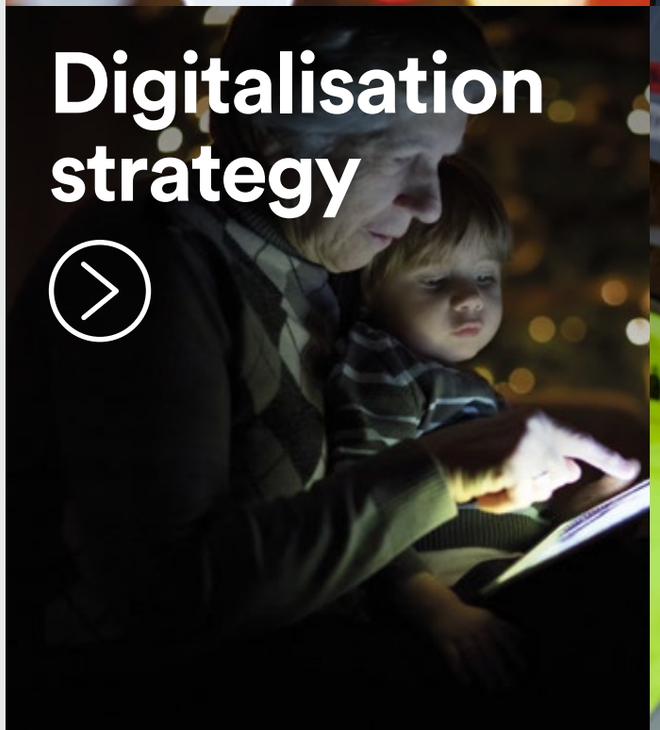
Digitalisation Strategy and Action Plan

December 2020 >

There are four sections in this document



Introduction

The urgency of accelerating the transition to a low-carbon economy is well understood. The UK has committed to achieve net zero carbon emissions by 2050 and three quarters of local authorities in our region have now declared climate emergencies.

Responding to the immense challenge of climate change requires a radical transformation to deliver a clean, safe and sustainable society for future generations. Dramatically decarbonising the electricity system while also electrifying everything from transport to heating is an essential part of the solution.

Northern Powergrid
Roadmap for Digitalisation
March 2020

Introduction

The development and deployment of new technologies will be a key part of how we make the transition to zero-carbon electricity. In the next decade, we will see millions of homes and businesses embrace electric vehicles, adopt heat pumps and use battery storage in combination with renewable sources of generation.

New digital technologies, including automation, data analytics and artificial intelligence, will enable consumers to become active participants in the energy system and transform how it operates. These changes will place new stresses on energy networks while simultaneously creating new opportunities to innovate and transform how we manage our systems and how we enable the transition to net zero.

They are also driving profound changes in what our customers, partners, suppliers and employees expect from us as a business.

Energy networks have a vital role in enabling the overall energy system to evolve and support rapid decarbonisation. As a Distribution Network Operator (DNO), we have had a central role in facilitating a low-carbon energy system, connecting people to renewable power across our region.

Our company vision, as laid out in our Emerging Thinking, is clear that we see the future as our opportunity to power our region with sustainable, long-term investments that unleash the potential of innovation, digitalisation, our people and collaboration. Our Digitalisation Strategy and Action Plan therefore sets out to embrace that vision and provide the digital enablement of the capabilities we see as being necessary to meet these challenges, factoring in the twelve performance areas of our Emerging Thinking and our journey to Distribution System Operator (DSO).

Throughout this document, you will see us mention existing products and services. You can access or get information on these by visiting www.northernpowergrid.com/services-directory/

Digital technology is a key enabler of our transition

Our vision is for the network to evolve into a trusted and neutral platform able to facilitate the optimisation of our regions' energy system, minimise the need for new infrastructure, make the best use of low-carbon generation and minimise the need for expensive dedicated storage and high-carbon generation.

By doing this we think the network can underpin a net-zero energy system and help use resources sustainably. At the same time, we want the network to continue to deliver what it does today, providing universal services for customers, suppliers and others to benefit everyone. Utilising digital technologies and capabilities is a key part of being a DSO. The digital technology revolution is transforming every area of society and energy networks are no different.

Continued investment in new digital technology and innovation will drive the delivery of a more efficient, optimised network that reduces costs and improves our service for customers. It will transform our customer experience, enabling more tailored services and support – areas in which we are already making great strides. By embracing these new technologies and moving to a fully digital workplace, we will also increase our efficiency as a business, improve transparency over how we operate and enable more effective collaboration with our colleagues and other organisations.

"Next Generation" digital capabilities (people, process, technology and data) have been developing rapidly in their availability, relevance and adoption across all industries. The speed at which new products are developed and the impact on customer satisfaction are growing exponentially.

Investing in core digital capabilities

Customers are at the heart of our digital transformation; this includes those who do not wish to or cannot use technology.

Our strategy for the digitalisation of our network and our business is wholly focused on delivering the most efficient, reliable, affordable and safe network possible, while also enabling the transition to net zero carbon.

In line with our design principles, we believe that the best customer outcomes can be delivered through focused investment on eight core areas that are central to the delivery of a genuinely digital network and business.

Our digital transformation is providing the opportunity to:

— deliver innovations that improve the effectiveness and reduce the overall cost of running the network, both capital costs, such as new network infrastructure, and the costs of operating the system
— empower consumers to become active participants in the energy system and adapt how it operates as it decarbonises
— transform our customer experience to provide more tailored services and support and drive higher standards of customer service
— better coordinate network operations and energy market operations, delivering greater efficiency and unlocking new opportunities that benefit our customers and support net zero
— create a digital workplace, increasing our efficiency as a business, enabling more effective communication and collaboration and supporting greater employee satisfaction
— further improve the reliability, resilience and safety of our network.

We want to implement, operate and participate in a digital energy network, while using technology to continuously innovate and evolve as a digital business.

Our plan to deliver a digital transformation

We are already implementing industry-leading digital innovation projects on our network. Our Activating Community Engagement project ran the world's first trial of a mobile game to incentivise households to reduce their electricity consumption at times of peak demand.

Our Foresight project is using ground-breaking data analysis to enable fault prediction and proactively deploy network technology to automate the restoration of power supplies to customers. Looking to the future, our Distribution Future Energy Scenarios explore a range of credible decarbonisation pathways which enable us to determine our future services and investment programmes.

Both of these initiatives are examples of work we have done in ED1 that has set in motion our digitalisation journey, but we have done much more. We have implemented a Customer Relationship Management system (CRM) to begin to improve our customer experience; we have digitalised our asset records in readiness for opening up our data, which has already allowed us to introduce a new service called AutoDesign for self-service estimates; we will have invested circa £83m in smart grid enablement; we have made smart meter data investments; and have begun to develop network heat maps.

Our Digitalisation Strategy and Action Plan, developed in conjunction with opinion and feedback from external stakeholders, forms part of our approach to meeting the challenge of the new decarbonisation landscape. It sets out our vision to become part of the digital energy system, utilising all appropriate available digital tools, data and technologies and transforming the capabilities of our infrastructure and our business to support a flexible, reliable and resilient energy network for the 3.9 million homes and businesses we serve.

The Digitalisation Strategy and Action Plan is integral to the future of our business and forms part of our next long-term business plan, which is now being prepared for the ED2 regulatory price control period from 2023–28. It has also been developed in alignment with the five key recommendations from the Energy Data Taskforce's Strategy[1] for a Digitalised Energy System which can be seen throughout.

1 Energy Data Taskforce: A Strategy for a Modern Digitalised Energy System (catapult.org.uk).

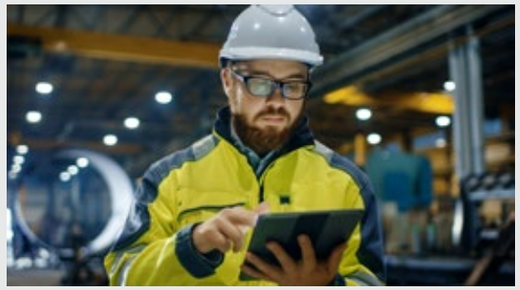
Ensuring the right outcomes through principles-led design

The development of our Digitalisation Strategy and Action Plan is underpinned by a set of clear design principles. This ensures that innovation and initiatives that we propose are focused on delivering the right outcomes for our customers, our stakeholders and our business.

As we continue to develop our plans and our role as the regions' Distribution System Operator, it is critical we do so openly and transparently, in dialogue with our customers and wider stakeholders.

This document outlines our guiding principles for digitalisation, sets out our strategy, the outcomes we want to deliver and our vision for the digital future of our network and business.

It is a snapshot of our plans. We want it to stimulate conversations with our customers and stakeholders and we are looking forward to working with all of our stakeholders and the communities we serve to refine and develop our plans. Your feedback will allow us to shape our plans in the best interests of our customers.



The work we intend to do and the initiatives we expect to kick off have the needs of our customers at their heart.

Stakeholder engagement

How you can help shape our digital vision and why we need your help

This is the third version of our Digitalisation Strategy and Action Plan, dated December 2020. Stakeholder expectations, technology and commercial development keep moving fast within and outside Northern Powergrid.

An ongoing dialogue about digitalisation with customers, policy makers, regional stakeholders and colleagues will help us to refine this strategy and will contribute to the production of a strongly evidenced plan for the RIIO-ED2 price control that provides our customers with what they need.

When producing further iterations of the Digitalisation Strategy and Action Plan (DSAP), we will continue to engage widely including utilising the Customer Engagement Group, an independent panel of experts brought together to challenge and shape our future plans and scrutinise this area of our business plan. They have helped influence this version of our DSAP and fed in to its development on several occasions.

Have your say

Please tell us what you think about our strategy, how you feel about some of the key themes and our ambition to underpin plans with technology and open data.

We would welcome your views on the goals, objectives and principles we are setting out and our direction of travel.

We expect to have a specific set of engagements emerging in 2021 but any views on our plans are welcomed at any time. Send your comments to: **yourpowergrid@northernpowergrid.com**

Stakeholder engagement

Our response to your feedback so far...

"You said" We did

"I'd like to see more detail around each approach and initiative."

We have spent more time getting into the details of our implementation plans, forming our action plan section.

"You don't mention customers who don't want to or cannot use digital services."

We have made our strategy inclusive for customers who would prefer not to use digital services.

"Document lacks information on the value customers expect to derive from digitalisation."

We have linked the initiatives and business outcomes to the customer value; see some examples **here**.

"How does this strategy tie into Open Data and Consumer Vulnerability?"

We have added more information on data best practice throughout this document but especially **here**.

"The document reads as being inward looking and should be clearer on how it will meet changing consumer needs."

We have put the customer at the heart of what we do throughout the document.

"Isn't cyber security an issue with data and digitalisation?"

We've added assurances about the importance of cyber security.

"How will you set up to continuously improve and innovate?"

We have begun to get to grips with what a transition such as this would require from people and process changes and have included the information in this version. Examples are **here**.

"How will you tackle cultural barriers and bring your people along with you?"

We understand the cultural impact of transformation on our colleagues; see **here**.

"I'd like to see a timeline for the changes."

We've added a timeline for the initiatives and shown some examples of the roadmaps for services we're developing.

"Could you consider adding more detail around innovation and improving and streamlining business processes?"

We have added further detail on usage of customer analytics and insights as well as innovation and automation.

Stakeholder engagement

Our response to your feedback so far...

"You said" We will

"Can you clearly define your baseline set of initiatives?"

We are working closely with our business to identify the baseline initiatives and we will ensure that these are clearly highlighted within our next iteration.

"Could there be a view of what data you plan to capture from your substations?"

We are working on this and we will add this level of detail in as part of a future iteration.

"I'd like to see further clarification on senior ownership and accountability for delivery of your strategy and action plan."

We have added some information on deliverability but we will flesh this out in our next iteration.

"Some of your benefits are too business focused and don't articulate the customer benefit."

Whilst we have addressed this in the current DSAP we will continue to refine this further as we create our ED2 business plans, supported by customer personas.

"How will planned activities be coordinated with other organisations?"

We are exploring this and we will ensure that this is covered within our next iteration.

"I would like to see the dependencies between the initiatives."

We will ensure dependencies are clearly mapped within the next iteration.

What we will do next

During the development of this version of our Digitalisation Strategy and Action Plan we've received lots of feedback from consumers, stakeholders and experts, some of which we could not immediately action as it needed more thought and analysis.

That being said, we think we have some good ideas for the next iteration that we'd like to test with you.

- We would like to demonstrate our transformation map as more of a 'products and services' roadmap, demonstrating to you when you are likely to see new or improved services, enabled by our digitalisation initiatives.
- We would like to be more transparent on the prioritisation of initiatives and how we know they're the right things to do, but we think that this can be done by demonstrating this 'products and services' view over time so is dependent on the step above.
- We will refine our propositions for digitalisation aligned to our business plan so as to continue to develop more detail, particularly to support the six-monthly iterations of our action plan section, which we expect to be able to plot out on a roadmap by the next version.
- We will begin to share some of the detailed data sets that have helped us develop this digitalisation strategy and think more about how you can interact with these and how you might help us shape digitalisation in the future.

Have your say

Please tell us what you think about our strategy, how you feel about some of the key themes and our ambition to underpin plans with technology and open data.

We would welcome your views on the goals, objectives and principles we are setting out and our direction of travel.

We expect to have a specific set of engagements emerging in 2021 but any views on our plans are welcomed at any time. Send your comments to: **yourpowergrid@northernpowergrid.com**

Digitalisation is one of the key enablers for our long-term business strategy and vision

There is growing recognition of the impact that digitalisation and the power of digital data and platforms have on the day-to-day lives of customers, stakeholders and colleagues; what it will mean for our current and future business models and service offerings; and how we will adapt to meet those demands.

Successfully embracing digitalisation and data will help us to deliver the customer-tested vision and twelve performance areas identified within our Emerging Thinking (as detailed in figure 1) and so:

- lead the drive towards decarbonisation
- operate a highly reliable and resilient network
- delight our customers with outstanding service
- provide remarkable value for money
- ensure world-class levels of safety and security
- be a force for good throughout our region and beyond.

Embracing digitalisation and data will help to delight customers and communities with outstanding service that is tailored to them.

Figure 1
Our Emerging Thinking 12 Performance Areas

Our Roadmap for Digitalisation (March 2020) set out our goals and objectives to leverage the power of digital data and platforms to meet stakeholder needs and wants

In March 2020, we defined our digitalisation strategy through the Roadmap for Digitalisation document as represented by figure 2. The Roadmap for Digitalisation was underpinned by five core principles and would be delivered through eight desired outcomes. It sets out our plans to:

- enable business change by using digital technology and capabilities and embracing an innovation culture;
- further unite operational technology and information systems to enable a greater value proposition for our customers and stakeholders;
- develop a data-driven culture that embraces open data principles and improves the exploitation of data (network and core business data), enabling real-time decision making;
- introduce a cultural shift through enhanced skills and equip our workforce to drive digital transformation and so encourage continuous improvement and agility; and
- demonstrate that digitalisation and our plans and service offering will benefit the region and the wider GB energy system as a whole.

In June 2020, our information systems department began development on a 10-year digitalisation action plan. This plan identified, defined and validated a set of digitalisation initiatives based on capabilities and outcomes and translated these into time-bound transformation maps. These initiatives are the specific activities that we will undertake to deliver our strategy.

Figure 2
Northern Powergrid's digitalisation strategy

Core capabilities

Delivering a digital energy network ⇄ **Building a digital business**

Desired outcomes

- Promoting data transparency
- Enabling data analytics and insights
- Network planning and operations
- Digitalising the energy system
- Improving our technology capabilities
- Leveraging intelligent automation
- Transforming the customer experience
- Enabling a digital workplace

Design principles

- Security is a hygiene factor
- Customer led
- Facilitating efficiency
- Maximising the value of data to us, our customers and our stakeholders
- Keeping the future in mind

Digitalisation initiatives that will deliver our desired outcomes and objectives have been identified through a structured approach

The Digitalisation Strategy and Action Plan has been built iteratively by working with our business areas, external expert technology providers and taking into account the views and opinions of stakeholders.

We used a four-step process to gather objectives, define required capabilities and build initiatives into a roadmap:

1. Gather objectives

— Colleagues from multiple functions and business areas were engaged in interviews and workshops to capture objectives during their own business planning processes.

— This was supplemented by input from our Emerging Thinking, Business Improvement Plans and key strategy documents including our DSO Development Plans (DSO v1.1 as amended), and outputs from Customer Engagement Group (CEG) to ensure that we were fully aligned and had captured the latest customer needs and wants.

2. Identify key digital capabilities

— Using industry standard capability models and reference architectures, objectives were mapped to digital capabilities to identify where potential investment and change is required.

3. Derive a set of digitalisation initiatives

— We identified a comprehensive list of digitalisation initiatives to deliver the digital capabilities that would underpin our performance areas.

— Each set of initiatives has a qualitative business case and can be traced back to the objectives to ensure the stated requirements are being met.

4. Define and prioritise a 10-year transformation map

— The initiatives were translated into a transformation map prioritised by 'enabling' value (qualitative business case analysis) and logical sequencing.

Figure 3
Digitalisation objectives, capabilities and initiatives

We are driving transformation across three time-bound stages – Enable, Expand, and Enhance

The time-bound stages have been created to allow the reader to visualise a timeline for our action plan, showing when we anticipate initiatives will be delivered. It should be noted however, that these are not fixed start and end periods as the delivery of initiatives may cross over these time boundaries.

Enable

Initiatives that solve immediate challenges, take us from a manual capability to building the platform for a digitalised capability or to create the capability in the first instance.

Expand

Initiatives that take either the digitalised capabilities created in the Enable stage, other existing digitalised capabilities or additional stakeholder requirements and either expand across the enterprise or expand/standardise the use of a capability to release further benefits.

Enhance

Having realised the capabilities in the Expand stage, use them to maximum advantage and deliver maximum benefit.

Our desired outcomes for digitalisation will enable the 12 performance areas identified within our Emerging Thinking

— We have continued with the concept of splitting our strategy into two themes, Delivering a digital energy network and Building a digital business, and have used colour coding to indicate the two themes and where the outcomes sit within these themes.

— As represented by figure 2 earlier in this document there is convergence between the two themes. Rather than setting out a third theme to identify such converged capabilities they have been detailed under the theme to which they provide the most benefit.

— As a whole, the outcomes will enable the 12 performance areas of our Emerging Thinking.

Delivering a digital energy network

Promoting data transparency by collecting and sharing energy system data in a consistent and open manner to promote grid efficiencies and compliance.

Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy network.

Improving network planning and operations through utilising emerging technology, data and digital capabilities.

Digitalising the energy system using digital devices, advanced communications and interconnected systems to drive real-time decision making.

Building a digital business

Transforming customer experiences to better understand the customer journey from all perspectives and touchpoints and adapt our services to specific customer segments.

Improving our technology capabilities to drive down IT costs and risk from unsupported information technology whilst being able to realise future digital opportunities.

Leveraging intelligent automation to reduce manual tasks, speed up processes and re-focus effort on value-added activities that boost productivity and efficiency.

Enabling a digital workplace to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.

Mapping of Emerging Thinking and digitalisation

— In order to see the alignment of the 12 performance areas of our Emerging Thinking (ET) and our digitalisation objectives, the following high-level matrix has been produced.

— A green cross on the matrix indicates that there are alignments between our Emerging Thinking performance areas and our digital objectives.

— Our Digitalisation Strategy and Action Plan will evolve as we solidify our ED2 business plan. The result of this means that this matrix will be updated to align to our ED2 business plan outputs. More detail on this will be available in our data catalogue which will be published in the future.

	Promoting data transparency	Enabling data analytics	Improving network planning and operations	Digitalising the energy system	Transforming the customer experience	Improving our technology capability	Leveraging intelligent automation	Enabling a digital workplace
Decarbonisation	✓	✓	✓	✓		✓		✓
Customer services	✓	✓	✓	✓	✓	✓	✓	✓
Reliability & availability	✓	✓	✓	✓			✓	✓
Connections	✓	✓	✓	✓	✓		✓	✓
Climate change adaptation	✓	✓	✓	✓		✓		
Physical & cyber security	✓	✓	✓	✓	✓	✓	✓	✓
Long-term network performance & condition	✓	✓	✓	✓		✓	✓	
Safety	✓	✓	✓	✓		✓		✓
Openness & transparency	✓	✓	✓	✓	✓	✓	✓	✓
Environmental protection		✓	✓	✓	✓			✓
Our communities		✓				✓	✓	✓
Business carbon footprint		✓	✓	✓		✓		✓

A four-step process was executed to gather business objectives, define required capabilities and build initiatives into a roadmap

1. Gather objectives

Our first step was to **gather desired outcomes and objectives** through facilitated workshops. To do this, we spoke to multiple key stakeholders and referenced internal and external documents, such as DSO v1.1, Emerging Thinking, Annual Stakeholder Reports, CEG minutes, and internal performance reports.

2. Identify key capabilities

We used **capability maps** to understand the key capabilities that have an impact on and would deliver the objectives. We did this by carrying out an impact assessment and mapping exercise.

3. Derive a set of initiatives

Based on the capabilities required and reference architecture, we derived a **set of initiatives**. Those initiatives link back to the objectives to ensure the business requirements are being met.

4. Define and prioritise roadmap

The initiatives were translated into a **roadmap**, which was prioritised through business case analysis.

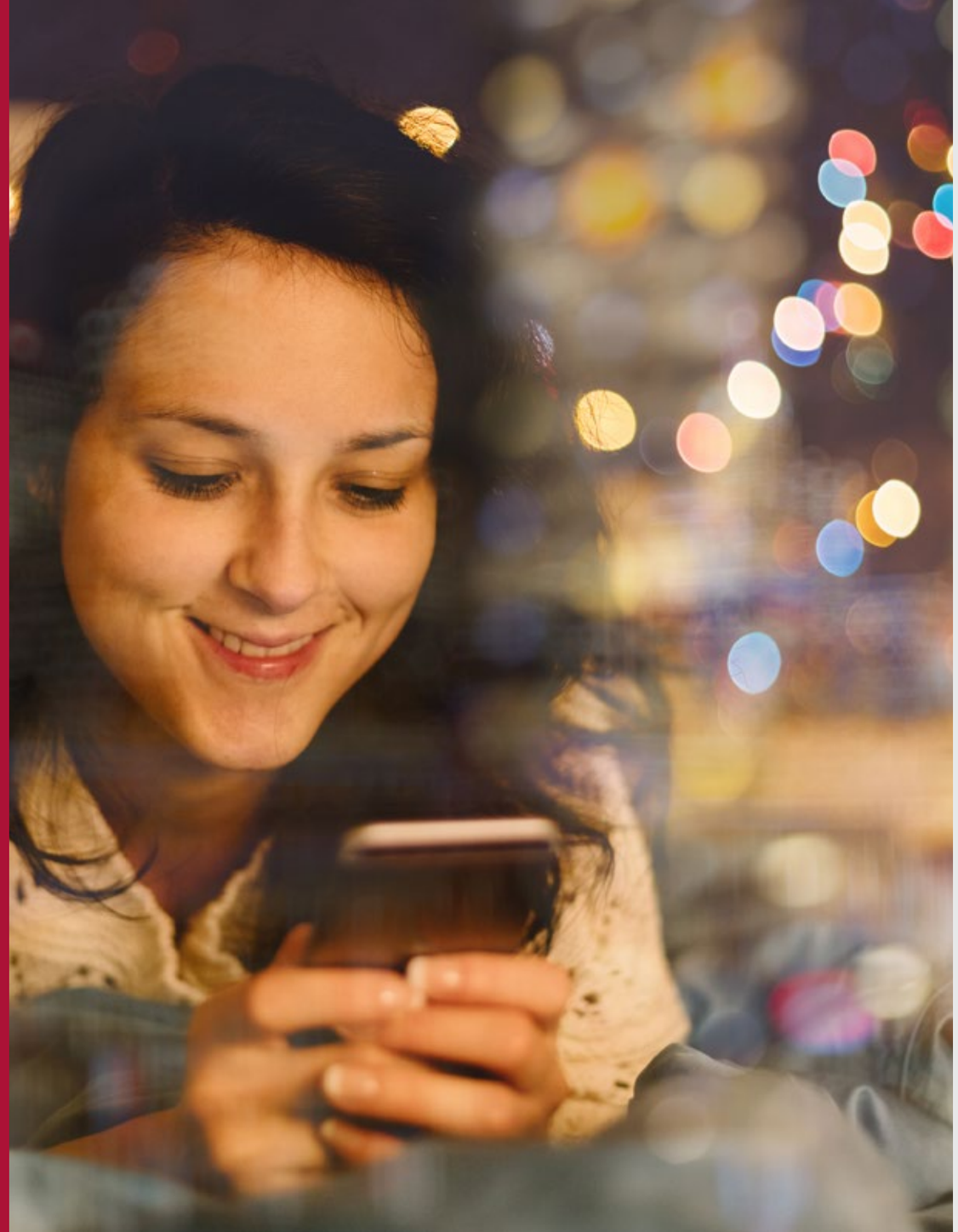
Executive summary

Philosophy

The challenges that presents themselves in modernising the UK energy sector to achieve the shared goal of societal decarbonisation by 2050 are significant and we know they will not all be solved with technology, but we recognise the opportunities that digitalisation offers in solving some of these challenges and we have developed this strategy building on this ethos.

We see the value in data; having more, increasing its quality and sharing it openly to better inform consumers and stakeholders who hold the keys to unlocking decarbonisation. We understand the need for the flow of this data to exist, in real time, between our control systems and the systems that manage the rest of the UK electricity system to deliver flexibility. We know that efficiencies can be unlocked that will mean we can do more for energy consumers in a quicker and less costly way, all whilst we bring our processes to the forefront of our digital footprint so that consumers, stakeholders and the market around us have access to our processes, ready when they need them, at their convenience.

Our digitalisation philosophy, however, matches our organisational reputation and stance in that we recognise not only the opportunities but also the risks and the need for pragmatism and caution when developing our plans. We know that there will be areas of our business that are primed and ready for digitalisation, eager to share the high-quality data that will enable insights and pave the way for our journey to DSO. In the same respect, there are other areas that will take longer to adapt and adopt the new capabilities that digitalisation will bring and there will also be areas where digitalisation will bring forward no benefit. Therefore, we have taken an approach in this iteration of our Digitalisation Strategy and Action Plan to lay out the options as we see them. We will continue to refine these, working with the business and applying the consumer lens to focus on the highest value areas before confirming these in our action plan. Our intention therein is to show, in the truest sense of a strategy, the options that we will consider but may not necessarily take forward, as they may not underpin the business objectives that present the best value for our consumers and stakeholders.



Philosophy

As a provider of critical national services, we have always recognised the need to provide resilience across our energy network which sets a tone for our approach to digitalisation. The increased interconnectivity and available data alone introduces new risks, risks that we must consider in terms of physical and cyber security and which are fundamental precursors to network resilience. Our risk appetite is accordingly set very low.

As we consider the threats that exist today, compared to those that existed as recently as five years ago, it is clear that the world around us has changed. More systems, devices and 'things' are internet connected than ever before and the expectation of the consumer is that they see no reason why more data should not be available and why processes should not be digitalised. Our consumer panels have shown that consumers understand the cyber threats that exist in a digitalised world and so expect us to protect both their data and the supply of their electricity as we continue this path.

That being said, our ambition is still clear; and as we said in our Emerging Thinking, although a lot is yet to be revealed, we have a clear view of the long-term destination and direction of travel. We are excited about the challenge that lies ahead for our business and the opportunity that we have to make a difference to our region in enabling the transition to a carbon-free society. We see the future as our opportunity to unleash the potential of innovation, digitalisation, our people and collaboration to achieve our ambitions.

As a provider of critical national services, we have always recognised the need to provide resilience across our energy network...

Context

As we publish this latest version of our Digitalisation Strategy and Action Plan, we are working hard to develop the business plan that sets the blueprint for our next regulatory period, beginning in 2023. As we do this, we are working with the business, consumers and stakeholders to collaboratively develop the propositions, underpinning capabilities and enabling technologies that drive the greatest customer value propositions. This approach allows us to demonstrate how each one of the initiatives we will undertake has a direct impact on our consumers and stakeholders and contributes to the new or improved value proposition we can offer them.

Because this business planning process is ongoing, the digitalisation strategy we have published should be seen, not as a definitive set of plans that are rigidly set in stone, but as a set of options that reflect the ambition of the business and that could enable the delivery of our ambitions as set out in our Emerging Thinking. As you will see in our action plan, we have a great deal of detail in each of the initiatives that will allow us to refine them down as we begin to finalise more and more of our business plan. This will allow us to focus on a smaller selection of the most impactful and relevant workstreams that could enable the greatest consumer value and that will be aligned to the other complementary publications being developed such as our Innovation and Workforce Resilience strategies.

As we develop our propositions in increasingly more detail we will also be are working hard to understand the cost impact of each of our initiatives which will feed into our business plan.

Our actual propositions will come in due course and, in fact, we already know there is a 'baseline' set of initiatives that represents the work we know we need to do to simply meet our most basic objectives in the next regulatory period. As we develop beyond these propositions, however, we will continue to do so with engagement from our stakeholders, consumer panels, technical specialists and our regulator, all of whom have had significant input into this strategy as it stands today. By engaging in this way we have been able to hone our propositions to ensure they meet the expectations of those who consume our services, who ensure we are doing so in line with regulations and who have the ability to challenge us to be the best we can in embracing a digital world, enriched by high quality data.

The future is not yet clear, and you will see this reflected in our strategy. We recognise the need to continuously iterate in a world that is ever changing and nowhere is this more abundantly true than with regards to this publication.

Context

We expect to further refine areas, such as our outcome area of data transparency, as we continue to explore the energy system data and use cases being developed in our business plan. We expect to improve our understanding on the impact of the control centre of the future as we begin to set out how flexibility might operate across our sector. In either case, and in most cases in this strategy, we are setting out on a trajectory of investing in the areas we know are "least regret", the areas we can enable without restricting future flexibility. An example of this would be our initiatives on data integration. We know they will be critical in shipping the data required to empower market flexibility, however we have no clear view of what this type of market solution. So, we invest in developing open, API led, loosely coupled solutions that mean we can be flexible. Where possible we consume services on subscription and maximise the benefits of the cloud in terms of "pay as you use" in areas where we do not yet know if it will be a significantly used solution. This approach also enables an evergreen approach to providing solutions improving our risk position.

Drawing this to conclusion, hopefully this has provided useful insight into our progress towards digitalisation, where we are in relation to our wider business plans and what our philosophy is when it comes to digitalisation. One final element that has been critically important in the development of this, though, has been the design principles we laid out as we began this journey, and they remain as true today as they did then so are worth repeating as we introduce this new version.

Customer led and socially inclusive
Transforming the value proposition to deliver experiences led by internal and external customer needs and enabled by new colleague solutions.

Security is a hygiene factor
Continuing to lead security performance in the digital arena within the sector.

Keeping the future in mind
Having flexibility within the design of the system to adapt to changes e.g. energy transition and the move from a DNO to DSO.

Facilitating efficiency
Promoting competitiveness in the market and driving efficiencies within the business to offer affordable services.

Maximising the value of data to us, our customers and our stakeholders
Delivering value and improving visibility of data to proactively drive new ways of working in a more productive way.

Unlocking digitalisation

To unlock organisational dexterity, which will allow us to adapt easily to the ever-changing external environment, we have identified several enablers that we have started to implement but need to embed further.

These enablers are not the complete picture and we will continue to collaborate with our people department to ensure that our strategy and action plan is aligned to our people strategy.

Getting digital right requires changes to our business and culture as well as technology

We have set out our plans in publications such as Emerging Thinking and DSO v1.1 to establish ourselves as:

— a trusted and neutral platform able to optimise the whole energy system and underpin the rapid transition to decarbonisation of electricity, transport and heat;
— a reliable and resilient system operator with the consumer at its heart that is a force for good;
— an enabler of cross sector and regional economic growth; and
— an active player in the GB energy system, facilitating and enabling whole system thinking.

Digitalisation is a key enabler of these plans and can help us to meet our goals and ensure we are able to take a leading role in the changing GB energy system. We will be accelerating our digital transformation in the remaining years of the ED1 period so that when we enter ED2 our transformation is already underway.

We know that embracing digital is not just about making investments in technology platforms but is wider reaching.

Understanding our ability to deliver will be key to successful delivery. To understand our current capabilities we have assessed ourselves using recognised maturity models and third-party benchmarking. We are working closely with our executive team to ensure that the leadership and delivery capabilities are in place to create the right conditions to drive digital.

To succeed in digitalisation we must also deliver lasting cultural change as a digital culture will allow us to deliver results more quickly and is key to ensuring our success in digital transformation. To deliver that change we will:

— prioritise the cultural alignment of our transformation, ensuring that the changes are ingrained rather than imposed.
— consider and adjust our transformation based on our existing cultural strengths.
— measure and monitor our cultural evolution, allowing us to identify and correct course and demonstrate improvement.

How we plan to start to change our culture...

Considerations we are investigating as we further develop our Digitalisation Strategy and Action Plan and move into wider ED2 planning.

Executive sponsorship

— Demonstrate clear accountability for success including KPIs
— Provide clarity of board-level responsibility for the delivery of the Digitalisation Strategy and Action Plan

Delivery capability

— Evaluate and document our capability/ experience to deliver digitalisation
— Understand the implication on the current operating model and ways of working

Stakeholder/user led

— Validate the Digitalisation Strategy and Action Plan (DSAP) with external and internal stakeholders
— Ensure that the DSAP is considered “evergreen”

Market co-ordination

— Further develop our approach to open data and whole market coordination
— Engage with current/future energy market actors

Quantify the strategy

— Calculate the cost/benefit of the Digitalisation Strategy
— Support ED2 planning by using the Emerging Thinking cost model analysis

What are the risks?

We know that any significant change brings with it risks but, in this sense, it has been important for us to consider these risks in more detail as the impact of getting this wrong could directly affect the resilience of our power network or the protection of consumer data.

As such, we believe there are four main risk vectors:

1

There are risks to our operations and resilience of the electricity network in our regions. One threat vector that increases with digitalisation is that of cyber attack.

2

There are risks that we could lose or misrepresent data, causing us to be in breach of laws or regulations.

3

There are risks that our chosen path for digitalisation will be ineffective in meeting the needs of our consumers and stakeholders.

4

And finally there are risks that we will not be able to deliver the digitalisation strategy due to skills gaps, poor change management or lack of buy in.

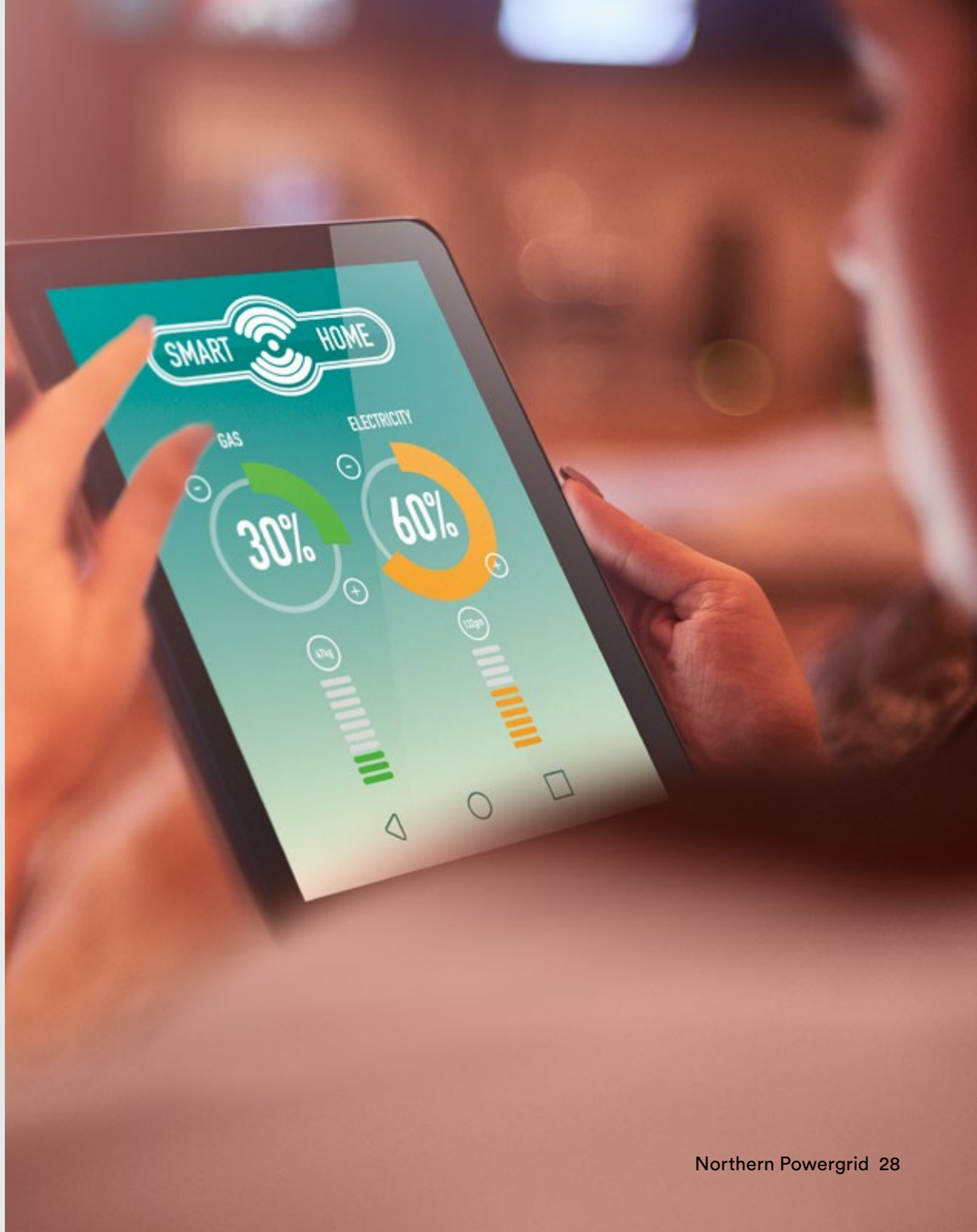
As with any strategy such as this, we will undertake thorough risk management throughout the programme to ensure all of these are mitigated and managed appropriately but at least acknowledging these high-level risks as we commence means that we will not lose this focus as we develop the plans further.

Focusing on cyber and data privacy risks

As we increase the amount of digital products and services we provide to consumers and stakeholders, we know the risk and impact of cyber attacks increase and the necessity of maintaining solid governance over data privacy will be more important than ever before.

To this end we have devised a specific set of initiatives targeted at cyber resilience and data privacy but, to summarise, our intention is to keep your information safe by investing in technology that helps us to identify weaknesses in our IT systems and quickly detect attacks. We will use intelligent technology to help our teams quickly identify real-time threats, hunt for and resolve weaknesses in our systems and maintain our strong defences as we open up our systems to more widely share data.

We do not envisage a world where we will vastly increase the amount of personal information we will hold about consumers but we do see that the type of data we will be able to utilise could be more granular and therefore data privacy and our commitment to best practice in this area will remain. We know from feedback you have given us on this topic, that you trust us to hold and process this type of data but we will not rest on this trust and will continue to invest in this as a key area of risk mitigation as we continue on our digitalisation journey.



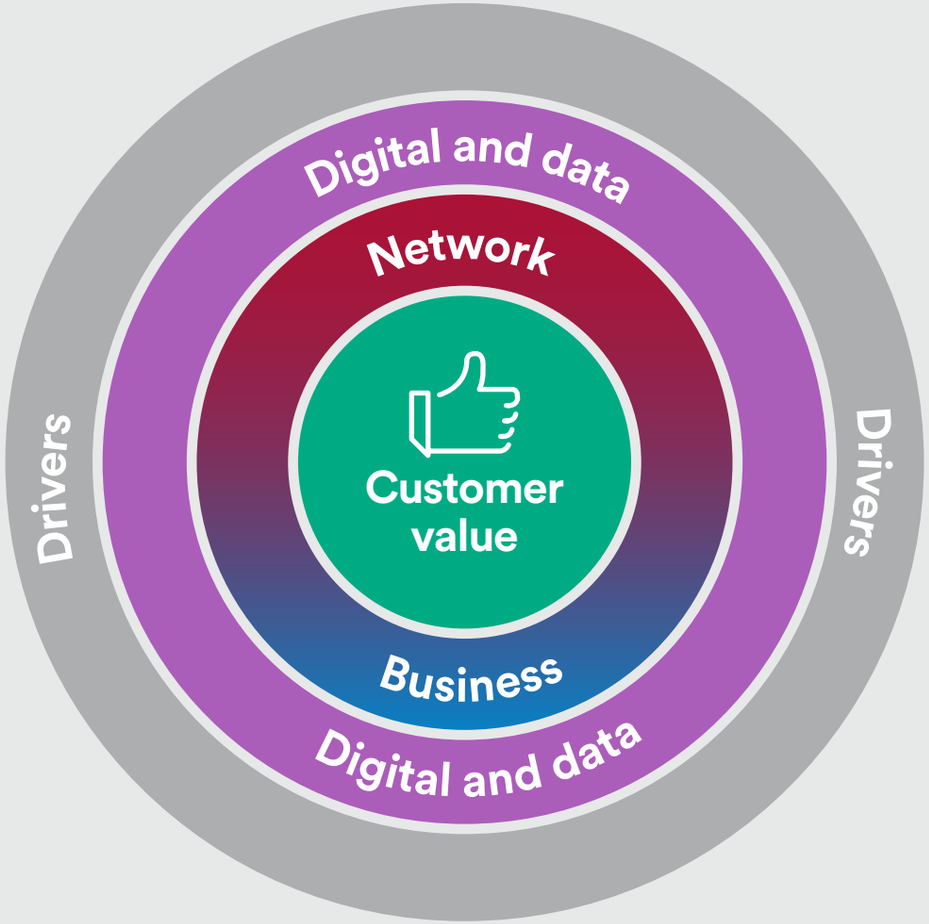
Brought to life...

The aim of digital transformation, and therefore our digitalisation strategy, is to meet our changing consumer and business requirements as well as aligning to the findings of the Energy Data Taskforce report[1] and its five key recommendations. This is achieved through the introduction of new, or modification of existing, customer experiences, business processes and technology enabled capabilities.

As an enabler for these changes, all the initiatives identified within our strategy and action plan should link directly or indirectly to a business outcome, which in turn should link to a consumer value proposition.

The linkage for each initiative back to a customer value proposition is highly complex and to display it within this document would increase the page count significantly, so to illustrate the point we have pulled out several examples on slide 30 (digital business) and slide 31 (digital network).

These provide the clear thread between the digital enablers, the business outcomes and the end value for our customers. We will be publishing this linkage in the future, as part of a data catalogue supporting our strategy.



1 Energy Data Taskforce: A Strategy for a Modern Digitalised Energy System (catapult.org.uk).

How will digitalisation enable consumer value?

These examples show how we will enable consumer value, in this case by improving access to data and reducing outages.

Digital enablers

- Building data interfaces and channels so that our external stakeholders can access relevant data, but also effectively provide us with their requests.
- Focusing on data quality and leveraging technology to proactively ensure we have the right data standards in place.
- Surface existing data points and identify new or unutilised data sources. Define how and where these data points could/will be used.
- Building a flexible analytics capability to be able to introduce new data points quickly and build use cases at pace to meet fast changing demand.
- Centralising network data with technologies and tools that allow to quickly scrutinise data, rationalise it and build analytics for decision making.
- Using digital channels to make it easy and effective for our field colleagues and contractors to capture and submit data at the point of work.

Business outcome

- Have a full, accurate and integrated centralised data set with the ability to share in a standard format.
- Have an operating model specific to the management of data for internal and external purposes including a data request triage process.
- Have a clear strategy for the use of data that can be obtained from the energy system and third-party data sources.
- Enhanced Condition-Based Risk Management capabilities through enriched data sets enabling improved decision making.
- Developing data models to forecast loads and identify reinforcement and interventions in the network as well as ways to better exploit existing assets.

Customer value

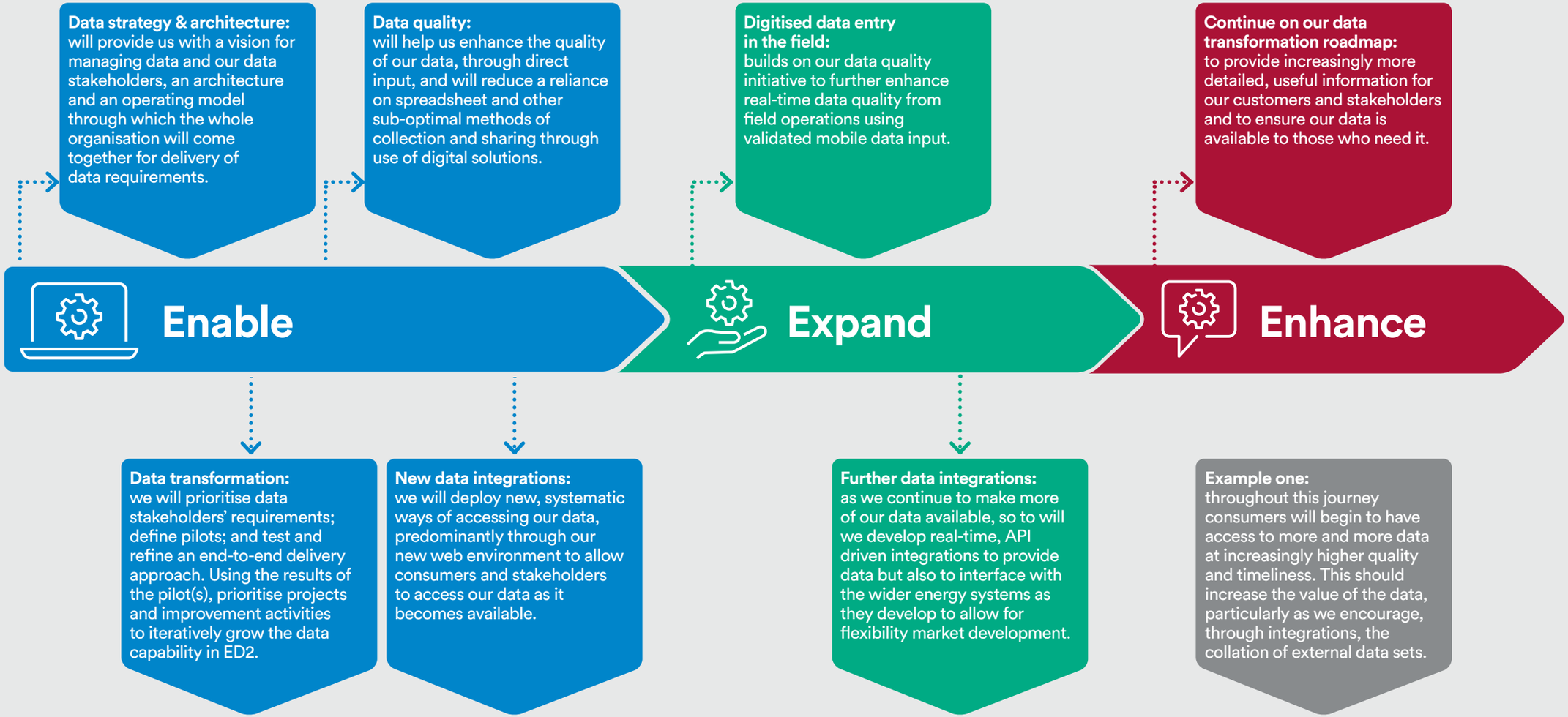
- The ability to access data that will allow you to make informed decisions.
- A reduction in outages due to our ability to understand where outages may occur and prevent them from happening.

How will digitalisation enable consumer value?

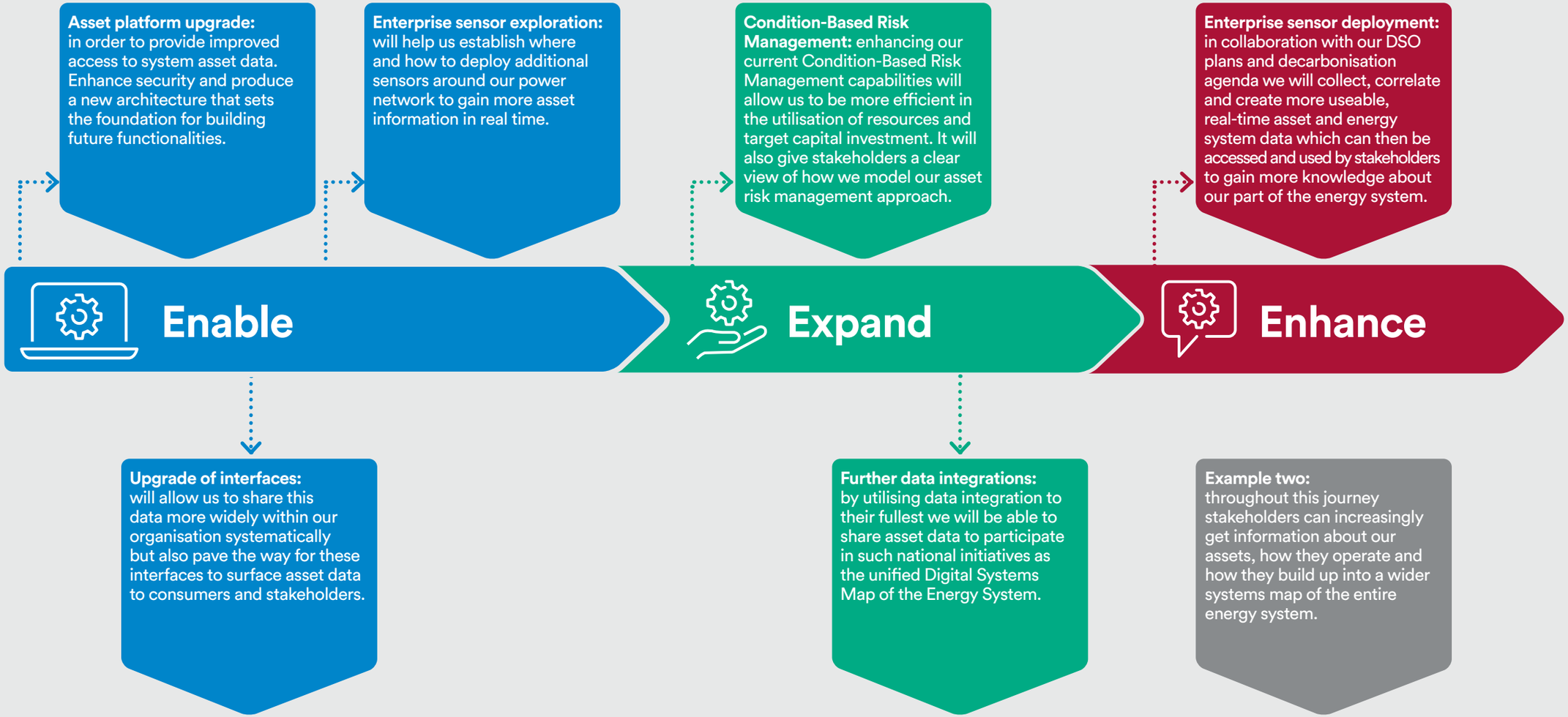
The diagram below provides some examples of how we will enable consumer value, in this case through improved customer experiences.

Roadmap

Each of the pillars of our strategy is defined on a transformation map later in this document, but to bring to life some of the initiatives that will underpin the customer value propositions, the following page depicts where we see these mapping across the three time-bound stages: Enable, Expand and Enhance.



Roadmap



There are a series of activities that we should undertake to implement and drive our digital transformation

Enable

100% Level of progress

Digitalisation Strategy and Action Plan journey

	First Ofgem digitalisation strategy	Digitalisation action plan Iteration 1	Iteration 1 of digital strategy and action plan published	Draft digitalisation action plan Iteration 2	Preparing for implementation	Testing our delivery capability	Full scale digital transformation
Activities	Our Roadmap to Digitalisation submitted to Ofgem, informed by EDTF and wider stakeholder views.	Digitalisation Strategy and Action Plan Iteration 1. It includes an action plan to underpin the strategy, creating a clear set of business-aligned digitalisation initiatives.	Digitalisation Strategy and Action Plan published to website.	Enhance Iteration 1 and include our ED2 business plan outputs and any revisions to our digitalisation initiatives. Rigorously test that our initiatives are both architecturally and economically robust. Refine/quantify our Initiative business case(s) and so directly feed the ED2 business planning process.	Evaluate and assess our as-is and target architecture and our target operating model in line with our People strategy and wider organisational design. Identify and resolve any changes to the business and IT delivery model required to implement the digital capabilities and realise the business benefits.	Run early Proof of Concepts and pilots to test and learn through an early set of initiatives.	Execute the Digitalisation Strategy and Action Plan and wider programmes to set the foundation for a successful ED2.

Digitalisation strategy

1. Introduction to this section

Outcomes are delivered through digitalisation initiatives

To arrive at relevant and impactful digitalisation initiatives, a functional view from our business, customer engagement and regulatory guidance have identified which capabilities need to be enhanced and changed. Mapping to business objectives shows why such capabilities are in scope for change and can be found in the following slides.

The outcomes of delivering a digital energy network	The outcomes of building a digital business	Objectives	Capabilities required	Initiatives
Promoting data transparency by collecting and sharing energy system data in a consistent and open manner, adopting data best practice, to promote efficiencies and compliance.	**Transforming customer experiences** to better understand the customer journey from all perspectives and touchpoints and align our services to specific customer segments.	During development, key internal stakeholders from multiple functions and business areas were engaged. Using input such as Emerging Thinking, DSO v1.1., immediate needs, and future ambitions, the stakeholders stated objectives they wished to achieve. Using an analysis methodology, these objectives have been consolidated and appropriately mapped to their associated capabilities and initiatives. For every objective, there may be multiple capabilities and initiatives.	Business objectives were mapped to business capabilities using logical capability models. Delivering these business objectives will require new or additional capability. The mapping identifies where potential investment and change is required. Capabilities have been consolidated and appropriately linked to associated business objectives. For every objective, there may be multiple capabilities.	The digitalisation initiatives will deliver the new or additional business/ technology capability required to deliver the Digitalisation Strategy and Action Plan. A number of initiatives were identified and detailed out through proformas. The initiatives have been consolidated and appropriately mapped to associated business capabilities. For every capability, there may be multiple initiatives. Consolidated initiative proformas provide further narrative. The reader is also advised to refer to the detail in the appendix.
Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy system.	**Improving our technology capabilities** to drive down the cost of IT and the risk of technical debt through a programme of constant review and refresh to realise future digital opportunities.			
Improving network planning and operations through utilising emerging technology, data and digital capabilities.	**Leveraging intelligent automation** to reduce manual tasks, increase efficiency of processes, improve quality and re-focus effort on value-added activities that boost productivity and efficiency.			
Digitalising the energy system using digital devices, increased monitoring, advanced communications and interconnected systems to drive real-time control and decision making.	**Enabling a digital workplace** to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.			

You might find it helpful to read the 'Mapping how to' guide on the next few pages of this document.

1. Introduction to this section

Introduction to the content of our Digitalisation Strategy and Action Plan

This section is divided into two themes:

— **Delivering a digital energy network, and**
— **Building a digital business.**

Each theme is subsequently presented by following the sequence:

1. The outcomes are to be achieved by Delivering a digital energy network and Building a digital business. In the March 2020 publication of the Roadmap for Digitalisation, each theme identified four outcomes.
2. Through the consolidation analysis, and for each outcome, a mapping of objectives, required capabilities and consolidated initiatives is produced, there is a how to read guide on this later on in the section.

   These maps also make reference to the digitalisation initiatives that were produced and in effect become the consolidation of all initiatives as they align to a specific outcome.
3. A transformation map then sequences the consolidated initiatives across three stages of transformation. These are:
   — Enable
   — Expand, and
   — Enhance.
4. A how to read guide of the transformation map is available in the next slides. The transformation map and the Stage Outputs show results of our initiatives at the end of each stage.
5. The section then concludes by providing a high-level analysis on the operating model dimensions as the initiatives are implemented.
6. Finally, for each consolidated initiative a proforma is produced. These provide detail into the scope of the consolidated initiatives and articulate outcome. They are organised in order of each digitalisation outcome.

Figure 4
Mapping of digitalisation outcomes to consolidated objectives, capabilities and initiatives

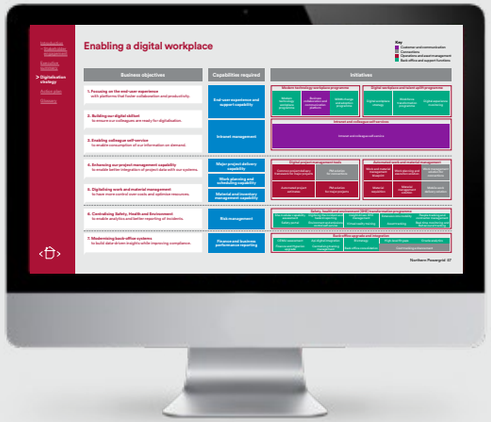


Figure 5
Transformation map

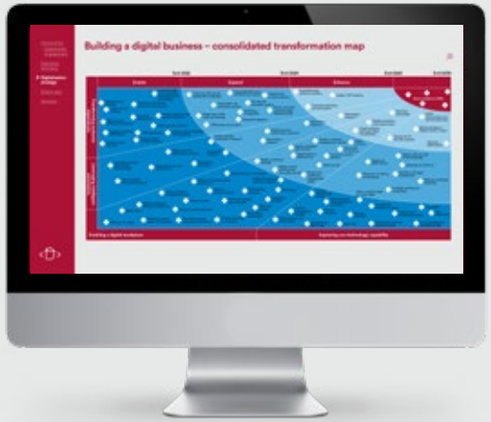
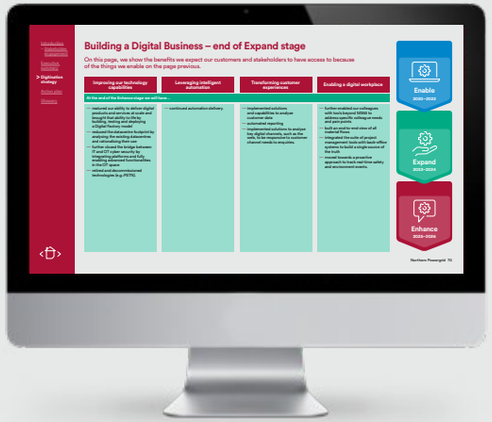


Figure 6
Transformation Stage Output



1. Introduction to this section

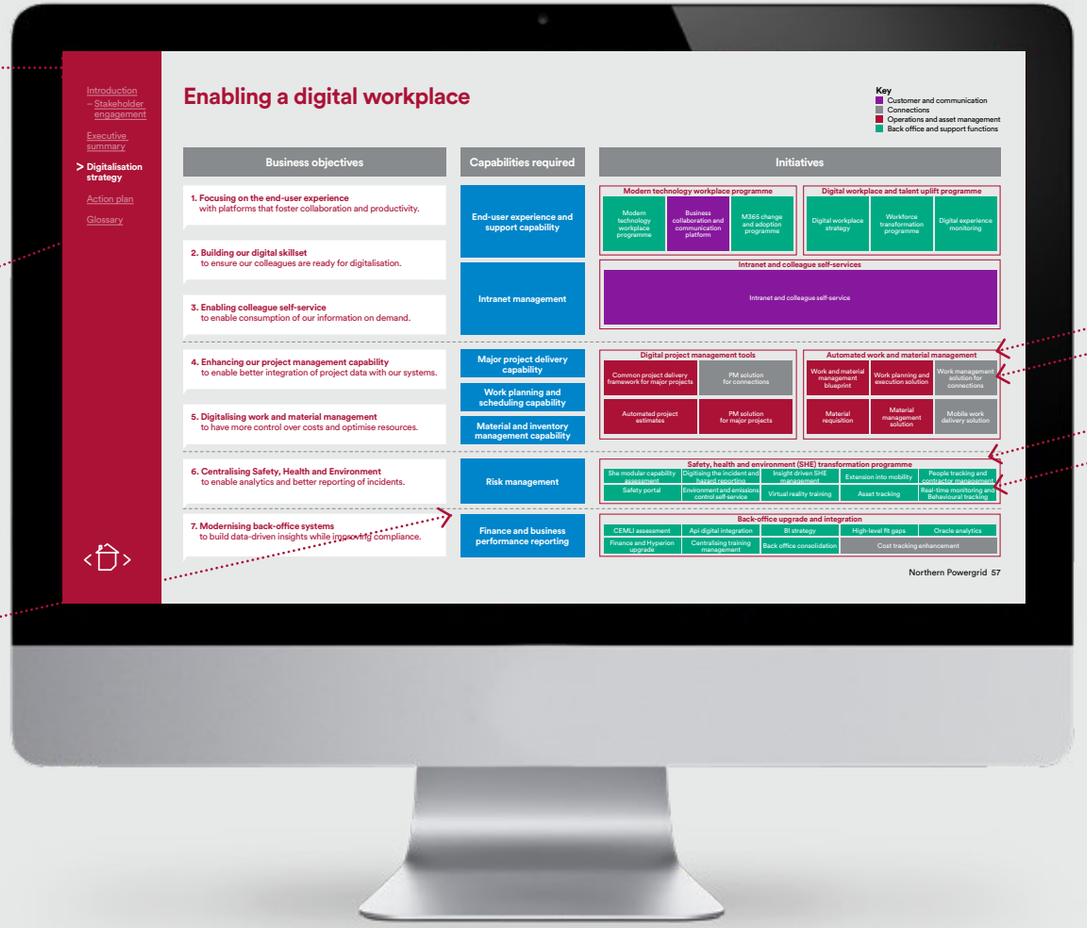
How to read the mapping between consolidated objectives, capabilities and initiatives

The business objectives have been consolidated and mapped to a set of aggregated capabilities and initiatives.

1. Digital outcomes from the March 2020 Digitalisation outcomes

2. Business objectives
The business objectives gathered were mapped against our Digitalisation Strategy's desired outcomes and grouped accordingly.

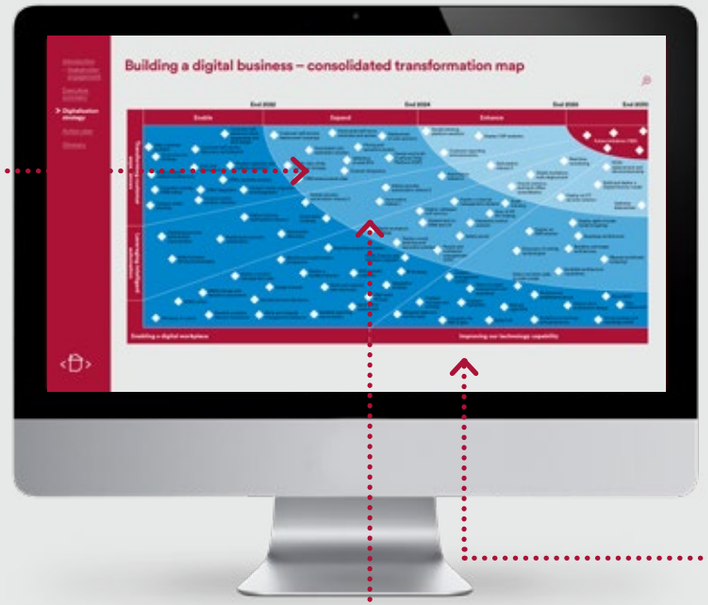
3. Capabilities required
Objectives were mapped against capability maps to understand the key capabilities required. During the consolidation exercise, key capabilities were grouped into eight maps, one per desired outcome.



4. Consolidated initiatives
During the consolidation exercise, the original initiatives were consolidated in order to eliminate overlaps and link them to the desired outcomes.

1. Introduction to this section
How to read the transformation maps

The transformation maps sequence the digitalisation initiatives across three transformation stages – Enable, Expand and Enhance. The stage output provides narrative of what transformative outcomes we will have achieved through the initiatives.



1.
T-map overview

A transformation roadmap or T-Map is a one page visual depiction of the major initiatives required to achieve a strategic goal, along with estimated timing of each of them.

It is worth noting that the T-Map does not constitute a programme plan and the timelines are estimations based on logic and priorities. The closer an initiative is to the left-bottom red lanes, the earlier it would come in terms of implementation times.

2.
Milestones

Every milestone has a point related on the T-Map. These milestones are outlined on the initiative proformas.

3.
Lanes

The T-Map is divided into four lanes.

4.
Phases and achievements

The T-Map is divided into phases that represent stable operating states with a set of key achievements related. Such achievements are further defined separately.

Digitalisation strategy

2. The journey so far – digitalisation in action

Digitalisation has been part of our journey for some time now

Although our digitalisation strategy has only recently framed our future ambition into the two main themes and eight pillars described in this document, we have been laying the groundwork to enable these initiatives throughout our current regulatory period.

Promoting data transparency

We have become members of the ODI Leeds, a pioneer node of the Open Data Institute, to deepen our skills and understanding of open data. We are publishing and consulting now on our Distributed Future Energy Scenarios using an open data approach, to co-develop our regional forecasts together with our stakeholders.

Enabling data analytics

Use of mathematical algorithms to assess and predict asset health using data. Informs capital investment decision making, determination of maintenance policy and regulatory reporting on network outputs.

Power system design tools form a "digital twin" of the network used to model a wide variety of operational conditions as we transition to more active network operation. In combination with network monitoring data this is a key DSO enabler to providing information on the energy network.

Digitalising the energy system

We are delivering a £83 million Smart Grid Enablers programme, which is transforming our ability to monitor, control and communicate with more than 860 major substations and 8,000 distribution substations. This will enable us to respond to real-time information about power flow on our network.

Deployment of remotely controlled network switches in conjunction with automated network switching algorithms to minimise the number and duration of customer interruptions.

Improving network planning and operations

Innovation project that allows customers to interact with a digital model of our network and self-quote for network connections such as new housing and public electric vehicle charging points. The tool also provides a first of its kind heat map of capacity for local low-voltage networks. For the first time, customers have access to real network data upon which they can optimise the connection quotation process.

Transforming customer experiences

We have deployed an agile developed customer relationship management tool to allow our customers to self-serve on an increasing number of services we provide. We will continue to develop new services throughout ED1 and utilise this as an underpinning service into ED2.

Improving our technology capabilities

We are moving to an evergreen technology environment whereby we are continually iterating to avoid technology debt and encourage the adoption of emerging technology to drive efficiencies.

Leveraging intelligent automation

We have successfully piloted a number of RPA initiatives across our back and front office functions proving that we can make efficiency gains and process improvements in a rapid and responsive way.

We have undertaken a Proof of Concept whereby we have ingested some of our operational data into a repository and allowed a machine learning algorithm to spot patterns that might help us predict things such as our estimated time to recover from a fault.

Enabling a digital workspace

We are enabling new capabilities for our colleagues by investing in rolling out modern devices and software to support efficient collaboration, better connectivity and ease of use. All of which allows our colleagues to be empowered to deliver excellent customer service.

Digitalisation has been part of our journey for some time now

We are already investing in initiatives that enable data analytics and drive consumer value, an example of this is our Foresight project, detailed below.

Enabling data analytics

Our Foresight project is developing fault prediction and location techniques using data collected on our low-voltage network and deploying network technology to automate the restoration of supplies to customers.

The transition to DSO includes making use of intelligence from data to develop increasingly active networks that deliver high levels of reliability and availability for customers. Identifying and preventing potential power cuts before they happen will help us deliver on this customer-focused ambition. We can do so by improving our understanding of our network's status through data analysis. Foresight is a three-year project that will enable us to spot the tell-tale signals on the network before a fault happens. It will improve our understanding of indicative pre-fault behaviour of low-voltage cable networks and our ability to develop management options for it.

A greater understanding of fault types will support a radical change in our approach to replacement works and will improve network reliability, efficiency and maintenance programmes, which will benefit our customers and result in less physical disruption on the network and roads. If we can fix faults in advance, we will keep the power flowing to all of our customers and not only play our part in resource conservation by saving materials, but also minimise the need to dig up roads, which causes traffic disruption for local businesses and householders.

Improving network planning and operations

Our eAM-Spatial Programme has delivered a single Integrated Network Model that provides a single data repository for network asset information including asset attribution, spatial location and network connectivity for all our network assets.

Combining a full asset attribute model, locational data and a comprehensive network connectivity model provides a single source of the truth regarding our network asset information. The Integrated Network Model which interfaces with our Distribution Management System provides the basis of an intelligent model crucial to the transition to DSO. We have a single integral model that allows all areas of the business and external data users to share information in compatible ways and formats.

The Integrated Network Model is central to network design and planning. It is designed to integrate further with active network monitoring on the LV and HV networks and is providing an increasingly intelligent tool for the active management of the network.

Our eAM-Spatial solution is interfaced with other information systems to provide external access to our data and is used to provide the data source for our AutoDesign capability. Moving forward we will expand the availability of the data held within the system on an open data basis.

Digitalisation has been part of our journey for some time now

Transforming customer experiences is another area where we are investing now to be strongly positioned for our ambitions for the next price control period.

Transforming customer experiences

AutoDesign is a new online, self-service tool that allows consumers to self-serve to receive budget estimates on LV connections in minutes, and for free, with the ability to guide customers to the most cost-effective connection options. We expect it will accelerate low carbon technology deployment by our customers, and assist our own LV design processes.

We have a project currently running to expand this capability into higher voltages and to allow customers to obtain a full self-service design capability based on our current network configuration and then take that design through to either an estimate or a binding quotation that they can accept and pay for online without the need to engage with our teams.

This same solution will be used by our technicians where customers prefer to engage with us on a face-to-face basis and in this regard an extension to this project will see us expanding our capability to offer timed appointments for such engagements.

The outcome of this initiative provides our connections customers with omni-channels of their choice, speeds up the estimation, quotation and acceptance cycle and contributes towards decarbonisation through reductions in travel.

Leveraging intelligent automation

We are undertaking a cutting-edge Machine Learning project that will employ machine learning to predict the estimated times of restoration for our unplanned power cuts.

We record power cut information in our outage management system and machine learning will combine this data with other internal and external data sources to provide us with better insight into the factors that influence restoration times. We will use this insight to make predictions on when we will restore power to customers and improve the accuracy of information that we provide to our customers, something we know is important to them and will make a real difference to them being able to work around any service interruptions.

This marks only the beginning of our journey to use automated intelligence with our existing and emerging data sets to be able to better predict, plan and adjust according to actionable data insights. The key for us in exploring automation initiatives such as this one is that we recognise the market is not rich with the types of resource that would typically have been employed to deliver such insights. Being able to leverage technology to reduce the need for such resource means we can still enable the ambitions set out within this strategy and our business plans to underpin our output areas with high value, real-time and open data.

Digitalisation strategy

In our Roadmap for Digitalisation (updated in March 2020) we identified again that we wanted to implement, operate and participate in a digital energy system, using technology to continuously innovate and evolve as a digital business.

We recognise the importance of digitalisation to our role within the GB energy system and how it provides us with the opportunity to embrace the transition from Distribution Network Operator to the role of a Distribution System Operator whilst also providing exemplary customer service and operating a modern digitally-driven business.

Delivering a digital energy network is key to underpinning our future strategy. In delivering this capability, we will focus on the following desired outcomes:

Promoting data transparency by collecting and sharing energy system data in a consistent and open manner, adopting data best practice to promote efficiencies and compliance.

Improving network planning and operations through utilising emerging technology, data and digital capabilities.

Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy system.

Digitalising the energy system using digital devices, increased monitoring, advanced communications and interconnected systems to drive real-time control and decision making.

Promoting data transparency

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Objectives	Capabilities required	Initiatives
1. Enhancing the responsiveness of our organisation so that we can respond to stakeholder requests more efficiently and transparently.	**Data strategy and governance**	**Data strategy and architecture**: Set the vision and know the data stakeholder; Defining the data operating models; Data architecture
	Data delivery	**Data transformation office**: Set up the data transformation office **Data transformation programme**: Implement use cases pilots; Scope data transformation programme and deliver agile at scale
2. Building open data interfaces and channels so that our external stakeholders can access relevant data, but also effectively provide us with their requests. **3. Using all possible sources for data** and identifying technologies to be triaged and integrated as they become available.	**Data triage and requirements management**	**External and internal use of data**: New data integration
4. Focusing on data quality and leveraging technology to proactively ensure we have the right data standards in place. **5. Using digital channels** to automate or make it easy and effective for our field colleagues and contractors to capture and submit data at the point of work.	**Data quality management**	**Data quality**: Identify data gaps and asset data backlog resolution; Discover and implement solutions to digitise data entry; Adopt data best practice and data quality improvement strategy; Data quality and data cleanse

Enabling data analytics

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Objectives	Capabilities required	Initiatives
1. Centralising network data with technologies and tools that allow us to quickly scrutinise data, rationalise it and build analytics for decision making.	**Exploit new data opportunities**	**Analytics strategy and CoE**: Analytical capability strategy; Implement analytics CoE
2. Building a flexible analytics capability to be able to introduce new data points quickly and build use cases at pace to meet fast changing demand.		**Enabling advanced analytics on network operations**: Network operations quick win initiatives; Use of AI, Machine Learning and automation for network operations; Reporting and analytics solution; Intelligent digital solutions for modelling and automation; Forecasting and analytics for network trading; Automation and AI for network trading
3. Developing data models to forecast loads and identify reinforcement and interventions in the network as well as ways to better exploit existing assets.	**Network investment management**	**Network planning and investment analytics**: Alignment with data transformation and Use of smart data strategy; Define technical architecture for network planning/network architecture; Modelling and engineering digital rollout 1 and 2
4. Leveraging analytics for investment planning to model flexibility levers and commercial constraints to optimise our investment plans.	**Network cost planning**	

Improving network planning and operations

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Objectives	Capabilities required	Initiatives
1. Integrating network operation and introducing commercially available systems into the control room to enable flexibility mechanisms.	**Network risk management**	**Enable network operations strategy and operating model**: Support network operations strategy and defining of architecture; Enable network operations operating model
2. Enabling real-time visibility of the network including energy flows and environmental conditions, down to the LV network level, to be able to forecast different load scenarios and predict faults.	**Network operations management**	**Management of energy resources**: Energy resource management strategy and architecture to enable operations control; Build out ANM Hub capabilities, roll out at enterprise level. **Active network management**: ANM hub strategy and architecture to enable flexibility services; Build out DERMS capabilities, roll out at enterprise level
3. Continue with DSO v1.1 initiatives* to set the foundations for the journey to be the Distribution System Operator for our territories. (*DSO v1.1 plans have been included as a set of IS initiatives as they will set the foundations upon which we can, where identified, expand such capabilities to complete our journey to DSO and expand that capability to meet our developing ED2 business plans. More details of these activities can be found at www.northernpowergrid.com/asset/0/document/5139.pdf)	**Network planning** **Network management** **Investment planning**	**Network operations**: Low-voltage monitoring; Network monitoring database & visualisation improvements; Active network management system rollout (flexibility connections); Development of improved distribution load estimates; Network forecasting models; Improving demand forecasting; Distribution system analysis tools; Smart network design methodologies; Customer-led distribution system; Fault prediction and LV cable health

Digitalising the energy network

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Objectives	Capabilities required	Initiatives
1. Increasing the use of data in asset management to understand the health of assets and identify interventions.	**Network risk management**	**Asset data platform upgrade**: Asset data platform update and enhancements **Enhance Condition-Based Risk Management**: Identify opportunities for and deploy enhanced Condition-Based Risk Management and decision making capabilities
2. Building on Condition-Based Risk Management decision making and planning to optimise asset life and target capital investment to reduce interruptions of critical assets.	**Asset management**	Capability analysis and definition of future improvements Deliver enterprise sensor data handling and analysis capabilities
3. Exploring emerging technologies and finding innovative ways to augment asset management capabilities.	**Data quality management**	**Network and asset management**: RTU & AVC replacement Operational communications replacement for SCADA Integrated substation condition monitoring Modelling asset risk
4. We are enabling decarbonisation by deploying smart grid voltage solutions, real-time thermal ratings, automatic load transfers and employing risk-based decision making capabilities.		

Delivering a digital energy network – transformation journey

The initiatives will enable us to deliver a set of new and enhanced capabilities that ultimately will transform us as a business to deliver stakeholder outcomes and customer benefits.

The initiatives have been prioritised by business value using qualitative business cases and logical sequencing and have been translated into a roadmap with four time-bound transition states:

— **Enable (2020–2022):** Initiatives that solve immediate challenges, provide quick wins and build the platform for future growth

— **Expand (2023–2025):** Initiatives that build on previous work and provide further benefits or identify later stakeholder requirements for business transformation

— **Enhance (2025–2026):** Initiatives that are either more innovative in nature or build on the previous work to complete a series of capabilities for full benefits realisation

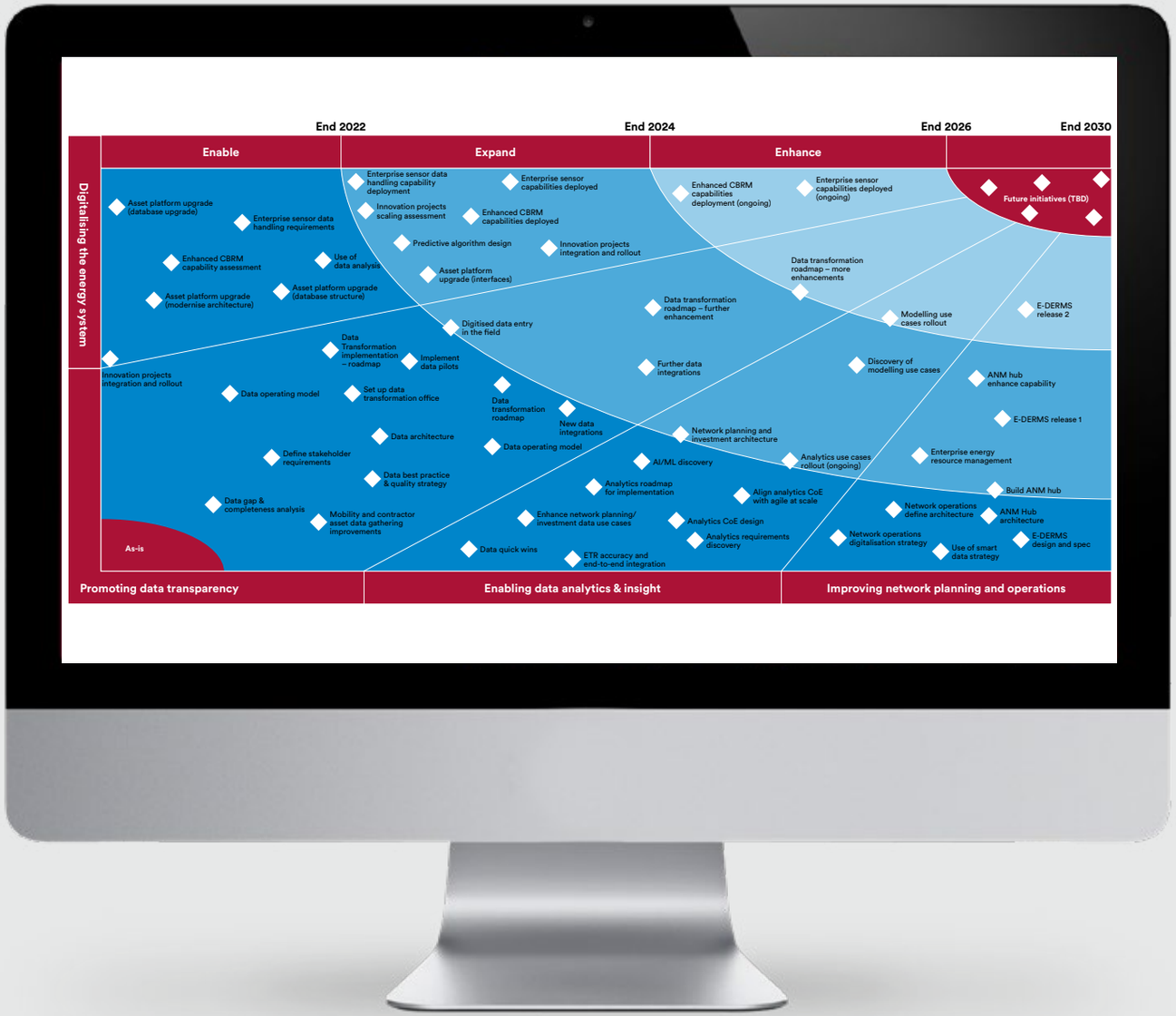
— **Future Initiatives (2027–2030):** Initiatives that, due to the speed at which technologies emerge, are as yet undefined and unidentified. These will be added to the DSAP as part of our ongoing review and update process.

The digitalisation initiatives have been presented in a ten-year transformation map. The benefit of a transformation map is that it shows how the initiatives are sequenced, and what falls within each of the transformation categories above.

The transformation map includes a narrative of what we will achieve at the end of each phase of transformation, i.e. what level of change would have occurred at the end of Enable, Expand and subsequently Enhance. It is therefore advised that the reader studies the transformation map with the stage narratives side by side.

We will go through three stages of transformation

Delivering a digital energy network – consolidated transformation map



Digitalisation strategy

In March 2020 we defined our Digitalisation Strategy (through the Roadmap for Digitalisation document) as wanting to implement, operate and participate in a digital energy network, using technology to continuously innovate and evolve as a digital business.

We recognise the importance of digitalisation to our role within the UK energy sector and how it provides us with the opportunity to embrace the transition from Distribution Network Operator to the role of a Distribution System Operator whilst also providing exemplary customer service and operating a modern digitally-driven business.

Building a digital business is key to underpinning our future strategy. In delivering this capability, we will focus on the following desired outcomes:

Transforming customer experiences to better understand the customer journey from all perspectives and touchpoints and align our services to specific customer segments.

Improving our technology capabilities to drive down the cost of IT and the risk of technical debt through a programme of constant review and refresh to realise future digital opportunities.

Leveraging intelligent automation to reduce manual tasks, increase efficiency of processes, improve quality and re-focus effort on value-added activities that boost productivity and efficiency.

Enabling a digital workplace to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.

Improving our technology capabilities

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Business objectives	Capabilities required	Initiatives
1. Migrating to the cloud to enable scalability while reducing technical debt.	**Infrastructure and cloud management capability**	**Deploy a hybrid cloud**: Cloud strategy; Application portfolio assessment and rationalisation; Cloud TOM and governance; Hybrid cloud deployment
2. Moving towards a modern architecture to allow flexibility and rapid integration of future services.	**IT governance and architecture capability**	**Adopt agile ways of working**: Set up an Agile Centre of Enablement (CoE); Deploy product based delivery teams; Test and implement a Digital Factory model. **Build an architecture capability**: Develop the architecture capability; Architecture enablement group delivery
3. Evolving the operating model to set IS as an enabling function for digitalisation.		
4. Transforming cyber security to deliver highly effective cyber security services in IT and OT.	**Cyber security capability**	**Implement advanced threat detection tools**: NIS-D improvement plan initiatives; Endpoint Detection and Response (EDR) solution; OT security solution
5. Enhancing the telecoms network to better manage the telecoms assets while replacing retiring technologies.	**Telecoms management capability**	**Deploy telecoms tools and retire old technologies**: Telecoms service desk; Telecoms asset management platform; Replacement of retiring technologies in telecoms

Leveraging intelligent automation

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Business objectives	Capabilities required	Initiatives
1. Using automation to standardise processes and remove manual tasks. This will be done across all business areas. **2. Integrating systems** by leveraging a modern architecture to reduce manual activities and expand the ability to share data. **3. Better modelling and assessing the network** by leveraging emerging technologies to assess business, customer and energy network scenarios.	**Systems integration and process automation**	**Robotics opportunity discovery and implementation** Customer and people services/Operations automation discovery and rollout Automation and artificial intelligence implementation Systems integration Note – This is a theme suggested and where applicable mentioned within the proforma of all initiatives
4. Optimising processes to provide faster customer services while improving the colleague experience.	**Process improvement**	**Process mining and process improvements** Process mining and improvement transformation Process optimisation and Robotic Process Automation (RPA)

Transforming customer experiences

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Business objectives	Capabilities required	Initiatives
1. Shifting towards omni-channel so that customers have access to all and preferred channels whilst providing self-service functionality.	**Channel development and integration** **Real-time chat and automation capability**	**Omni-channel transformation**: Omni-channel strategy; Channel integration; Social listening platform and analytics; Live Chat **Contact centre modernisation**: Contact centre modernisation **Website modernisation**: CMS strategy; CMS platform development; Website modernisation; Website analytics
2. Enhancing the customer experience to deliver high standards alongside well developed customer journeys. **3. Improving our external communications** providing intuitive, modern and effective communications through preferred customer channels.	**Customer data and records management** **Enquiry management and response time estimation**	**Customer strategy**: End-to-end customer journeys; Connections performance management framework; Customer journey refresh through customer research – 2nd iteration; End-to-end connections blueprint; Major projects performance management framework **CRM modernisation**: CRM rollout programme and enhancements; CRM rollout for connections **Customer analytics**: Customer data platform and analytics
4. Delivering connections sooner to outperform regulatory performance criteria for time to quote and time to connect, whilst giving choice to the customer.	**Design automation and cost estimation**	**Customer self-service**: Customer self-service platform; Customer self-service portal – upgrade and integration; Pricing and quotation system
5. Automating our connections estimates and quotes to provide customers with fast, on-demand estimates and quotations for their different connections requirements.	**Quotation management**	**Automated estimates and quotation**: Automated self-serve estimates and quotes; Cost estimation solution

Enabling a digital workplace

Key
- Customer and communication
- Connections
- Operations and asset management
- Back office and support functions

Business objectives	Capabilities required	Initiatives
1. Focusing on the end-user experience with platforms that foster collaboration and productivity. **2. Building our digital skillset** to ensure our colleagues are ready for digitalisation. **3. Enabling colleague self-service** to enable consumption of our information on demand.	**End-user experience and support capability** **Intranet management**	**Modern technology workplace programme:** Modern technology workplace programme; Business collaboration and communication platform; M365 change and adoption programme **Digital workplace and talent uplift programme:** Digital workplace strategy; Workforce transformation programme; Digital experience monitoring **Intranet and colleague self-services:** Intranet and colleague self-service
4. Enhancing our project management capability to enable better integration of project data with our systems. **5. Digitalising work and material management** to have more control over costs and optimise resources.	**Major project delivery capability** **Work planning and scheduling capability** **Material and inventory management capability**	**Digital project management tools:** Common project delivery framework for major projects; PM solution for connections; Automated project estimates; PM solution for major projects **Automated work and material management:** Work and material management blueprint; Work planning and execution solution; Work management solution for connections; Material requisition; Material management solution; Mobile work delivery solution
6. Centralising Safety, Health and Environment to enable analytics and better reporting of incidents.	**Risk management**	**Safety, health and environment (SHE) transformation programme:** She modular capability assessment; Digitising the incident and hazard reporting; Insight driven SHE management; Extension into mobility; People tracking and contractor management; Safety portal; Environment and emissions control self-service; Virtual reality training; Asset tracking; Real-time monitoring and Behavioural tracking
7. Modernising back-office systems to build data-driven insights while improving compliance.	**Finance and business performance reporting**	**Back-office upgrade and integration:** CEMLI assessment; Api digital integration; BI strategy; High-level fit gaps; Oracle analytics; Finance and Hyperion upgrade; Centralising training management; Back office consolidation; Cost tracking enhancement

Building a digital business – transformation journey

The initiatives will enable us to deliver a set of new and enhanced capabilities that ultimately will transform our business, and deliver stakeholder outcomes and customer benefits.

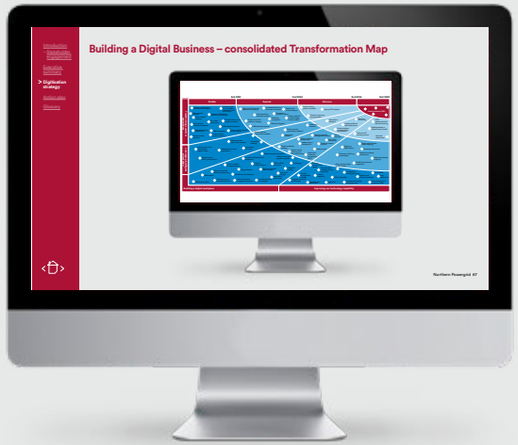
The initiatives were prioritised by business value (see qualitative business cases in appendix) and logical sequencing and translated into a roadmap with four time-bound transition states:

- **Enable (2020–2022):** Initiatives that solve immediate challenges, provide quick wins and build the platform for future growth
- **Expand (2023–2025):** Initiatives that build on previous work and provide further benefits or identify later stakeholder requirements for business transformation
- **Enhance (2025–2026):** Initiatives that are either more innovative in nature or build on the previous work to complete a series of capabilities for full benefits realisation
- **Future Initiatives (2027–2030):** Initiatives that, due to the speed at which technologies emerge, are as yet undefined and unidentified. These will be added to the DSAP as part of our ongoing review and update process.

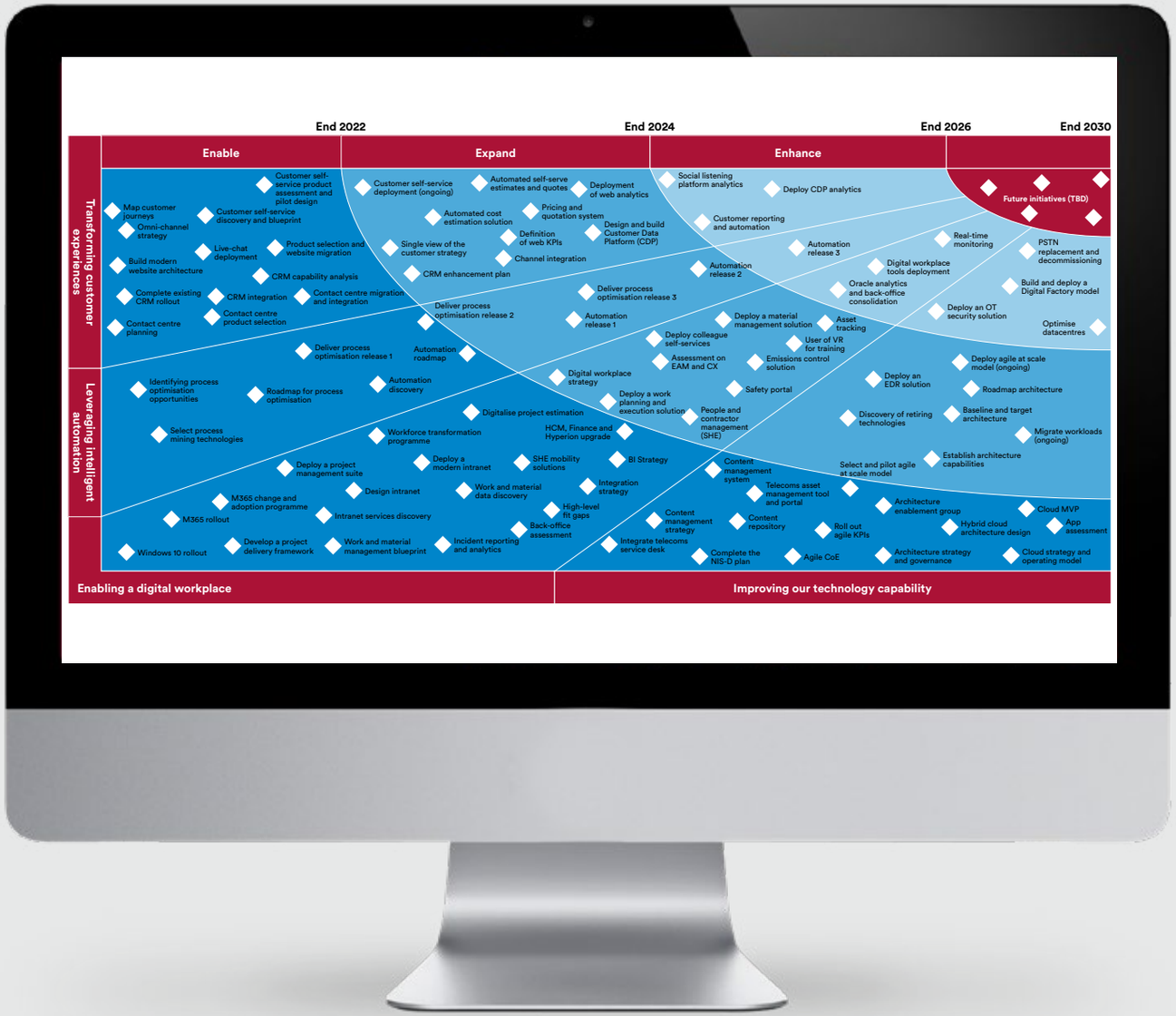
The digitalisation initiatives have been presented in a ten-year transformation map. The benefit of a transformation map is that it shows how the initiatives are sequenced, and what falls within each of the transformation categories above.

The transformation map includes a narrative of what we will achieve at the end of each phase of transformation, i.e. what level of change would have occurred at the end of Enable, Expand and subsequently Enhance. It is therefore advised that the reader studies the transformation map with the stage narratives side by side.

We will go through three stages of transformation



Building a digital business – consolidated transformation map



Action plan

The action plan section of this document details the initiatives that deliver our strategy

This section breaks down the initiatives detailed within the strategy further, providing information on how the changes required to move us forward will be implemented. The plan details initiatives that are either in flight or will be started during the next six months.

Our future initiatives can be found here.

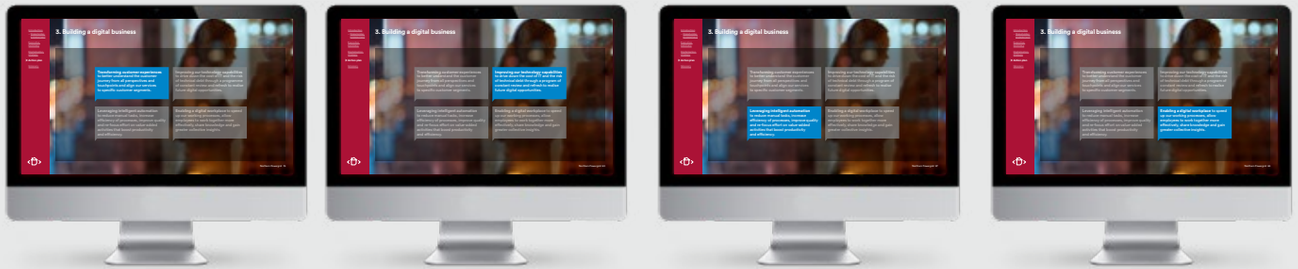
To implement our strategy we know, at a high level, we will have to:

Embrace new technology + **Cleanse and maximise our data** + **Change our culture**

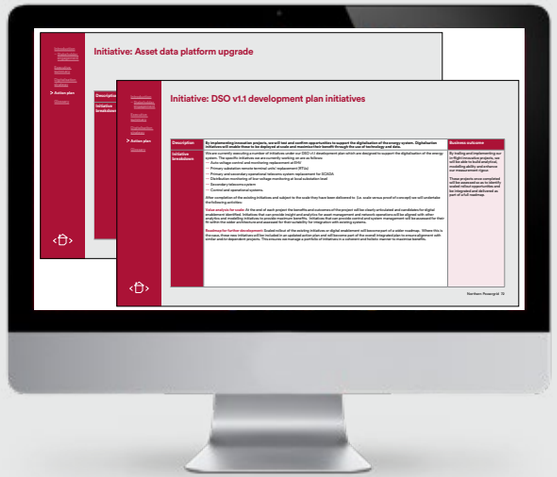
It is important to recognise that our action plan is fluid. Although we have sought to be as clear as possible in this version, it is expected that this action plan and the initiatives within it will change as we refine our business plan for RIIO-ED2.

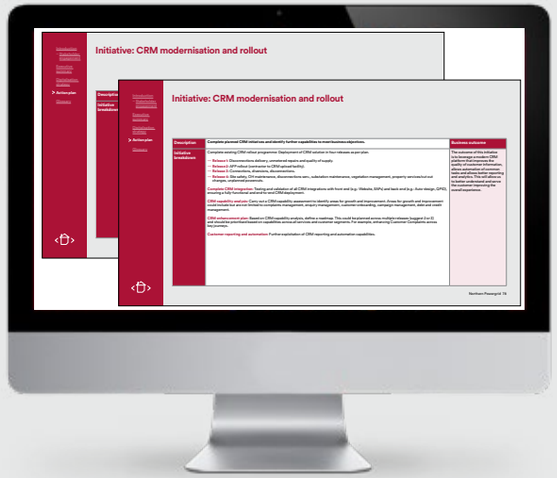
Detailed proformas will narrate the scope of the consolidated initiatives as they relate to each digitalisation outcome

Digitalisation outcomes



Consolidated initiative proformas





Action plan

Action plan progress overview

The Kanban style board below details the current progress status of all initiatives within our action plan.
It should be noted that this Kanban is forward looking and does not represent those initiatives already completed.
For more information on Kanban boards, please see **https://en.m.wikipedia.org/wiki/Kanban_board**

To do	In progress	Done
Data strategy and architecture	Network planning and operations, existing initiatives	
Data quality	Asset data platform upgrade	
Omni-channel integration	DSO v1.1 development plan initiatives	
Contact centre modernisation	Customer strategy	Safety, Health and Environment
	CRM modernisation and rollout	Implement advanced threat detection tools
	Process mining and process improvements	
	Robotics discovery and implementation	
	Modern technology workplace programme	

2. Delivering a digital energy network

Promoting data transparency by collecting and sharing energy system data in a consistent and open manner, adopting data best practice, to promote efficiencies and compliance.

Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy system.

Improving network planning and operations through utilising emerging technology, data and digital capabilities.

Digitalising the energy system using digital devices, increased monitoring, advanced communications and interconnected systems to drive real-time control and decision making.

Initiative: Data strategy and architecture

Description	**The data strategy and architecture will provide us with a vision for managing data and our data stakeholders, an architecture and an operating model through which the whole organisation will come together for delivery of data requirements.**	Business outcome
Initiative breakdown	The EDTF report recognised the need for a digitalised energy system and has data at the heart of its five recommendations. Energy data is becoming an output that our external stakeholders will continue to request. Provision of data is potentially becoming a legal obligation for the DNOs. At the same time, the industry has produced data best practices and is expecting energy participants within the networks domain to implement and align with these. The data strategy and architecture initiatives will assess the vision, the operating model, and the architecture that we will pursue in order to satisfy internal and external stakeholders with their data requirements. To do this, we propose that data is ultimately managed in a matrix organisation, where there is ownership and accountability toward both internal and external data stakeholders. This will be achieved through horizontal and vertical accountabilities that come together for the delivery of data requirements and requests. At the centre of this sits a data transformation office that becomes the central point of accountability and plays a coordinating role for all data requests and deliveries. This vision of an organisation is based on lessons learnt from other organisations who have excelled at data management. The key features of the initiatives required to deliver the data organisation are as follows: **Visioning:** This is the first step of a series of activities that we will undertake to further develop the data strategy. The objective is to bring the organisation together and align on a single vision for data. The intention is to use the vision to paint a picture of the future and be able to set the principles and the high-level goals for our transformation. **Stakeholder requirements:** We need to have a clear view of our data stakeholders and consumers. Whilst current energy system participants are obvious external customers, we will consider potential future business models, wider stakeholders, prosumers and expand on our set of data stakeholders. Building data requirements, will allow us to map out the end-to-end data use case (a.k.a. journeys) to ensure we understand the service needs of these stakeholders. Groups of data requirements will have business owners assigned, which will be defined as part of the overall operating model governance with clear accountabilities for the management and maintenance of the data requirements being set, and will be under continuous review.	The data strategy and architecture will articulate and design the blueprint, processes, governance and the operating model required for the management of data for internal and external purposes. The strategy and architecture are important inputs into all future data activities, especially as they relate to how we will interact with external stakeholders. In the strategy, there will be a focus on how data requests should be triaged, who should own external interfaces for specific data points and how we will be organised for delivery of such data requests.

Initiative: Data quality

Description	**This initiative will help us enhance the quality of our data through direct input and will reduce a reliance on spreadsheet and other sub-optimal methods of collection and sharing through use of digital solutions.**	Business outcome
Initiative breakdown	Whilst our asset data is held in our central asset management and spatial solution forming an Integrated Network Model, there are other data sets that require to be cleansed, improved and centralised. This initiative will revise our processes to reduce the use of spreadsheets, access databases, emails and paper as a means for collection, submission and data entry and move to digital solutions to expedite data collection, entry and sharing and will reinforce quality standards at the time of data collection and entry. This will include integration of work management and field service solutions with the data repositories and will be expanded into mobility solutions. Data and the quality of data will become an intrinsic part of any delivery and as such will be measured in that way in terms of process and governance. Key features for this are: — **Discovery and prioritisation:** With a focus on all the processes that collect and submit asset, operational and customer data, discovery will look at processes where data collection error rates can be improved, and submission or lead times streamlined. The discovery exercise will focus on where digital solutions can be used to enhance such processes, and where paper-based submissions can be digitised. Opportunities are prioritised at this stage. — **Process automation:** A discovery exercise will identify opportunities for processes to be streamlined and automated so that, where possible, data entry can become automated. — **Data quality:** As part of discovery the value of data will be identified. Where auto data entry cannot be achieved, conditional controls will be applied to make the manual entry of high value data compulsory through logical system controls. — **Solution selection and design:** This step will identify the most appropriate solutions and create high-level designs and architecture for their implementation. — **Implementation:** Based on prioritisation, agile rollout plans will be produced. Implementation and adoption will align with other data and digital transformation projects to identify dependencies and sequencing opportunities so that delivery can be maximised.	Provision of optimisation through technology for future efficiencies. This initiative will also enhance data collection and create direct links to the asset and operational systems. The outcome will reduce further burden on the data entry function, optimise processes and reduce rework.

2. Delivering a digital energy network

Promoting data transparency by collecting and sharing energy system data in a consistent and open manner, adopting data best practice, to promote efficiencies and compliance.

Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy system.

Improving network planning and operations through utilising emerging technology, data and digital capabilities.

Digitalising the energy system using digital devices, increased monitoring, advanced communications and interconnected systems to drive real-time control and decision making.

Initiative: Network planning and operations, existing initiatives

Description	By implementing innovation projects, we will test and confirm opportunities to augment modelling, analytics and measurement points for enhanced network operations and asset management capabilities, and improved consumer service.	Business outcome
Initiative breakdown	We are currently executing a number of initiatives that are designed to improve our network operations capability. The specific initiatives we are currently working on are as follows: — Network monitoring database and visualisation improvements — Active network management system rollout (flexible connections) — Network forecasting models — Distribution system analysis tools — Customer-led distribution system — Development of improved distribution load estimates — Improving demand forecasting — Smart network design methodologies. After completion of the existing initiatives and subject to the scale they have been delivered to (i.e. scale versus proof of concept) we will undertake the following activities: **Value analysis for scale:** At the end of each project the benefits and outcomes of the project will have to be clearly articulated. Projects that provide insight and analytics for asset management and network operations will be aligned with other analytics and modelling initiatives within the same areas to provide maximum benefits. Their fit within the wider architecture will also be assessed as will the suitability for integration with existing systems. Only if the value of the initiatives is clearly assessed and agreed, will the scaling of the solution and their wider implementation be considered. **Roadmap for further development:** Scaled rollout of the existing initiatives will become part of a wider roadmap. Where this is the case, these new scaled initiatives will be included in an updated action plan and will become part of the overall integrated plan to ensure alignment with similar and/or dependent projects. This ensures we manage a portfolio of initiatives in a coherent and holistic manner to maximise benefits.	By trailing and implementing our in-flight innovative projects, we will be able to build analytical, modelling ability and enhance our measurement rigour. These projects once completed will be assessed so as to identify scaled rollout opportunities and be integrated and delivered as part of a full roadmap.

2. Delivering a digital energy network

Promoting data transparency by collecting and sharing energy system data in a consistent and open manner, adopting data best practice, to promote efficiencies and compliance.

Enabling data analytics and insights to improve system resilience and reliability by promoting greater transparency through sharing data across the wider energy system.

Improving network planning and operations through utilising emerging technology, data and digital capabilities.

Digitalising the energy system using digital devices, increased monitoring, advanced communications and interconnected systems to drive real-time control and decision making.

Initiative: Asset data platform upgrade

Description	**Enhance the existing asset data platform in order to provide improved access to system asset data. Enhance security and produce a new architecture that sets the foundation for building future functionalities.**	Business outcome
Initiative breakdown	We have made a significant investment and have delivered a single Integrated Network Model that provides a single data repository for network asset information including asset attribution, spatial location and network connectivity for all our network assets. This set of initiatives is designed to upgrade the underlying database to release new capabilities and update the original architecture to ensure maximum value is obtained. EAM/Spatial upgrades: — **Database upgrade:** Upgrade underlying spatial database to release new database capabilities and improve performance. — **Modernise architecture:** Modernise the architecture with a single master dataset and implement an improved read only capability to improve user experience, further secure the master data through access control and improve synchronisation and exception logging. — **Database structure:** Normalise the asset database and create individual asset groups to drive efficiencies, create data check tools and implement a new partition logic. — **Interface upgrades:** Upgrade interfaces from DB Link to Oracle ESB creating dynamic interfaces between different applications.	The outcome of the EAM/ Spatial upgrade is to improve access to asset data and build the foundation for future initiatives that will leverage asset data to realise efficiencies in asset management activities in support of creating the foundations for a smart grid.

Initiative: DSO v1.1 development plan initiatives

Description	**By implementing innovation projects, we will test and confirm opportunities to support the digitalisation of the energy system. Digitalisation initiatives will enable these to be deployed at scale and maximise their benefit through the use of technology and data.**	Business outcome
Initiative breakdown	We are currently executing a number of initiatives under our DSO v1.1 development plan which are designed to support the digitalisation of the energy system. The specific initiatives we are currently working on are as follows: — Auto voltage control and monitoring replacement at EHV — Primary substation remote terminal units' replacement (RTUs) — Primary and secondary operational telecoms system replacement for SCADA — Distribution monitoring of low-voltage monitoring at local substation level — Secondary telecoms system — Control and operational systems. After completion of the existing initiatives and subject to the scale they have been delivered to (i.e. scale versus proof of concept) we will undertake the following activities: **Value analysis for scale:** At the end of each project the benefits and outcomes of the project will be clearly articulated and candidates for digital enablement identified. Initiatives that can provide insight and analytics for asset management and network operations will be aligned with other analytics and modelling initiatives to provide maximum benefits. Initiatives that can provide control and system management will be assessed for their fit within the wider architecture and assessed for their suitability for integration with existing systems. **Roadmap for further development:** Scaled rollout of the existing initiatives or digital enablement will become part of a wider roadmap. Where this is the case, these new initiatives will be included in an updated action plan and will become part of the overall integrated plan to ensure alignment with similar and/or dependent projects. This ensures we manage a portfolio of initiatives in a coherent and holistic manner to maximise benefits.	By trailing and implementing our in-flight innovative projects, we will be able to build analytical, modelling ability and enhance our measurement rigour. These projects once completed will be assessed so as to identify scaled rollout opportunities and be integrated and delivered as part of a full roadmap.

Action plan

3. Building a digital business

Transforming customer experiences to better understand the customer journey from all perspectives and touchpoints and align our services to specific customer segments.

Improving our technology capabilities to drive down the cost of IT and the risk of technical debt through a programme of constant review and refresh to realise future digital opportunities.

Leveraging intelligent automation to reduce manual tasks, increase efficiency of processes, improve quality and re-focus effort on value-added activities that boost productivity and efficiency.

Enabling a digital workplace to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.

Initiative: Omni-channel integration

Description	**Provide us with the ability to listen to the voice of the customer and build a suite of integrated channels, including live chat, aligned with customer preferences and journey requirements.**	Business outcome
Initiative breakdown	**Omni-channel strategy:** In order to enable an omni-channel experience, a strategy will be produced so that customers can shift between preferred channels, when required, in a cost-effective manner. The key features here should include: — **Channel costing:** Cost analysis on every channel (and potential channels for the future) where we provide a service in order to identify optimal cost-effectiveness. — **Customer preference analysis:** Customer research (both secondary research and customer focus groups) to identify preferred channels by customer groups as well as analytical research to understand channel usage, effectiveness and customer sentiment. This can be done as part of customer journey mapping as well. — **Cost-benefit analysis and channel development roadmap:** Based on channel costs and preference, channels will be prioritised for further investment and development into a roadmap. This roadmap details the development and integration of channels. **Channel integration:** Implement workflow management capabilities to facilitate customer channel shift across all key journeys. The features of these activities should include: — **Channel customer journey:** Definition and mapping of customer journeys across channels with clear articulation of customer requirements. — **High-level design:** Produce high-level design of the scenarios (personas and journeys) and produce architecture as key inputs. Consider key systems integration points such as CRM, OMS, etc. — **Deployment:** Plugging our channels into the workflow management system to enable end-to-end case tracking.	The outcome of this initiative is the provision of an omni-channel experience for our customers and stakeholders, ensuring digital and other traditional channels are available, linked and effectively operated. We will also be able to analyse the voice of the customer over the channels, identifying improvements and being proactive in engagement.

Initiative: Contact centre modernisation

Description	**Use of modern IVRs and implementation of full suite of Contact Centre as a Service functionality to provide call monitoring, reporting and tracking.**	Business outcome
Initiative breakdown	**Planning:** Definition of a holistic model for the new contact centre, including systems (IVR, contact centre systems, corporate voice platform, back-up voice platform), requirements (e.g.: voice recording, analytics, reporting) and integration points (CRM). The first release focuses on the IVR system (definition of a cloud-based architecture to replace the old IVR components), while the second release builds upon full functionalities (call recording, monitoring and reporting) and integration points. **Integration and migration:** Diversion of incoming calls to the cloud-based IVR, directing the output back to the contact centre via existing PSTN in the first release. Link the contact centre with the CCaaS solution and the cloud-based IVR to enable a fully managed and scalable customer service in the second release.	A fully managed CCaaS solution will reduce complexities and enable flexibility and scalability to deal with increased demand, increasing first contact resolution and hence improving the customer experience. Also, the ability to analyse customer complaints quickly will increase the one-day resolution rate.

Initiative: Customer strategy

Description	This initiative will focus on customer segmentation, completion of customer journeys for all types of services, and tracking and managing of connections customer performance. A connections blueprint is suggested to ensure connections leverage best industry practices.	Business outcome
Initiative breakdown	**Customer journeys:** This is a continuation of existing activities to further build and refine customer journeys. As an input we should ensure it has completed customer segmentation and done so for all its segments. Appropriate customer information and findings to define end-to-end customer journeys across all service types should be used. In connections, the work should also include medium and large connections types. During the development of customer journeys, include design of key features such as performance measurements, channel touchpoints, data requirements and process maps. Revisit and improve customer journeys already produced, such as those produced for small connections. Considered within customer strategy, it is recommended that a connections end-to-end blueprint is also produced. This will develop a blueprint/ business guide detailing the end-to-end business processes, system requirements and technology architecture of the target connections business that leverages best practices for customer outcomes and operational efficiencies. The work should include: — **Cross-industry best practice research:** Develop a richer understanding of leading practices by drawing on experience in similar organisations within or outside the energy sector. Identify new practices, business models, or capabilities that can be leveraged within Northern Powergrid and define appropriate business relevance. — **End-to-end Connections to-be processes:** Collate all documents providing details on end-to-end as-is processes. Ensure documents provide insight on roles, integration and data requirements. Use these as an input for process optimisation and articulation of to-be processes. — **End-to-end high-level business architecture design:** Design the target architecture clearly showing key dimensions such as capabilities, functional systems, processes, data flows and integration points for the entire connections business. — **End-to-end Connections blueprint:** Consolidate above findings into a blueprint document that will serve as a live document and one that provides a baseline for change. This blueprint can always be updated should there be any further improvement initiatives or significant changes identified.	The output of this initiative is to give us deeper insight into customer requirements and ensure that service delivery is designed as per customer highest standards and pleasing experience. Moreover, a framework will be implemented that tracks connections delivery, with a focus on drivers of Broader Measure of Customer Service (BMCS) and ensuring that the connections business leverages best practices and is organised according to them. This is done through the implementation of a connections blueprint.

Initiative: CRM modernisation and rollout

Description	Complete planned CRM initiatives and identify further capabilities to meet business objectives.	Business outcome
Initiative breakdown	Complete existing CRM rollout programme: Deployment of CRM solution in four releases as per plan. — **Release 1:** Disconnections delivery, unmetered repairs and quality of supply. — **Release 2**: AFP rollout (contractor to CRM upload facility). — **Release 3**: Connections, diversions, disconnections. — **Release 4**: Site safety, OH maintenance, disconnections serv., substation maintenance, vegetation management, property services/cut out changes, unplanned powercuts. **Complete CRM integration:** Testing and validation of all CRM integrations with front end (e.g.: Website, EAPs) and back end (e.g.: Auto-design, QPID), ensuring a fully-functional and end-to-end CRM deployment. **CRM capability analysis:** Carry out a CRM capability assessment to identify areas for growth and improvement. Areas for growth and improvement could include but are not limited to complaints management, enquiry management, customer onboarding, campaign management, debt and credit management. **CRM enhancement plan:** Based on CRM capability analysis, define a roadmap. This could be planned across multiple releases (suggest 2 or 3) and should be prioritised based on capabilities across all services and customer segments. For example, enhancing Customer Complaints across key journeys. **Customer reporting and automation:** Further exploitation of CRM reporting and automation capabilities.	The outcome of this initiative is to leverage a modern CRM platform that improves the quality of customer information, allows automation of common tasks and allows better reporting and analytics. This will allow us to better understand and serve the customer improving the overall experience.

Initiative: Automated estimate and quotation

Description	**This initiative aims to produce quotes and estimates faster and on demand to connections customers. The capability will integrate with digital channels, including the customer portal, but also automate design and engineering activities to bring end-to-end efficiencies.**	Business outcome
Initiative breakdown	**Automate cost estimation solution:** This initiative is about automating and streamlining connections costs, especially for larger connections. This is important as it will be a key input into the pricing. The initiative calls for discovering the solutions that could provide appropriate functionalities and then implementing them accordingly. **Automated self-serve estimates & quotes:** This initiative is about discovering and understanding the as-is and scoping the detailed connections job types that will be eligible for self-serve through automated estimates and/or quotes. The scoping will be aligned to the customer research and customer journey work to reflect customer needs accurately. The detailed job types will be broken down into prioritised items to be deployed and rolled out in phases. The initiative then suggests: — Extension of automated estimates for medium and large connections (automated estimates already in place for small connections) — Automated quotes for small connections — Extension of automated quotes for medium connections. **Pricing and quotation system:** This initiative is about a discovery exercise to understand the as-is systems and scope the detailed requirements of the new pricing and quotation system. This will involve revisiting the capabilities already outlined in the core connections systems proposals. Consolidation of the requirements across all connection types will be essential to develop a common pricing and quotation system. The proposal then proposes implementation as: — Upgrade pricing and quotation system for small connections — Migrate and enable quote on site through new systems — Upgrade pricing and quotation system for medium and large connections.	The output of this initiative will give us the ability to expedite cost estimation and provide customers with fast and on-demand quotation across all digital and physical channels. This is built on the quote on site ability and extends the auto estimate functionality in place. It also focuses on finding solutions that automate design activities, especially for medium and larger connection types.

3. Building a digital business

Transforming customer experiences to better understand the customer journey from all perspectives and touchpoints and align our services to specific customer segments.

Improving our technology capabilities to drive down the cost of IT and the risk of technical debt through a program of constant review and refresh to realise future digital opportunities.

Leveraging intelligent automation to reduce manual tasks, increase efficiency of processes, improve quality and re-focus effort on value-added activities that boost productivity and efficiency.

Enabling a digital workplace to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.

Initiative: Implement advanced threat detection tools

Description	**Ensure readiness for advanced threat-monitoring capabilities by completing the initiatives of the NIS-D improvement plan. The improvement plan will conclude with the implementation of solutions to enable advance threat-monitoring in both the IT and OT arena.**	Business outcome
Initiative breakdown	**Complete the NIS-D improvement plan initiatives:** Finalise the NIS-D initiatives that were scoped after we assessed its cyber security capabilities against the NCSC Cyber Assessment Framework (CAF). The NIS-D improvement plan initiatives to be completed are: — **IT and OT security operating model:** Authorise and implement an operating model with resources dedicated to the cyber security of OT environments. — **Behavioural analytics:** Evaluate, select and implement tooling and processes to improve the ability to detect behavioural-based anomalies and advanced threats. — **Risk management process:** Review and enhance the risk management process to ensure threat intelligence. — **OT change process:** Embed risk management into the OT change process. — **Privileged access management:** Review the effectiveness of the existing processes and implement any corrective measures. — **Automated asset discovery:** Evaluate, select and implement an automated asset discovery tools across all OT assets. **Deploy an Endpoint Detection and Response (EDR) solution:** Deploy a solution that combines threat visibility, detection and response across all our endpoints in order to shift the cyber security capabilities from a reactive to a proactive approach. The functionalities will include although not be limited to: — **Console alerting and reporting:** A console that provides visibility into our endpoint security status. — **EDR core functionality:** Capability to detect security threats and vulnerabilities on the endpoint in real time. — **EDR advanced response:** Advance analysis and response capabilities, including automation and detailed forensics about security incidents.	The completion of the NIS-D improvement plan will ensure we are ready for advanced threat-monitoring solutions in both the IT and OT space. Deploying an EDR and an OT security solution will support the shift towards a proactive threat management and closing the bridge between IT and OT cyber security. This will realise further efficiencies and reduce potential recovery costs.

Initiative: Process mining and process improvements

Description	**The use of process mining to identify areas of process optimisation and improvement. Process improvements will aim for efficiencies and increased output and should have customer and colleagues requirements considered.**	Business outcome
Initiative breakdown	**Discovery:** As we have business improvement managers within Customer and People Services and Operations, it is recommended that we build an enduring capability within those management areas to drive a Process Optimisation Programme. This has already started and will be built on further. Discovery will be about taking process assessments, if needed, with the use of process mining to all key areas of the business. It is recommended that this is sequenced as Customer and People Services, Back Office Operations, Field Operations and then Network Operations. A portfolio of assessment and improvement projects will be defined with clear objectives, showing intended outcomes. **Improvement programme and planning:** Process optimisations are best delivered through agile capabilities. In this document, we refer to us building an agile delivery capability for our initiatives. The process optimisation activities should have a roadmap of delivery so as to ensure business risk is minimised and areas where benefits can be realised are clearly identified and prioritised. Customer services and connections are two clear areas to provide early benefits. It is important to consider customer journeys and requirements when assessing the processes within these areas. **Process optimisation and stabilisation:** The key objectives of process optimisation should be: — to achieve processes which have had waste and non-value-added activities removed and remain compliant. — to have clear documentation in which roles, data requirements, inputs and outputs are clearly identified. — the material can be used for functional developments and training. — to provide a source for further improvements. Achieving a stable set of processes is a key point for further automation.	The outcome of this initiative is to create a programme of process optimisation that removes non-value-added activities from processes, provides for a mature set of documentation and then provides a stable platform for the introduction of further automation and efficiencies.

Initiative: Robotics opportunity discovery and implementation

Description	**Automation is used to remove manual activities as much as possible. The result of automation will be faster operations, increased output, and freeing of time and resources for carrying out more value activities, such as analysis.**	Business outcome
Initiative breakdown	**Discovery:** There is a dependency on the introduction of process automation, especially with the use of robotics, in that the processes in scope of automation should first be optimised. As such, we see this initiative running in conjunction with the process optimisation activities. Discovery for automation will be mainly focused on the use of robotics/AI tools where these technologies can be used. Given that process optimisation is under way in customer services then a good starting point is in associated processes. Suitable candidate areas for discovery are: — Customer and People Services — Connections — Material Management — Modelling activities in Network Operations, including network investment and planning — Performance and Reporting — Charge Setting — Back office and transaction activities (Information Service, for example). **Automation implementation:** Using agile delivery approaches is suitable for delivery of automation projects, as these can be small, high-value initiatives. It is important to manage these as a portfolio with incremental value being delivered through agile releases. Focusing and starting in one area of the business (such as customer services and connections) allows for building and growing the internal capability and provides for a template that can be repeated.	By implementing automation alongside process optimisation, further efficiencies and improvements can be achieved to automate manual activities that are performed by human resources or speed them up through the use of artificial intelligence.

3. Building a digital business

Transforming customer experiences to better understand the customer journey from all perspectives and touchpoints and align our services to specific customer segments.

Improving our technology capabilities to drive down the cost of IT and the risk of technical debt through a program of constant review and refresh to realise future digital opportunities.

Leveraging intelligent automation to reduce manual tasks, increase efficiency of processes, improve quality and re-focus effort on value-added activities that boost productivity and efficiency.

Enabling a digital workplace to speed up our working processes, allow employees to work together more effectively, share knowledge and gain greater collective insights.

Initiative: Modern technology workplace programme

Description	Deliver a user-centric technology ecosystem based on M365 to enable teams to work and collaborate seamlessly.	Business outcome
Initiative breakdown	**Windows 10 device rollout:** Procure Windows 10 device rollout: in order to ensure a secure, stable and reliable desktop and laptop estate for colleagues. This will be accompanied by remediation of the existing software estate to ensure readiness for Windows 10. **M365 rollout:** Migrate end-user Microsoft services to the cloud with Microsoft Fast Track support in the following services: — Exchange Online — Office ProPlus — Teams — SharePoint Online — OneDrive for Business — Intune Services — Enterprise Mobility and Security (EMS E3). The deployment will be conducted in iterative waves supported by bi-weekly adoption surveys. **M365 change and adoption programme:** Conduct change and adoption activities to ensure awareness and adoption of the Modern Technology Workplace tools and maximise the ROI of the programme. The programme will include: — **Champions network deployment:** Create a network of advanced M365 users that build excitement, buy-in and adoption of the platform, targeted at all levels. Leveraging champions will also alleviate the dependency on IS for day-to-day change tasks, allowing them to focus on strategic and value-add activities. — **Training:** Understand the training needs and providing several training options to end-users to ensure the platform is adopted and used correctly. End-users will be trained on how to use the platform and recognise how it can help them to collaborate with increased productivity. — **Communications:** A range of channels and messages will be used to ensure the end-users are aware, informed and enthusiastic about the new M365 capabilities. The communications workstream will agree on the high-level messaging and channels utilised.	The outcome of this initiative is to deliver a modern end-user and evergreen device estate that boosts employee collaboration even when working remotely, reduces productivity constraints due to poor performing IT and reduces the number of incidents regarding under performance.

Initiative: Safety, Health and Environment

Description	Digitise Safety, Health and Environment processes with a suite of solutions that deliver a one-stop shop for our colleagues and contractors.	Business outcome
Initiative breakdown	There are a number of activities suggested under this group of initiatives: **Incident reporting and analytics:** We are in the process of implementing a new system for Incident and Hazards reporting. A cloud-based modular solution could be a fit in this respect and we have pursued the same approach (Airsweb). The implementation of this capability allows us to digitise the reporting channels. At the same time, it allows us to collect hazard and incident data in one source of truth and therefore provides the ability to carry out analytics. Modular solutions are available to complement and provide this analytical capability and provide standard reports, visualisation and insightful analytics. But equally, self-service analytics through solutions such as Power BI can be used. The analytical capability suggested for SHE should be worked alongside and leverage any CoEs built for analytics. **People and Contractor Management:** This capability will set our colleague and contractors' specific safety requirements and will track that they are always competent. If integrated with operational activities, we will be able to highlight constraints, for example, which teams or contractors do not have certain competencies and, therefore, where operational bottlenecks may reside. The capability should also have the ability to integrate with training, as many of the competencies are realised through training. The SHE team will have visibility of training plans, progress of the training and be able to assign specific training to individuals whilst notifying managers. — **Safety Portal:** The portal will provide our colleagues and contractors with one easily accessible central location for SHE activities. The portal provides colleagues and contractors with the ability to report events, complete inspections, checklists and audits, and access safety information. This initiative should align with intranet activities.	The outcome of this initiative is that we can digitise our SHE capabilities through a modular approach. Starting with reporting and analytics, SHE will enhance tracking and people management and build toward more intelligent ways of training through VR and better situational awareness through real-time monitoring.

Glossary

Some of the words in this document use acronymns that might be unfamiliar so we have tried to explain some of these on the next page.

Glossary

Some of the acronyms used in this document might be unfamiliar so we have tried to explain some of these below.

ANM
Active Network Management

API
Application Programming Interface

BMCS
Broader Measure of Customer Service

CoE
Centre of Excellence

DER
Distributed Energy Resource

DERMS
Distributed Energy Resources Management

DFES
Distribution Future Energy Scenarios

DNO
Distribution Network Operator

DSO
Distribution System Operator

EDTF
Electricity Data Task Force

EHV
Extra High Voltage

HV
High Voltage

IS
Information Systems

IT
Information Technology

ITIL
Information Technology Information Library

LV
Low Voltage

NIS-D
The Security of Network and Information Systems Regulations

OMS
Outage Management System

OT
Operational Technology

SCADA
Supervisory Control and Data Acquisition

RIIO-ED1 or ED1
The current price control which runs from 1 April 2015 to 31 March 2023

RIIO-ED2 or ED2
The next price control which will run from 1 April 2023 to 31 March 2028

RPA
Robotics Process Automation

TOM
Target Operating Model

Common terms

Some of this document uses terms that might be unfamiliar, so we have tried to explain some of these below.

Customer
Customers that we supply electricity to or who are buying a service from us.

Digitalisation
The process of converting information from a physical format into a digital one.

Digitalisation/digital transformation
Digitalisation is a term we are beginning to use to describe the future of our digital and technology agenda. We recognise this can be an easily misinterpreted term so to level set, this is what digitalisation means to us and how it is being used:

Our digitalisation strategy (currently called Roadmap for Digitalisation) sets out our plans to:

- enable areas of business change using underpinning technology solutions
- bring together operational technology and information systems to enable a greater value proposition
- introduce a cultural shift to support digital transformation, encouraging continuous improvement and agility.

This digitalisation strategy will become a high-level, simplified interpretation of our detailed 10-year technology strategy that will support our RIIO-ED2 business plan and the initiatives within it.

Technical debt:
Technical debt is a concept in IT that reflects the implied cost of rework or additional work caused by not keeping systems up to date or choosing an easy (limited) solution now instead of using a better approach that would take longer or cost more in the short term.

As with monetary debt, if technical debt is not repaid, it can accumulate 'interest', making it harder to implement changes. Unaddressed technical debt increases IT entropy. Similarly to monetary debt, technical debt is not necessarily a bad thing, and sometimes (e.g., as a Proof of Concept) is required to move projects forward.