint for DEP and SMP and associated use cases ▪ Ensuring internal alignment	▪ Deep dive into user journeys ▪ Mapping internal business impacts ▪ Understand required technology capabilities ▪ Create programme delivery approach, high level plan and roadmap ▪ Draft product backlog

Any Feedback?

Balancing Programme

Item 5

Main document

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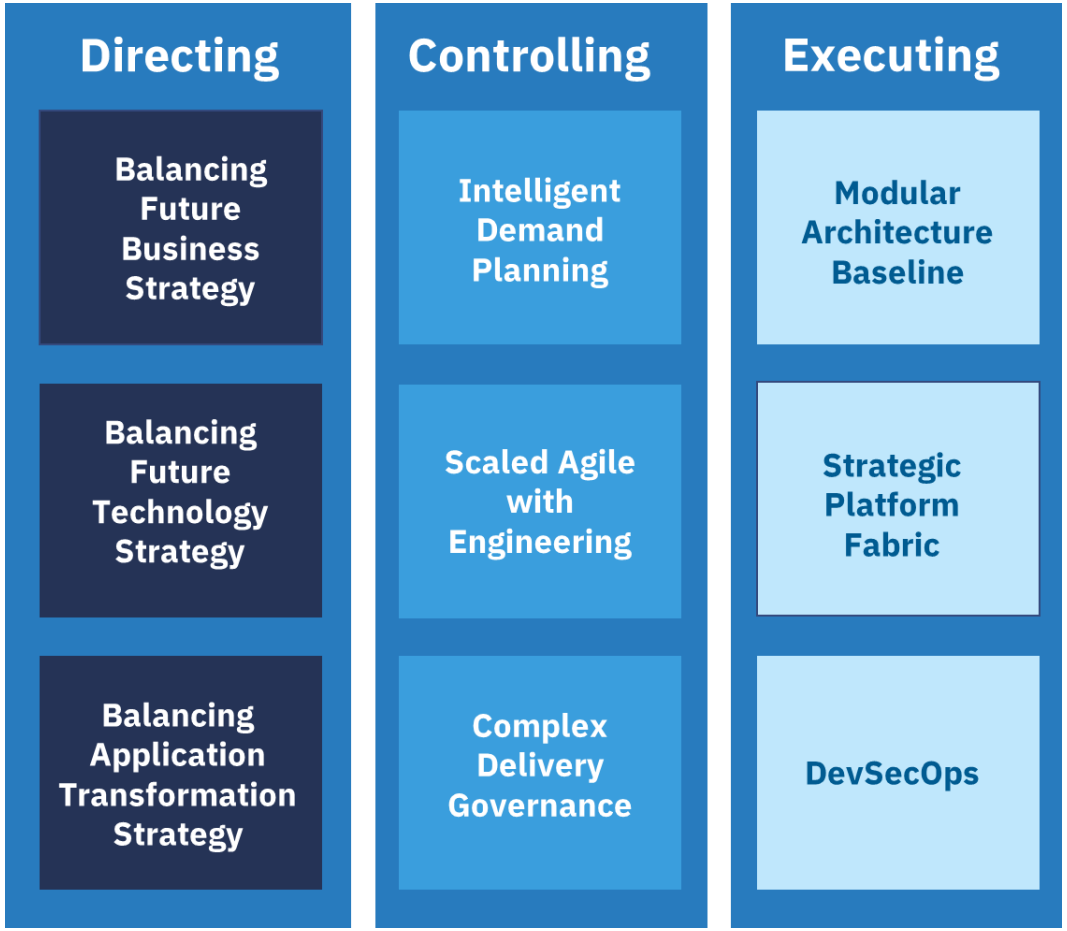
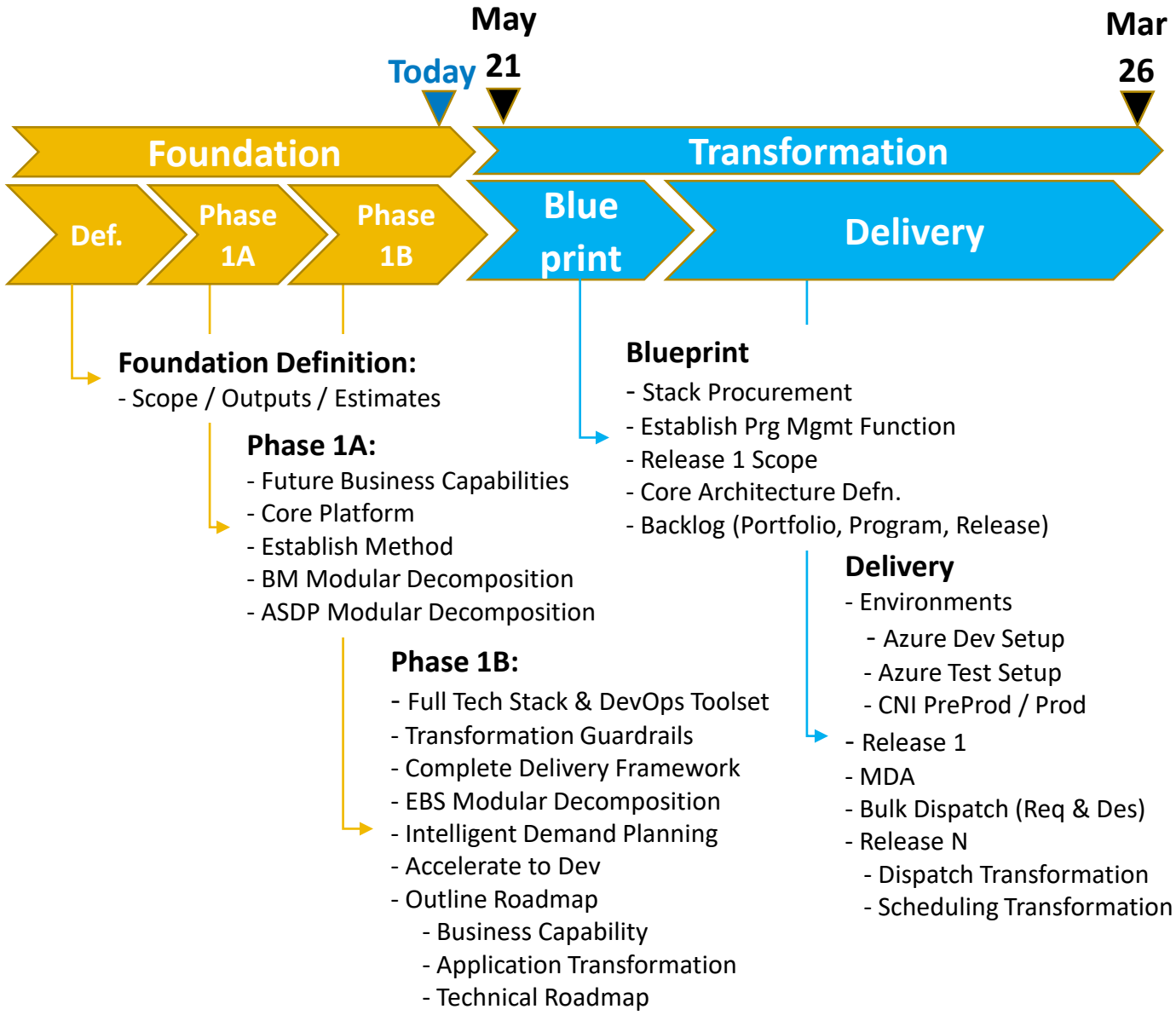
Recap Our Journey





Foundation Achievements

Business Principles & Capabilities

Process Vision

UX

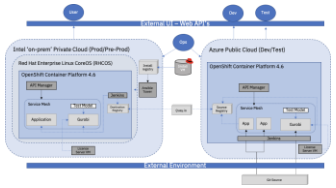
Change Vision

Personas

Future Business Model

RED HAT OPENSHIFT · Istio · Kong · GUROBI OPTIMIZATION · django · QUARKUS · portworx by Pure Storage · EDB POSTGRES · Red Hat Integration · Security Tech

Core Platform Selection



Hybrid Cloud

UI

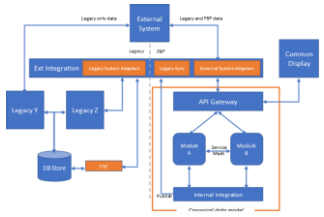
Integration

Security

Proof Of Technology

Demand Planning

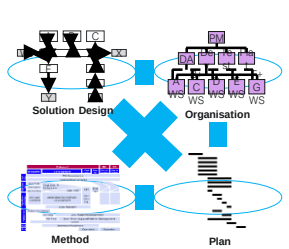
Scaled Agile with Engineering



Messaging and Co-existence guardrails

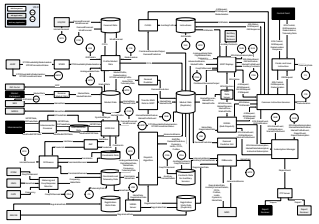
Application Transformation Strategy

Emerging Target & Roadmap



Complex Delivery Governance

DevSecOps Gap Analysis



Legacy Decomposition (BM. ASDP, EBS)

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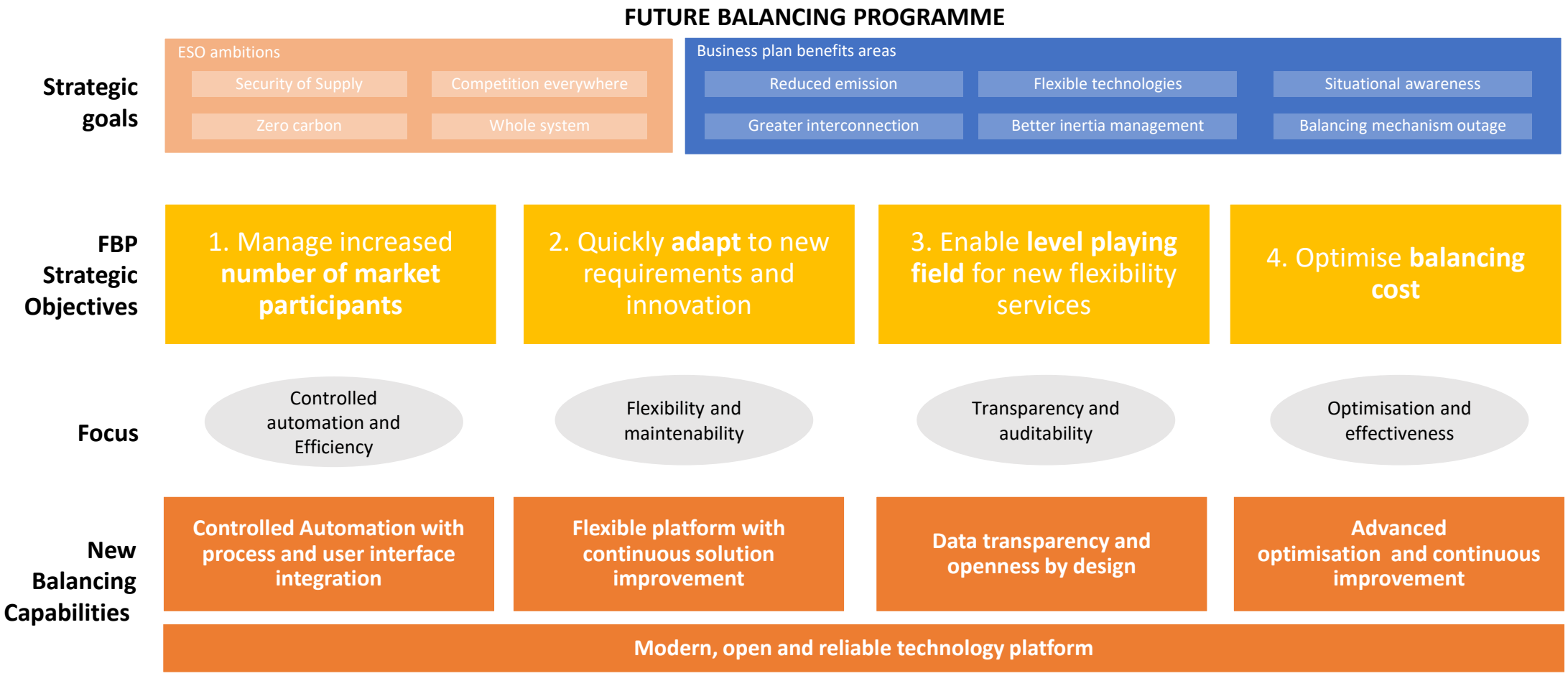
Key strategic objectives and new enabling balancing capabilities

The program strategic objectives and the new enabling business capabilities were set to address the scalability challenges identified earlier and modernise the core platforms to provide increased reliability and flexibility in line with RIIO2 business plan



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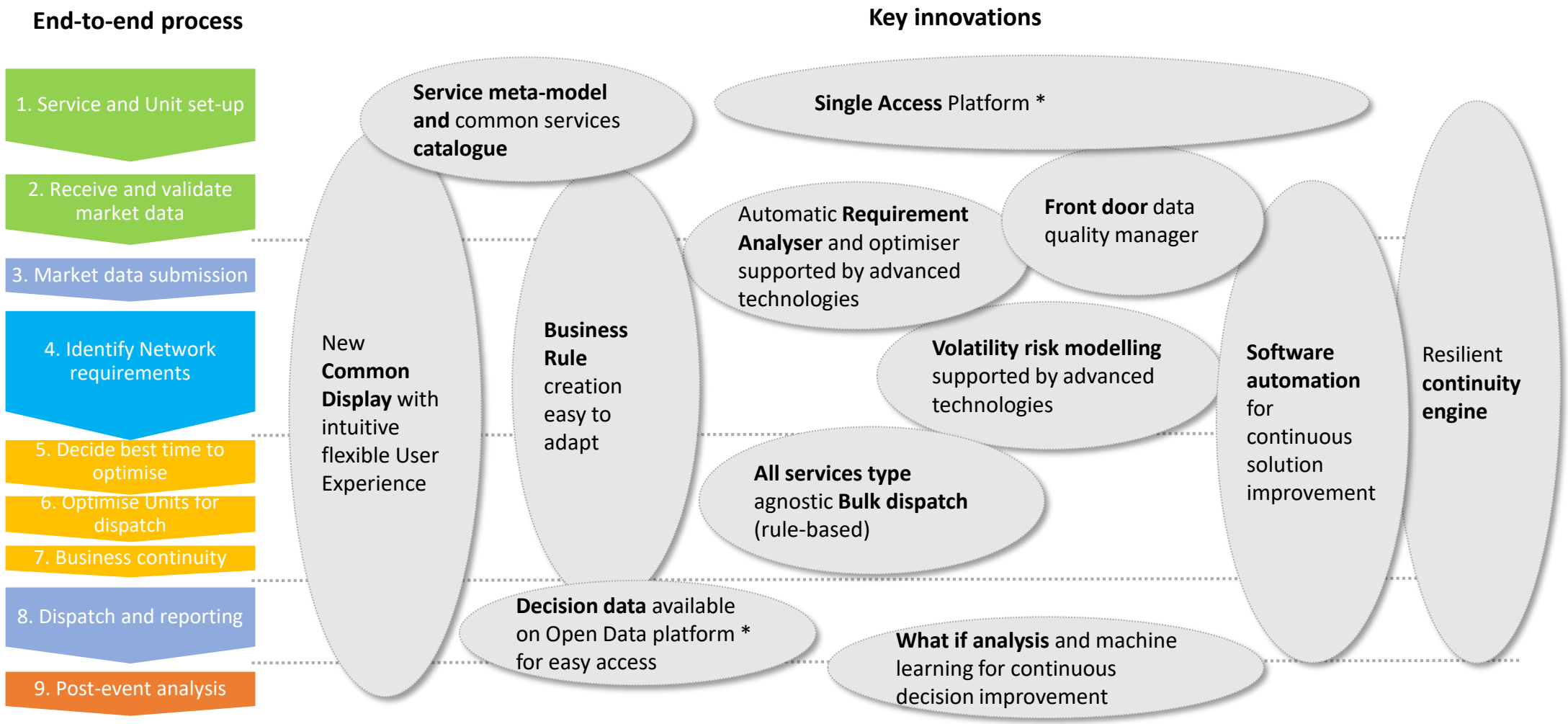
What will change - Key innovation introduced

The new Operating Model will leverage a set of innovative concepts and technologies to deliver the required capabilities



* Provided by Role 2 transformation initiatives

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Our Design Approach

Utilising Enterprise Design Thinking

GOAL 1 Refine UX vision and plan for Blueprint

- AS-IS Personas
- AS-IS User interface and experience

GOAL 2 Bring the future vision to life by visualising use cases

- Future user interface prototypes

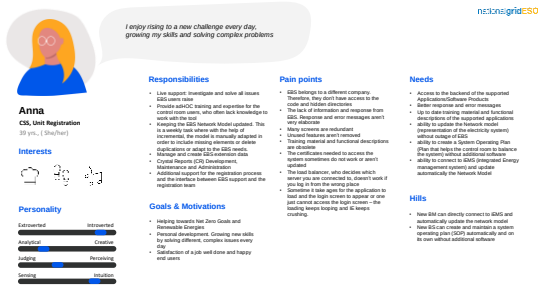
GOAL 3 UI tech select & UI proof of tech

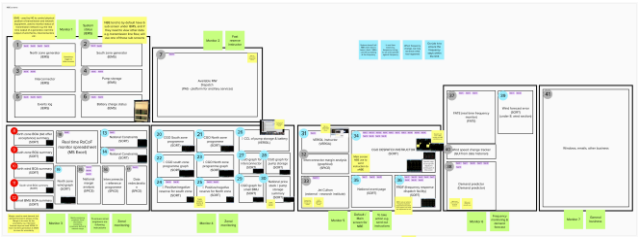
- Putting code behind one of the UI prototypes

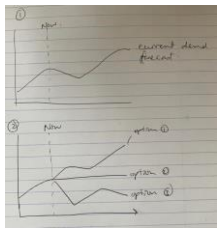
Observe

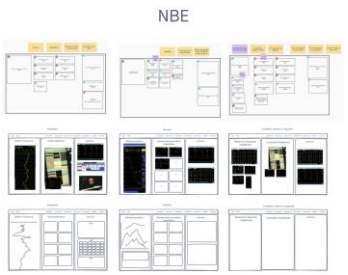
Reflect

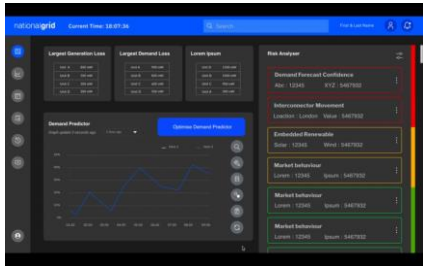
Make





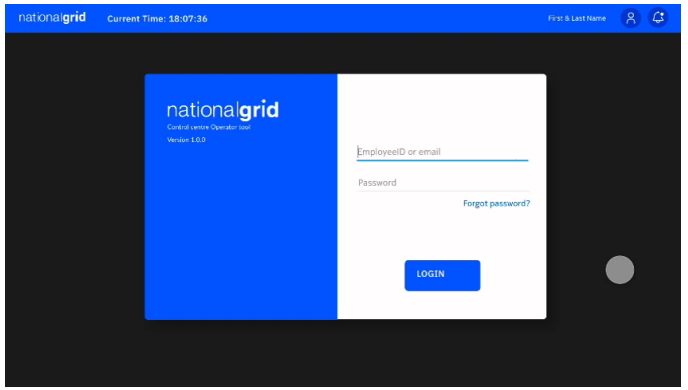






Videos

Bulk dispatch prototype & demo - video



Blueprint Phase Objectives

General

- Establish Squads with the defined ways of working (CDG)

Enterprise Solution Delivery

- Procure HW (CNI), SW (Azure) & Envs (Azure)
- Establish 'New' Features and User Stories for Dispatch & Market Product Backlog
- Establish Features and User Stories for User Define Applications (Shadow IT)
- Produce Solution Outline for Core Release
  - Establish Canonical Model
- Physical Operational Models for Azure Dev Test
- Logical Operational Model for CNI

Business Value Streams

- Establish Module Outlines for Core Release
- Establish 'Old' Features and User Stories for Dispatch & Market Product Backlog

Platform Enabler Value Stream

- Build Management Cluster (infra as code enabler)
- Build Platform Dev Environment (infra as code)
- Build Dev Environment (infra as code)
- DevSecOps Toolset & App Dev Pipeline
- Build ST/SIT Environments (infra as code)

E2E QA Stream

- Test Strategy
- Test Readiness
- ST Test Harness Design

Any Feedback ?

Ways of working

Item 6

Working groups proposal

- This section will be used to discuss and agree how working groups could be structured

- We have included a proposal including **potential** TAC representatives and will discuss in the meeting

- Key considerations
  - Is it aligned with TAC feedback?
  - Is it workable (eg time commitments, interaction between TAC and the sub-groups)?

Feedback from TAC

- In TAC-2 (4 March 2021), we asked the group for the main considerations for our transformational Balancing and Network Control programmes
- By votes, the top issues were:
  - Transmission-Distribution collaboration
  - Technology and operations collaboration
  - Start-up mentality
  - Adaptability
  - Collaborative transformation
  - Leadership
  - Simulation and visualisation technology
  - Relationship between hardware, software, human-machine interface implementation and decision science

- We propose creating four working groups to discuss these topics in more detail
- The approximate mapping is as per the colour coding

RDP joint forum (existing)

Technology transformation

Control room of the future

Digital and data

Regional Development Programme (RDP) joint forum

There is already a joint forum between the ESO and Regional Development Programme (RDP) partners. This provides a natural group to consider transmission and distribution collaboration.

Topics for discussion:

- System interfaces
- Communication
- Whole system balancing
- Joint markets?

Potential TAC representatives	Key internal representatives	Key external representatives	Key inputs for discussion
• ENA • SPEN • Service providers (eg STEMY) • Energy UK	• DSO • RDP • Balancing Programme • Network Control programme	• DNOs • Service providers	• RDP programme • DSO strategy • Whole system strategy

Considerations

The group would need expanding to service providers

Technology transformation

This group would discuss technology and ways of working, and be the main forum for detailed discussion on our key transformation programmes

Topics for discussion:

- Updates and input into key transformation programmes (Balancing, Network Control, Markets)
- Agile
- Case studies from external parties on technology transformation
- Technology strategy

Question: do we need one working group per project?

Potential TAC representatives	Key internal representatives	Key external representatives	Key inputs for discussion
• Large company (BP, Shell, RWE) • Start-up (Flexitricity, Arenko, Octopus, Limejump) • In-sector tech (Electron, Reactive) • Out-of-sector (Amazon) • Government (TechUK) • Consultancy (Accenture) • Consumer (Sustainability First)	• Balancing • Network Control • Markets • ESO Technology	• DNOs • Service providers • National Cyber Security Centre(?)	• Balancing • Network Control • Single Markets Platform • Digital Enablement Platform • Ways of working review

Control room of the future

This group would discuss the more abstract, theoretical and “art of the possible” concepts.

Topics for discussion:

- Machine learning and artificial intelligence
- Human/machine decision making
- Optimisation
- Simulation and visualisation

Potential TAC representatives	Key internal representatives	Key external representatives	Key inputs for discussion
• Transport for London • Smith Institute • University of Edinburgh • Elexon • Energy Systems Catapult	• Balancing • Network Control • Innovation • ESO Technology		• Balancing Programme • Network Control Programme • ESO Labs • Innovation strategy

Digital and data

This group would discuss the ESO's digital and data strategy

Topics for discussion:

- Data
- Digital
- Digital twins
- Customer interface

Potential TAC representatives	Key internal representatives	Key external representatives	Key inputs for discussion
• Any interested	• Digital and data	• DNOs • Service providers	• Digital and data strategy • Innovation strategy

Ways of working

Technology Advisory Council

- Progress reports
- Topics for consideration by full cohort

- Direction
- Prioritisation

- Meets every quarter
- Half-day meeting
- Full representation

RDP joint forum (existing)	Technology transformation	Control room of the future	Digital and data

- Meet every month
- 2-3 hours
- Tailored representation

Next meeting and calendar

Item 7

Next meeting and calendar

Meetings are every quarter for a half-day on the first Friday morning of the month, 9am-12.30pm

- 3 September 2021
- 3 December 2021
- 4 March 2022
- 10 June 2022 (Note: meeting a week later due to Platinum Jubilee bank holiday)
- 2 September 2022
- 2 December 2022
- 3 March 2023

AOB

Item 8

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