

Digital strategy

Leveraging digitalisation technology and digitised data to generate value for customers and stakeholders

December 2020

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1. About Electricity North West

Electricity North West is one of 14 electricity distribution network operators (DNOs) in Great Britain. We are responsible for maintaining and upgrading 56,000km of network and nearly thousands of substations across the region. We supply the electricity to the diverse communities in the North West of England which extends from Macclesfield all the way up to Carlisle.

We are regulated by the Office of Gas and Electricity Markets (Ofgem) who provide DNOs with the license to operate and decide what's fair for us to charge our customers for each price control period.

Our current price control began in 2015 and runs to 2023. It's referred to as RIIO-ED1. In full, that stands for Revenue = Incentives + Innovation + Outputs, Electricity Distribution 1. Under this framework, the price we can charge our customers is fixed until the next price control, RIIO-ED2, which will run from 2023 until 2028.

Work is already underway to set the framework for RIIO-2 that applies to all energy network companies (i.e. gas and electricity distribution). The framework will determine what RIIO ED2, which begins on 1st April 2023, looks like.

The period of time which the RIIO-2 price control covers will see significant change in the way electricity is generated, consumed and stored, driving innovation across the whole energy system both now and into the future.

2. Digital strategy vision

Technology and information are vital to almost every business, enabling everything including improved customer service, increased job satisfaction and rapid innovation. Within the electricity industry, it will take on an even greater significance as we transition to delivering Distribution System Operations (DSO), implement the UK's [Energy Data Taskforce](#) (EDTF) recommendations and support the road to net zero carbon.

We have previously outlined how we can support people, businesses and energy producers in the North West in our [Powering the North West's future](#) and '[Leading the North West to zero carbon](#)' documents. Our digital strategy 2020 is aligned to the objectives and action plans of these initiatives as well as external influences such as the EDTF, the [Open Network Project](#) and the Department for Business, Energy and Industrial Strategy (BEIS) – energy strategy and policies.

We plan to continue to deliver network reliability and security, excellent service and efficient operations by building on our core services and exploiting new and maturing digital technologies that are changing the way companies interact and work with their customers and stakeholders while recognising that some customer segments have digital accessibility challenges.

For our customers and stakeholders, this will mean increased openness and transparency through improved digital services informed by enhanced engagement, which will support market innovation, energy supply chain efficiency and economic growth.

Our customers have a large part to play in shaping and delivering our digital strategy. We will work together in an open and transparent manner and aim to provide improved digital services, while not excluding customers without digital accessibility, and open access to network and market information.

The digital strategy 2019 consultation document elicited feedback from stakeholders and customers via website and via a customer survey, asking specific strategy questions. A summary of the feedback is provided in Appendix B. This feedback has solidified our current thinking and shaped this version of the strategy.

However, we are in the middle of a process that will refine and confirm the digitalisation journey. Through the work being undertaken, internally and with stakeholders, to prepare our ED2 submission we will focus on the opportunities and projects that provide the best stakeholder outcomes. We are in a process of exploration and consideration. We are asking ourselves questions as to how best to address the challenges being posed. We aim to be open and transparent in this process and want stakeholders to help us decide what we do.

The initiatives described in this strategy are what we could do. We will refine this as we undertake more detailed planning, cost benefit analysis and consultation before settling on our strategy plan for ED2 that is affordable and deliverable.

We will fully implement the recommendations of the EDTF, led by industry regulator Ofgem, and working in collaboration with other energy network operators and Energy Networks Association:

- **Digitalisation of the energy system** – in the consumers interest, supporting the principles of 'new data needs', 'continuous improvement' and 'digitalisation'.
- **Maximising the value of data** – to aid sharing, data should be 'presumed open'. It should be 'discoverable, searchable and understandable', with common 'structures, interfaces and standards' and be 'secure and resilient'.

- **Visibility of data** – should be enabled by publishing data catalogues with meta data describing what is available.
- **Coordination of asset registration** – to increase registration compliance, improve the reliability of data and improve the efficiency of data collection.
- **Visibility of infrastructure and assets** – should be provided by a unified digital system map of the energy system.

3. About this strategy

This is one of a series of strategy documents that support Electricity North West’s business objectives which help deliver net zero carbon and enable the transition to Distribution System Operations (DSO). It supports and should be read in conjunction with our [DSO strategy document](#) and our [grid digitalisation strategy](#).

The strategy covers the whole business. The technology and systems that connect directly to and manage the electricity network (operational IT) and the technology and systems that support the day to day running of the business (non-operational IT).

The strategy will describe how digitised information, technology and systems will improve business processes to support delivery of the ED1 business plan goals:

- **Safety** – Making safety a priority every single day. This applies to customers, our employees and contractors.
- **Customer** – Providing excellent customer service.
- **People** – Ensuring the best working culture possible.
- **Sustainability** – Maintaining the network now and for future generations.
- **Affordability** – Keeping costs down for customers.
- **Reliability** – Keeping power flowing to our customers 24 hours a day, 7 days a week and to resolve problems quickly should they occur.

The digital strategy sets out the themes to deliver technology change through the rest of ED1 and then through ED2. It will be complemented by a comprehensive strategy plan and subsequent internal sub-strategies to cover the detailed IT technology, data, integration, network and telecommunication strategies.

Throughout this document the estimated cost of any proposals is provided as follows:

£ less than £1m

££ between £1m and £10m

£££ more than £10m



4. Digitalisation

Digitalisation is the process of leveraging technology that uses digitised data and information in order to transform and automate business processes and create additional value for customers and stakeholders. It forms a large part of our digital strategy and covers both operational and non-operational aspects of our IT transformation.

The three main capability themes that underpin our digitalisation are:

- **Enablement** – providing access to data and appropriate technology in the right place at the right time to enable our people to work more safely and efficiently and better serve our customers and stakeholders. We will deliver business change that transforms processes. We will do this to improve customer experience and to support the EDTF recommendations, DSO market innovation, energy supply chain efficiency and economic growth.
Supporting – Safety, Customer, People and Affordability.
- **Innovation** – Enabling the company and the supply chain to adapt quickly to changes in the operating environment and to innovate by continuing to invest in flexible technology platforms, data quality and data sharing. We will allow other stakeholders to innovate by sharing appropriate data and delivering the EDTF recommendations. We will do this to speed up the realisation of those benefits to our customer and stakeholders.
Supporting – People, Affordability and Reliability.
- **Insight** – Information and analytics, to enable us, as well as third-parties, to identify opportunities to innovate and continually improve the whole energy system access in an affordable, secure and reliable manner. This includes collecting more data where appropriate, and integrating the data we already hold and that provided by third parties (such as smart meter data, public data and data from suppliers), as well as enhancing our ability to analyse that data through the application of data science, operational modelling and electrical network modelling. We are developing a smart meter data privacy policy that will define what we store and how we protect it.
Supporting – Safety, Customer, People, Sustainability, Affordability and Reliability.

We will improve how the IT services create value for the company, its customers and its stakeholders, either directly or through third-parties. To successfully deliver this strategy we need to upskill our staff and ensure we can govern against it.

5. Our digital journey

The exploitation of IT and digital technologies has been a key objective for many years and these improvements are driven by a strategy that is reviewed annually.

A cornerstone of this journey and underpinning the operational technology strategy within Electricity North West, is the implementation of the Schneider Electric advanced distribution management system (ADMS) due to be completed during RIIO ED1.

In the context of the wider IT strategy for Electricity North West, ADMS provides a scalable platform through which real time telemetry information regarding the operational state of the electrical assets in the field can be collected and stored, and through which the electrical assets in the field can be remotely operated. The system also contains an up-to-date fully-connected model of the electrical network from grid intake from the national transmission network down to low voltage connected customers which allows the real time safety state of the electrical assets to be maintained by the control centre.

The control centre can also use this platform to respond to events happening on the electrical network such as faults and planned work. In short, the ADMS model represents the real time as-operated state and current safety state of the electrical network in real time.

What we have already delivered or will have delivered by the end of the RIIO-ED1 period:

Improved data quality and network connectivity

We've been cleansing our network connectivity and asset data to ensure that it accurately reflects our network. Having a robust and reliable network model is a key foundation for the development of new DSO services.

Improved customer communication by integrating our control room data with our customer system

We've created an interface between our outage management system (OMS) and our customer relationship management (CRM) system. This will ensure that we're better able to manage the impact of network events on our customers and improve customer communication during such events.

Improved network automation

We've implemented automatic restoration technology to our high voltage networks. This technology restores the network automatically when faults occur and has significantly improved the customer impact of such faults.

Enabled quicker and more efficient and affordable Flexible connections

We've worked closely with developers to facilitate new connections to the network which provide flexibility, such as varying demand and generation, to manage network conditions in real time. In return, developers benefit from quicker and more affordable connections.

Smart Street – making it easier to adopt low carbon technologies

We have trialled innovative voltage control techniques on our low voltage (LV) networks to enable our networks and customers' appliances to perform more efficiently and make it easier to adopt low carbon technologies onto the electricity network. We plan to roll out this technology more widely from 2020.

Implementing CLASS

We're implementing customer load active system services (CLASS) voltage control technologies at many of our larger substations. This low-cost solution uses voltage control to automatically manage energy consumption and allows Electricity North West to offer capacity services to the transmission system operator, National Grid.

Enhanced decision making and increased customer service by integrating smart meter data

We have implemented our integration to the smart meter gateway and through this integration the continuing implementation of smart meters in the UK will provide network companies with better visibility of the performance of the whole system. This will enhance the decision-making capability of network operators.

Offer better customer service by using network analysis tools

We've created a better understanding of load flow and fault levels and the impact these have on the service our network provides through the development and use of system analysis tools. We are putting these to work to offer our customers better service.

Enabled quicker solution delivery at a more affordable cost

We've changed our information technology implementation methods to improve what we do and how we do it.

Delivering the network management system (NMS) programme

To replace the existing control room operational IT systems, which have evolved over decades, with a modern commercial suite of tightly integrated intelligent applications. This platform in conjunction with our cleansed network model is fundamental to the evolution of our smart grid and facilitates our transition to net zero.

Improved customer and priority service register (PSR) services with changes to our customer contact centre systems

Developing and enhancing the service with more self-service for all customers and a welfare function to support PSR customers. We have provided self-service fault logging, PSR registration and general enquiries. We are implementing a chatbot service and piloting robotic process automation for repetitive data cleanse tasks.

Increased communication by re-engineering www.enwl.co.uk

In collaboration with external stakeholders we have provided more accessible planned work and fault information; a new online connections application process; flexible services information including requirements map, active proposals and ability to register.

Improved stakeholder access to geographic data

On top of the GIS files we share with stakeholders (eg independent connections providers) and in line the open data initiative, we are delivering a new GIS portal that will provide stakeholders with access to our GIS maps and data.

Increased efficiency by delivering workforce modernisation

Started the roll out of our workforce technology modernisation programme to provide our staff with the technology they need to work smartly and efficiently.

Enabled increase data collection with telemetry asset replacement

We have replaced any non-smart grid capable telemetry assets with modern digital equivalents.

Increasing network reliability with substation digitalisation

We have standardised on the use of open standard communications protocols to all our remote telemetry devices and have made steps towards digitalising our substations, replacing all our substation analogue communications links with digital equivalents.

Improved asset risk modelling

We have implemented a market-leading toolset to model and understand the risk of interruption due to asset failure on our network, and optimise our network investment to best mitigate these risks.

NMS CASE STUDY

As we move towards the low carbon economy, which is driving the ongoing penetration of distributed generation (generation connected to our distribution network, rather than National Grid's transmission network) and the connection of new electricity demands for electric vehicle charging and heat pumps, the operation of the network needed to change if vast increases in investment and consumer bills are to be avoided from expensive and disruptive network reinforcement. Furthermore, the operation of the network needed to become much more dynamic to meet the requirements of a distribution system operator (DSO).

We considered options to continue to develop our existing control room application or go to market for an off-the-shelf solution. Given the scale of change required to meet future requirements and yet unknown changes in market demands, a competitive tender process was undertaken, and the selection process concluded with the award to the Schneider Electric ADMS solution. This product now sits at the heart of our smart grid strategy and offers the ability to leverage wider strategies and technologies whilst the close working relationship with the supplier enables us to influence the development roadmap of the product.

The base product offered much of the required functionality to align to existing needs and the first phase of the implementation focused on the new SCADA system (Supervisory Control And Data Acquisition – a control system architecture made up of computers, data communications and user interfaces) and migration of the telemetry assets, all upgraded to new IP communications. This was complemented by changes to the automatic supply restoration solution, taking the base product functionality and adding our own bespoke developments taken from our existing control room capabilities.

The focus then changed away from further delivery of the control room capabilities and the implementation of the system into our control rooms and onto the first of our smart grid enhancements with the implementation of the CLASS solution. This offers control communication and dashboard which uses a combination of central software within the ADMS together with intelligent automatic voltage control (AVC) relays fitted at primary substations to provide a demand response under various scenarios including falling frequency. This development was not without technical challenges as we worked with both relay manufacturers and Schneider Electric to develop the operation and deliver real time dashboards with instant response.

In addition to control room functionality, the ADMS system integrates to a wider suite of business system, providing planned and reactive work management, integration into customer systems for incident reporting and communications and links to business finance applications. This level of integration requires a significant degree of technical integration and business change impacting all parts of the organisation. The rollout of this final stage of the first phase of the transition to our new

ADMS system is nearing completion, as the focus moves from technical development to business engagement and process changes.

However, the next phase is well under way with the work on our active network management (ANM) system and a number of prototype systems have been tested. The ANM system will take advantage of flexible connection contracts and curtailment contracts to vary demand and generation in real time to maximise network capacity and resolve any network constraints. ANM will also perform look-ahead load flow based on load and generation profiles and weather data to predict network constraints which may occur in the next 24/48 hours.

Alongside ANM we will develop a merit order management (MOM) system which will store and manage flexible connection contracts and supply a real-time merit order list to ANM. The MOM system will track usage of flexible and curtailment contracts to determine the most cost-effective flexible resource to use at any given time. ANM will use this merit order list to determine the priority order for use of flexible contracts to resolve network constraints in real time.

6. Next steps on the journey

The digital strategy will build upon these foundations to provide more accessible and open data, more insight and more innovation through the remainder of current price control period (ED1) and into the next (ED2).

This section contains descriptions of what we could do and is work in progress. We are in a process of exploration and consideration that will be stakeholder-led through the ED2 submission process. We will refine these initiatives with detailed plans and cost benefit analysis before we settle on which provide the best outcomes for stakeholders. These will be included in our business plan and will be described in the next version of the digital strategy and strategy plans.

Enablement

Data platform – To enable automation, AI and continuous process optimisation.

£ £

We will implement a strategic data and integration platform to provide a single version of our data to support analytics, external data sharing, new services, new apps and our open data plans. This will provide the platform to store data we do not currently collect and tools to increase the quality of our data. It will power our drive for increased automation and continual process improvement.

Operational IT – To deliver the smart grid benefits associated with our new NMS we will:

£ £ £

- deploy additional monitoring and control equipment on our network to allow a better understanding of network parameters in real time;
- modify our substation designs such that future new and refurbished substations will take account of emerging digital technologies and techniques to support enhanced network automation;
- deploy systemwide active network management within our NMS to automatically adjust demand and generation in real time through our new flexible connections contracts in order to efficiently utilise available network capacity;
- integrate our NMS with new commercial flexibility trading platforms to facilitate flexibility procurement and peer-to-peer flexibility trading in near real time;
- develop interfaces to third party operational systems such as National Grid and adjacent distribution companies to allow interchange of additional data between parties in both planning and near real time to facilitate control of network boundary power flows and dynamic limit assignment;
- integrate smart meter data into our NMS and exploit the data we are collecting to improve network planning and speed up the diagnosis of incidents;
- build on the topology and asset data cleanse work in our asset and geospatial systems to create a single network model in NMS and extract this model using open standards such as CIM for use in other tools such as enhanced planning applications; and
- collect and store significantly more data on the demands placed upon the network and the performance of the network in meeting those new demands and make this data available through the open data portal where appropriate.

Modernising our IT estate – to increase resilience, improve customer service and share information and data with stakeholders, we are:

£ £

- using flexible cloud technology where appropriate. Transforming our estate into a more cohesive and resilient architecture;

- reducing complexity and duplication within large legacy applications as those systems come up for replacement. Breaking them down into more flexible and resilient units; and
- enabling the workforce to work anytime and anywhere utilising mobile technology, with access to the right information to work efficiently, safely and provide great customer service.

Work and asset transformation – to transform the efficiency of our field force while making systems friendly for the field. Facilitating better planning resulting in less customer disruption because of maintenance activities.

£ £

Geographical Information Systems (GIS) continual service improvement – to make our network geographic system functionally richer and the data clearer, easier to access and share both internally and externally. Our GIS forms the basis for the unified model in our NMS.

£ £

Replatform our enterprise resource management system – to provide a stable and secure platform for our core HR and finance systems for the next 5-8 years.

£ £

IT security and cyber threat – to implement our cyber resilience strategy and drive the cyber security sub-strategy that will form part of our overall IT strategy. To ensure we maintain a safe and reliable network for our customers we will enhance our stringent cyber security measures with an internal security operations centre delivered in ED1 but enhanced in ED2, to further improve our ability to anticipate threats, protect our network, detect intruders and recover from attacks.

£ £ £

We are working with industry experts to enhance this capability and will focus on interactive developments of our strategy plan checking with external SMEs and stakeholders as it develops.

As we move application and infrastructure services to the cloud we will build in the security services required and use sophisticated threat detection capabilities and automation protection to keep our services and data safe.

As we apply more monitoring in substations and automate more operation IT services we will deliver, in parallel the advanced security techniques and Implement SCADA specific intrusion detection system and an intrusion prevention system within substations.

Innovation

Supply chain, stores and logistics innovation – to optimise the management of materials and assist in the efficient execution of capital work and incident restoration. We will utilise advanced analysis of material usage to streamline the supply chain and maintain optimum stock levels. Working with our suppliers to ensure that we reduce store utilisation. We will integrate the notification of material use in the field with stock systems to replenish as we use, and review collection processes and stock locations with the aim of reducing logistic waste and travel.

£ £

Operational IT – through a series of network innovation projects we have successfully piloted a number of new network technologies that deliver customer value. We are rolling out these technologies to realise the customer and stakeholder benefits:

£ £ £

- **Smart Street** – We have trialled innovative voltage control techniques on our low voltage (LV) networks to enable our network and customers' appliances to perform more efficiently and make it easier to adopt low carbon technologies. The trials deployed Smart Street technology at 180 locations. We will roll out this technology as business as usual. We will

prioritise locations where we observe the highest levels of low carbon technology penetration. It is anticipated that the technology will be further deployed at around 2,000 locations over the next eight years.

- Capacity to customers – The implementation of expanded data collection has been guided by the learning from our innovation projects – C2C, Respond and Celsius. We will install monitoring and control points to enable us to transition these projects into business as usual, therefore significantly increasing the capacity available to new connection customers. Capacity availability data will be published for the benefit of prospective connection customers.
- Interface – we are trialling the unification of edge technology, specifically at the distribution substations, to maximise the efficient use of communication technology. We will collect the data from several devices (remote terminal units (RTUs), providing automation, temperature measurements and Smart Street) into one communication device. We will trial split communications to make the best use of available resources. For example, non-critical data may go to a cloud hosting provider whilst critical data could be routed to our NMS.

Insight

Data analytics capability – We will enhance our ability to analyse data through the use of data science and operational research techniques to improve customer service, identify ways to work more efficiently and deliver better network forecasting to improve planning outcomes.

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We will deploy advanced planning tools that will consider flexible service options and we will digitise connection agreements, so they can be easily analysed to identify potential commercial alternatives to network reinforcement.

£ £

Open data – We currently share a number of data sets with customers and stakeholders such as the embedded capacity register (ECR), the long-term development statement, the distribution future energy scenarios and capacity heat maps, that facilitate customer participation in the flexible service market or lowers the cost of connections to our network.

£

We are committed to further data sharing and the concept of “presumed open” with secure and effective triage, and we are collaborating with other network operators, through the ENA’s [Open Networks Project](#) and [data working group](#), to ensure that our information is provided in a common industry standard.

We, and the other network companies, are exploring the possibility of developing a one-stop-shop for all electricity data to be made available in an open and interoperable format.

£

We will implement an effective data triage process to ensure that we mitigate against any security, privacy and commercial concerns with the data shared. We are working with the data working group on the overarching triage principles that will facilitate consistency across the industry.

£

To make the provision of information more efficient and timely we will automate the processes that provide network data and provide visualisation tools to illustrate scenarios and present data.

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Furthermore, to ensure an accurate and efficient data exchange, with other stakeholders, we are developing our capability to provide network models and information generally according to the [IEC common information model](#)(CIM) standard. This will streamline data exchange with National Grid and, in line with EDTF recommendations, CIM information will be made publicly available.

£ £
£ £

Improved customer outage information – A significant theme of feedback to our digital strategy consultation was about the provision of clear, concise and informative data regarding outages to customers and stakeholders. We will further enhance our customer and communication systems to provide this over a variety of self-service and service-based channels with greater personalisation and tailored engagement.

Improved stakeholder information – we will implement manual and automated messaging systems to keep stakeholders informed, utilising a range of digital communications channels and develop real time digital data links with other network and system operators to facilitate whole system co-ordinated restoration and data sharing.



7. Upskilling and workforce planning

There are three key aspects to our digital strategy that will have an impact on our workforce and the skills required going forward:

Delivery and support new digital technologies

To deliver the changes required by our digital strategy we will upskill current delivery staff and supplement existing skills and delivery methods. To ensure that we provide the customer and stakeholder benefits in a timely manner we are moving to a product line approach to solution delivery and will adopt iterative agile delivery methods where appropriate.

Our customers and stakeholders will benefit from more informative and greater access to our data. We also recognise that data management, governance, analytics and sharing is a key component of delivering our DSO transition strategy, our grid digitalisation strategy and our digital strategy.

We have some experienced architecture and analysis skills already, but we will upskill these resources to delivery our strategic data platform and the subsequent processes and capabilities to exploit it. We have set up a specific change programme to progress this. It will cover skills, technology and governance of data to deliver the required changes the company requires.

£

Our digitalisation plan will require significant levels of business process management and transformation. We will supplement our existing business analysis and design skills to deliver those capabilities that will ensure that the customer, stakeholder and internal benefits are realised.

Blurring of traditional operational, telemetry, telecommunications and IT boundaries through modern substation design

In our grid digitalisation strategy, we describe the evolution in relay to SCADA communication and the concept of a smart substation that has an operational local area network to support substation-based IT equipment such as local ANM servers.

This modern design will blur the traditional boundaries between field engineers, protection engineers, telemetry engineers, telecoms and infrastructure support.

We will need new working methods, standards, policies and authorisations to allow work on RTU, IT, network and telecoms equipment without impacting plant. We will upskill engineers, change practices, and amend roles and responsibilities to support the technologies that are needed for smart grid in a consistent manner.

£

Impact the whole workforce

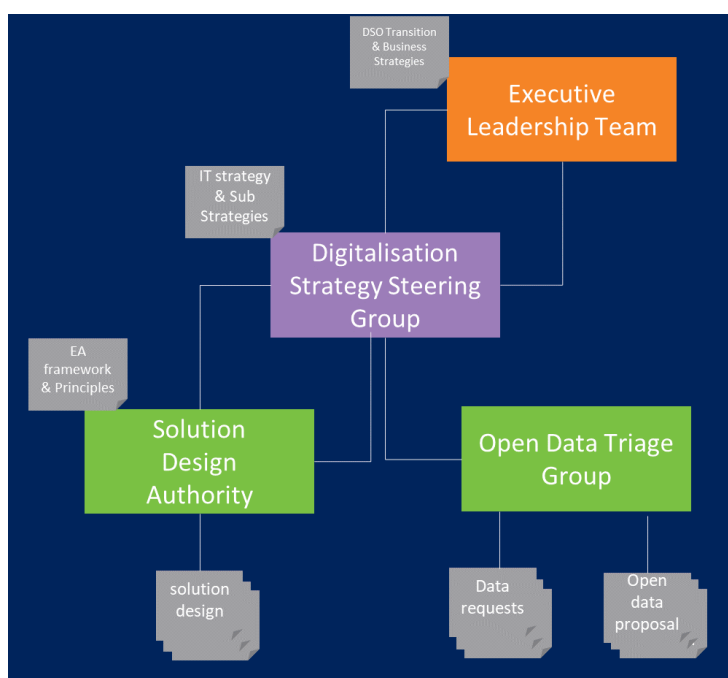
Finally, digital transformation will impact the whole workforce, will require the highest level of sponsorship and the business readiness and change aspects will be significant. We have reoriented along product lines to integrate the rapid delivery of new technology with business change, and ensure close collaboration with users to ensure that technology can deliver and adapt to the needs of the business.

8. Governance

We have a governance framework to direct, shape and oversee the delivery of the digital strategy. To ensure strategic alignment, safety and reliability of the services that we provide to customers and stakeholders, we apply significant governance to any business or technology change. The key elements of the framework are:

Executive leadership team – will ensure that the digital strategy is covering the requirements of the DSO transition strategy, the grid digitalisation and data strategy as well as the wider business plan to meet customer expectations. The ELT will be the escalation point for data triage conflicts that can't be addressed by the triage principles considered by the strategy steering group.

Digitalisation strategy steering group – is a monthly governance forum that consists of representatives from IT and each business area. The SSG reviews all strategy plans and proposals regarding digitalisation. The group directs and reviews progress of the digital and security strategies and is a forum where key business stakeholders ensure our customer and stakeholder requirements are considered. We are considering whether the SSG will be the forum for the open data triage process or whether to have a dedicated open data triage forum that will consider data requests or proposals to share data against the key principles in the EDTF data best practice guidance.



Solution design authority – a weekly design authority where all design proposals that materially change our IT infrastructure and architecture are peer reviewed, discussed and approved. The group specifically focuses on adherence to policy and standards to provide safe, reliable business and IT change that protects the services provided to customers.

9. Summary of RIIO-ED2 outcomes

Our digital strategy 2020 supports the delivery of the company goals and business plan for the benefit of customers and stakeholders. The strategy is aligned to the following outcomes and our engagement so far tells us that these are good points to lead into the plan that will deliver the strategy and deliver the outcomes for the RIIO-ED2 period to 2028:

- **Customers** will be able to access more accurate information more easily via more channels with enhanced self-service and tailored experiences.
- **Stakeholders** will be able to easily access our open data, and everyone will benefit from the insight and innovation 3rd parties deliver from analysing and creating new services with our data.
- **The business** will improve productivity and sustainability through more accessible and usable technology and better access to data and information across the organisation through improved collaboration tools.
- **The energy supply chain** will constantly improve as the delivery lifecycle is more iterative and speed of change quicker, fostering innovation that will improve services and reduce costs.
- **Sustainability and the journey to net zero** will be enabled by active network management capability.
- **Compliance with and delivery of the EDTF recommendations** to move towards a digitalised energy system and enable to collaboration and markets required in future.

Appendix A: EDTF recommendations

The table below is an overview of the EDTF recommendations, the work we have done and what we will do to align to each. This tables sets out our initial thoughts on what we need to do in the RIIO-ED2 period to fully embrace the EDTF recommendations.

EDTF recommendation	Achieved	What next...
<p>1: Digitalisation of the Energy System – Government and Ofgem should direct the sector to adopt the principle of Digitalisation of the Energy System in the consumers’ interest, using their range of existing legislative and regulatory measures as appropriate, in line with the supporting principles of ‘New Data Needs’ ‘Continuous Improvement’ and ‘Digitalisation Strategies’.</p>	<p>We are delivering a new network management system that will greatly enhance our capability regarding real-time network management and what if modelling of network scenarios.</p> <p>To deliver the solution. We have made significant improvements in our network data, asset data and GIS data.</p> <p>We have also made some use of standard meta data structures for describing electricity network asset, events and actions in order to aid integration.</p>	<p>In RIIO-ED1 we will optimise the operational processes once the solution is implemented. Driving scenario modelling, continuous improvement and innovation.</p> <p>In RIIO-ED2 we will look to support further integration across the whole energy system to enable the markets required to help move towards a “Zero” carbon future.</p>
<p>2: Maximising the Value of Data – Government and Ofgem should direct the sector to adopt the principle that Energy System Data should be Presumed Open, using their range of existing legislative and regulatory measures as appropriate, supported by requirements that data is ‘Discoverable, Searchable, Understandable’, with common ‘Structures, Interfaces and Standards’ and is ‘Secure and Resilient’.</p>	<p>We already share a number of asset and aggregated customer data sets openly or with 3rd parties to facilitate insight and innovation. E.g. the Systems Wide Resource Register and the capacity heat map data.</p> <p>We are delivering a new GIS portal that everyone can access.</p>	<p>In RIIO-ED1, we are developing a formal open data policy and will deliver changes to the data governance procedures to allow use to move to a Presumed Open regime with the relevant security and integrity. We are working with the ENA Data Working Group to develop a consistent set of principles industry wide and internally to implement a robust Open Data Triage process.</p> <p>We will deliver a strategic integration & data platform.</p> <p>We will embed an API based integration model as the first consideration when designing systems and sharing data.</p>

		In RIIO-ED2, we will build on this capability, extend the scope of what we share and continually improve how we deliver these digital services.
3: Visibility of Data – A Data Catalogue should be established to provide visibility through standardised metadata of Energy System Datasets across Government, the regulator and industry. Government and Ofgem should mandate industry participation through regulatory and policy frameworks.	As part of the Network Management System replacement programme, we have made some limited use of Common Information Model (CIM) standards based meta data to share data between some internal systems.	<p>In RIIO-ED1, we will continue to deliver API integration capability internally and externally</p> <p>We will look to utilise CIM and other standardization coming from EDTF.</p> <p>We will develop a catalogue of APIs for reuse as part of the strategic integration platform.</p> <p>In RIIO-ED2, we will maintain the data catalogue and expand it with additional data sets where this benefits stakeholders.</p>
4: Coordination of Asset Registration – An Asset Registration Strategy should be established to coordinate registration of energy assets, simplifying the experience for consumers through a user-friendly interface in order to increase registration compliance, improve the reliability of data and improve the efficiency of data collection.	We are reviewing what is required regarding asset registration as part of our transition to DSO planning.	<p>In RIIO-ED1, we will continue to engage with stakeholders in the development of asset registration strategy and standards.</p> <p>We are keen to help develop a set of APIs to assist collection, integration and sharing of data via user friendly or automated interfaces.</p> <p>Asset registration and quality data will be essential for situational awareness, forecasting the impact of energy needs and the development of local markets to address network constraints. It will become a key data set in our strategic data platform.</p> <p>In RIIO-ED2, we will look to improve the processes through automation and continuous improvement.</p>

<p>5: Visibility of Infrastructure and Assets – A unified Digital System Map of the Energy System should be established to increase visibility of the Energy System infrastructure and assets, enable optimisation of investment and inform the creation of new markets.</p>	<p>The Network Management Systems replacement programme will deliver a much-improved digitised version of the network. It will also provide a digital twin of the operational network.</p>	<p>In RIIO-ED1 through the Operational Process Optimisation and Active Network Management work we will expand our current digital system map to incorporate the additional data required to create and maintain a comprehensive digital twin that looks beyond the meter and is available to share with other stakeholders.</p> <p>In RIIO-ED2, we will work in collaboration with industry to develop a common data platform.</p>
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Appendix B: Strategy consultation feedback summary

In December 2019 we published our digital strategy consultation document. This was published via our website, the Ofgem website as well as signposted in our regular stakeholder forums. We also prepared a simple presentation for a survey to our 'Voice of the Customer' panel.

We received feedback from 76 stakeholders that ranged from large corporate stakeholders to individual customers.

This feedback has solidified our current thinking and shaped this version of the strategy by:

- Removing a lot of the detail about the sourcing strategy and our target operating model for IT as this is not an area of interest for our stakeholders.
- Structuring the document better to sign-post where we have come from and what the digital strategy is based on the feedback. Additionally, we are creating a supporting infographic 'strategy on a page' and a video explainer in early 2021.
- There is a clear requirement for apps and this is something that will be enabled by the digital strategy, whether delivered by us or a third-party. We have made this clearer in the digital strategy.
- There will be an ongoing requirement for older more established digital channels for some time and we need to ensure we do not exclude groups because of their lack of access to digital services. We have made this clearer in the digital strategy.

A sample of the feedback received from corporate customers:

What do you want from us in terms of data?

"The UK banking industry has introduced 'open banking' in response to regulatory changes and customer demand. Industry and customer account data has become more open, stimulating competition, innovation and creating greater value for customers. Likewise, energy system data that has value to the wider system and has been generated by monopoly or consumer subsidy should be available for the benefit of the 'system as a whole', and thereby can be viewed as a national asset. Information about assets in combination with the flow of energy through the network, including power flows, impedance and connectivity data, embedded generation connections and metering, network constraints and fault data can be used by stakeholders and other system operators to improve efficiency and maximise utilisation of the network."

How do you want to consume that data and what digital technologies are most important to you?

"Through APIs utilising associated applications and/or platforms that allow for as near real-time data exchange as possible in a non-cost prohibitive and process efficient manner."

What do you think are the key digital technologies we should be considering?

"Microservices; Digital Twin for the organisation; IoT; RPA"

How do you think those technologies will develop by 2028?

"As part of a trend towards hyperautomation, concept of Digital Twin in particular will be at the forefront of endeavours that drive efficiency in operations for large 'legacy' organisation undergoing digital transformation over the next 10 years."

What do you think we need to prepare for and in your experience, what are the blockers/challenges to delivering digital services?

“Digitalisation of an effectively analogue energy system has a large amount of possible technical blockers which could affect the delivery of quality digital services. Careful planning and a strategic approach is imperative to overcome these challenges, including, but not limited to:

- *Legacy data is often fragmented, incomplete and unevenly distributed across organisations. To fully utilise the power of data insights and analytics, the source must be well structured and of high quality. This often takes significant investment, however its value-added potential is immeasurable.*
- *Cyber security – a more open and distributed energy system enlarges the attack surface for which malicious parties can exploit and endanger the network. Security should be recognised as a hygiene factor, requiring constant monitoring and investment.*
- *Historically, interoperability across proprietary systems has been shown to cause issues. Leading digital companies circumvent this by embracing integration of ‘microservices’ through open industry standards.*
- *Technical debt - the implied cost of additional rework caused by choosing an easy (limited) solution now instead of using a better approach that would take longer. If technical debt is not repaid, it can accumulate ‘interest’, making it harder to implement changes. Unaddressed technical debt increases overall system entropy, and in extreme cases can lead to technical ‘bankruptcy’, where systems fail and have to be built again from scratch.”*

Voice Of The Customer feedback

Impact Market Research ran a short survey with the VOTC cohort. It asked seven questions about our digital strategy consultation document via a cut down slide presentation. It is worth understanding that the VOTC cohort are generally domestic customers who have registered to give us feedback regarding our operations, plans and performance.

The questions were:

1. What do you want from ENWL in terms of data?
2. How do you want to consume that data and what digital technologies are most important to you?
3. What do you think are the key digital technologies we should be considering?
4. How do you think those technologies will develop by 2028?
5. What do you think we need to prepare for and in your experience, what are the blockers/challenges to delivering digital services?
6. What are the digital priorities that we should be seeking to address?
7. Are there any other outcomes you think we should be delivering by 2028?

There were 170 respondents to the survey.

General summary:

- People want clear data and information that is relevant to them. Data about faults and outages remains the key requirement though some are now interested in usage, sustainability and cost of service.
- Most customers want to receive data and information via email (31%) and the company website (25%). Less so via text or phone. A significant number (12%) mentioned via an app.

- Most (41%) did not have a view on the key digital tech we should be considering. The rest mentioned smart meters, EVs, apps, smart home tech and low carbon technologies.
- Most (36%) did not have a view on how those technologies will develop through 2018, though a significant number expect development to be rapid.
- Regarding views on digital blockers, 19% thought lack of consumer knowledge and 18% thought cost to the consumer would be blockers. There was also reference to digital accessibility being a blocker and those that didn't want to engage.
- Regarding digital priorities, there was a range of opinions on priorities: good comms re. future tech; security and privacy; accuracy; clarity.
- When asked for other digital outcomes, most mentioned sustainability and renewable energy. Some just want a reliable supply and for it to be affordable.