SGN

Your gas. Our network.

SGN's Digitalisation Strategy

December 2020

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Foreword

1 Foreword

As previous Chair of the Energy Data Task Force, I am passionate about both the opportunity associated with digitalisation of the UK Energy system and the necessity of acting to deliver it. It is vital that the vision and strategy set out by the group in 2018 is progressed and delivered for the benefit of all UK citizens and indeed for the future of our country. Digitalisation is not only essential in our move to Net-Zero, but also to enable Operational Efficiencies & to deliver Customer Value.

The steps taken by both BEIS and Ofgem to deliver against this strategy are excellent and are to be applauded. But all parties within the industry have a huge amount more to do if we are to work collectively to tackle the challenge we all face. As an Independent Director of SGN, and the member of the Board responsible to lead on overseeing this digitalisation strategy, I take a personal interest in the steps the company has and continues to take on this journey, guiding and challenging the team as required. I am particularly passionate about the investment in digital skills and capabilities and in an environment of reduced funding and uncertainty around energy futures, I will seek to champion the continued prioritisation of talent, skills and capability development both within SGN and across our industry.

Laura Sandys CBE – Independent Director SGN

At SGN, our digital and technology goals are to ensure that our customers and our network is safer, greener and more efficient because of what we do. We aim to be a recognised leader in digital innovation and technology adoption. As Director of IT and Innovation at SGN and the Executive responsible for overseeing and delivering our Digitalisation Strategy and Action Plan, I am both excited and passionate about driving the digital agenda and playing a part in tackling the climate emergency that we all face whilst enabling operational efficiency and better customer value.

At SGN we have an exceptional record when it comes to Digital solutions and innovation within our sector. This has been recognised and celebrated through multiple awards achieved by the company. This year, we worked with partners to develop and deploy Fyld.ai to our field force. This product won the national UK IT award for “Emerging Technology of the Year”. Similarly, TFL recognised the innovation in our Distribution Network Information Modelling (DNIM) project which helps to reduce traffic disruption in our nation’s capital city. Due to our consistent achievement of being the number one network in customer service, SGN was awarded three awards at the UK Customer Experience Awards in 2020, partly due to the digital solutions underpinning our customer service offering.

Our digital and technology strategy has developed over many years and will evolve further as we listen to our stakeholders, collaborate and deliver the strategy in all five years of the GD2 price control timeframe. We are committed to delivering our Digitalisation Strategy and Action Plan and the required radical transformation of our current approach and how we operate.

Andrew Quail – Director of IT and Innovation

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Executive summary

2 Executive summary

This Digitalisation Strategy has been produced directly in response to the recommendations of the Energy Data Taskforce and the five recommendations made within their report entitled “Modernising Energy Data”. In summary, the report highlights the need to make more use of energy networks’ data to enable the move to net zero, enable operational efficiencies and deliver customer value. These recommendations have been adopted as a regulatory strategy by both BEIS and Ofgem. This has led to a specific requirement, shortly to become a license obligation, for UK network companies to publish their respective Digitalisation Strategies every two years and to demonstrate the adoption of data best practice guidelines.

Figure 1: SGN’s Digital Transformation Framework

Our Digitalisation Strategy has four main sections;

Background: Covers the context and our digital readiness:

- **Context:** The drivers and needs case for change is summarised within this section in addition to the framework and environment we are currently operating within.
- **Our digital readiness:** The position in which our industry and SGN in particular, finds itself with respect to digital and data maturity is defined here. We have undertaken analysis and readiness assessments with respect to our maturity as well as an assessment of our digital skills. Understanding our current position and areas in need of focus is a fundamental component to feed into our overarching strategy. It is also vital that we balance the wider digitalisation ambition with the capability of the organisation and the industry as a whole.

Our Digitalisation Strategy for GD2: In this section we cover our approach and the outcomes and benefits achieved to date across seven strategic themes, each one an essential component for successful digital transformation. Our approach is summarised in the diagram above and we will cover each theme in some detail within the body of this document.

Delivering digitalisation: We are responding to 12 high-level requirements outlined by Ofgem within their open letter to network companies of June 2020. These requirements have very recently been complemented by 9 digitalisation principles which Ofgem shared in November 2020. Whilst the digitalisation principles were only recently shared, the principles are broadly maintained throughout our working practices and our strategic approach to digitalisation as explained within this section.

Conclusion and next steps: Summary, key risks and what we will do next.

3

Background

3 Background

3.1 The digitalisation opportunity

The UK government has committed to cutting greenhouse gas emissions to net zero by 2050 and Scotland by 2045. Delivering a cost effective and socially acceptable low carbon transition will require significant transformational change to the existing energy infrastructure, along with the types of energy that are used within it.

Our energy system needs technology and infrastructure that are both cost effective and clean, but it also needs innovation in processes, transactions and consumer offerings to realise a whole-system energy infrastructure. Data and digitalisation are essential to move the energy network from passive to active and is key to delivering the necessary infrastructure at the least cost. This is a fundamental part of the Government's Industrial Strategy and Ofgem's approach to regulation for RIIO-GD2.

The necessity of driving and delivering Open Data and digitalised energy solutions will effectively require new business models, products and services to meet customer and stakeholder needs both within and outside our industry.

Our programme of work to deliver energy transition will demand new platforms, operating models and data sharing opportunities to be delivered and exploited. This will not only require demonstration of low/zero carbon heat sources but the development and delivery of innovative digital and data solutions. The opportunities we have explored and will continue to explore are highlighted later within this document but as an example of some of the opportunities that exist;

- **Future Network Control:** This is an innovation opportunity that exists to undertake a radical review of network management to meet the evolving needs of low/zero carbon gas sources such as biomethane and Hydrogen. This will also address the changing needs of a UK gas network and energy customers to the ones we have today. Data collection and sharing is crucial to correctly control new, smart systems and provide accurate billing for consumers. New network control requirements, methods of communication, alarms etc., will also be essential to ensure security of supply and safe control of operations.
- **H100 Fife:** Our recently successful Network Innovation Competition (NIC) winner, H100 Fife, will require methods and technologies to manage, run and operate the network. This project will explore, develop and demonstrate these and highlight opportunities to utilise network data in ways that are not undertaken today.
- **Real-Time Networks - phase 2:** This will require the deployment and testing of new sensors to manage a hydrogen network and varying gas quality. This will collect and share data on hydrogen within the network, influencing gas quality and consumer bills. The collection of data in real time can minimise network constraints and maximise commercial returns of network actors.
- **Control systems:** We have proposed a project in GD2 to look at instrumentation and communications systems for whole systems optimisation Real time visibility of local system management through sharing of operational data between GDN and DNO control rooms to optimise flow and system pressures and provide better offtake profile notices to the electricity system operator.
- **National Energy System Map:** We are already proactively working with other network companies in the development of a proof of concept for a digital mapping service, known as National Energy System Map (NESM). Although there are a number of regional-based representations of this data, this will be the first time ever that a UK-wide solution will be provided in a single platform. A number of stakeholder groups have asked for this.

This is just a small sample and there are many, many more opportunities. We have highlighted more about what we have done, and what we intend to do, subject to funding and stakeholder priorities, within section 4.9 Digital innovation

3.1.1 Modernising energy data

In 2018, the Government appointed the Energy Data Taskforce, who published a report entitled "Modernising Energy Data" (MED). The report's recommendations are to make more use of energy networks' data to enable the move to net zero, enable operational efficiencies and deliver customer value. The five key recommendations of the MED report are;

1. Digitalisation of the energy system.
2. Maximising the value of data.
3. Visibility of data.
4. Coordination of asset registration.
5. Visibility of infrastructure assets.

The full report can be found at: https://es.catapult.org.uk/reports/energy-data-taskforce-report/ and its recommendations are summarised in the diagram below;

EDTF recommendations

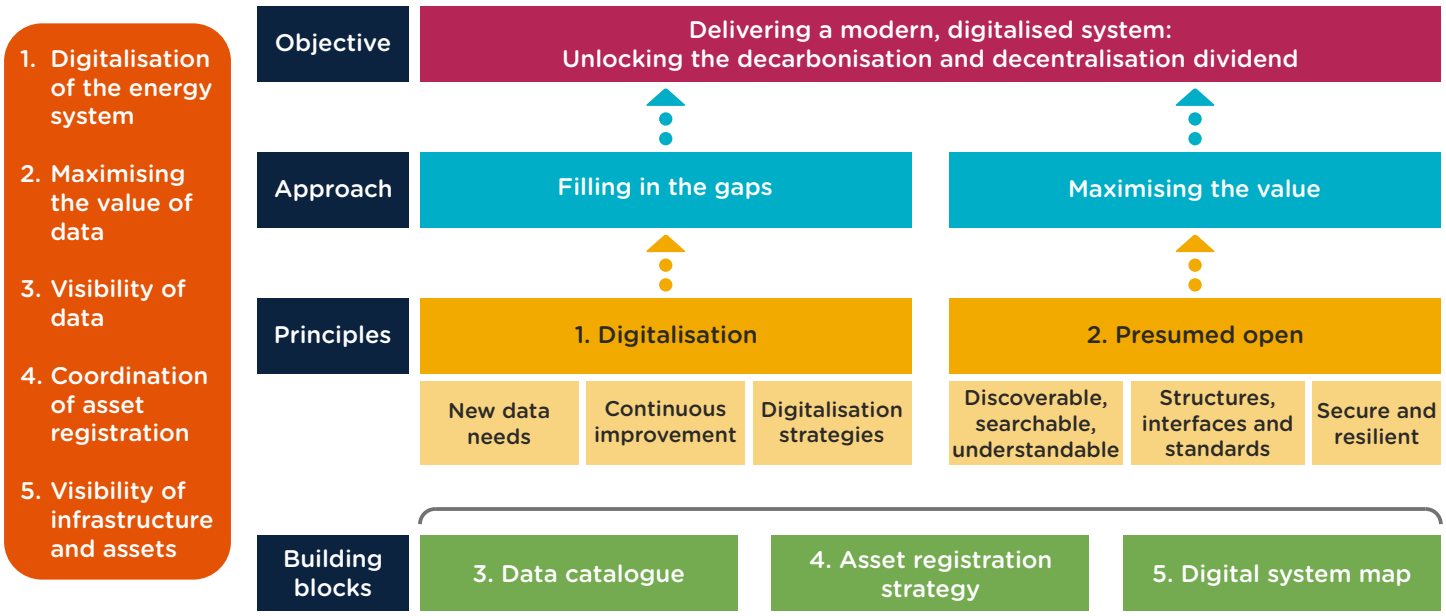


Figure 2: EDTF recommendations summary

Department for Business, Energy & Industrial Strategy ofgem Innovate UK

These recommendations have been adopted as a regulatory strategy by BEIS and Ofgem and consequently, licence conditions and associated guidance are being proposed on the UK Energy Network companies to further progress, develop and deliver this strategy.

3.1.2 Digitalisation priorities

In June 2020,[1] Ofgem published its open letter outlining regulatory expectations for digitalisation during RIIO-2, following its evaluation of the sector's initial digitalisation strategies submitted alongside their RIIO-2 business plans in December 2019. Whilst there was recognition of the progress made across the sector, Ofgem has called out the need for further effort to be made and progress evidenced during RIIO-2.

To underpin this expectation, Ofgem detailed the steps needed to be incorporated into digitalisation plans as well as execution and delivery of outcomes.

1 **Governance**	Providing clarification on senior ownership, accountability and board-level responsibility for delivery of the digitalisation strategy and action plan.
2 **Needs driven**	Identifying how each planned activity is driven by stakeholders'/users' needs.
3 **Coordination**	Describing how planned activities will be coordinated with other organisations.
4 **Workforce planning**	Providing details on a workforce plan for effective business transformation, such as upskilling, recruiting skills, diversity and embedding these into the operational model.
5 **Define success**	Reach a common understanding with network company stakeholders of what success looks like and reflect these in the digitalisation strategies and actions plans.
6 **Service design**	Demonstrate adherence to recognised practices when creating and improving data and digital services.
7 **Measure progress**	Set objectives and include a framework for assessing progress against them. Review and report on that progress.
8 **Data best practice guidance**	We recommend the network companies review the guidance, engage with the associated consultation process and consider including a commitment to follow its expectations as part of their digitalisation strategy and action plan update.
9 **Modernising Energy Data Access (MEDA)**	The competition is seeking a solution to the inter-operation of data between data/digital services provided by different organisations. The solution delivered might reasonably be beneficial to the network companies and therefore should be considered for inclusion in the digitalisation strategies and action plans.
10 **Energy data visibility discovery**	The ONS is exploring how to effect data visibility across the energy sector. Recommend digitalisation strategy and action plan includes how the network company will work to continuously improve visibility of data.
11 **Asset registration**	Networks to clarify views on own needs from and responsibilities for asset registration services. We would like network companies to clearly articulate whether DBPG can support meeting these needs and responsibilities.
12 **Digital mapping**	This is an ENA led effort that is prototyping a digital mapping service. We would like to see the updated digitalisation strategy and action plans define the relationship between this service and associated digitalisation activities.

[1] https://www.ofgem.gov.uk/system/files/docs/2020/06/open_letter_digitalisation_strategies_feedback.pdf

3.1.3 Collaborating to deliver digitalisation and open data

The Data Working Group (DWG) was formed through the Energy Networks Association (ENA) in response to stakeholder views that our networks needed to engage, and that the issues needing to be addressed are common across our industry.

The DWG provides a collaborative forum through which these conversations can occur and solutions developed, along with other data services aligned to the EDTF report recommendations. Most importantly it provides a platform for stakeholders to engage and help inform and shape the solutions and services they view as adding most value.

The DWG currently has two workstreams in which SGN plays an active part, to the extent that we will be chairing one of them. These two workstreams are aligned to recommendation 5 and 2 of the EDTF report:

Recommendation 5 refers to a Digital System Map for making infrastructure assets more visible through a common platform. This is to provide open and easy access to a UK-wide geospatial representation of gas and electric network assets and supplemental information as appropriate to enhance the information available to the data consumer.

As mentioned previously, the DWG is undertaking a proof of concept for this map - known as National Energy System Map (NESM). Although there are a number of regional-based representations of this data, this will be the first time a UK-wide representation will have been provided in a single platform. This is data that several stakeholder groups have and are requesting, particularly with the move to de-centralising the energy system.

Recommendation 2 refers to Presumed Open Data. This is a fundamental principal of the EDTF report and points to the democratisation of energy data for the greater good (with appropriate privacy and security arrangements). This recommendation backs up the UK Industrial Strategy and the opening up of data in support of the UK economy. To facilitate this step-change across the energy sector, the DWG has established a workstream to facilitate requests for data through an Open Data Triage Framework, which SGN is leading. The objective is to provide data consumers, customers and stakeholders with a single, transparent and consistent method of raising requests for data from the networks.

In order to ensure that these workstreams are aligned to our sector stakeholders' priorities and requirements, there have been two very successful stakeholder events held. These have been very well attended by in excess of 120 participants and by a cross-section of research organisations, consultants and energy focus groups.

> The key feedback received centred around:
>
> - The networks' ability to share real-time data to support data consumers' downstream use
> *Development of APIs is something that is further down the line (not part of the Triage framework initially) and is something that SGN will be looking at as part of its roadmap*
> - Understanding DWG's engagement with other industry initiatives in delivering EDTF recommendations
> *The DWG has a team set up to engage with other initiatives to ensure appropriate cross-alignment*
> - How will data be licensed for use – both R&D and commercial? Will 3rd parties be able to innovate using the data?
> *The principal behind Open Data is that data is made available to whomever needs to use it for whatever purpose, and the only requirement is to acknowledge the source. Each network company will need to assess the data they will be sharing as "open"*

The output from our stakeholders is helping to shape DWG thinking alongside that of the individual networks. Whatever solutions and services the industry delivers it is important, and expected, that there is a direct link back to our stakeholder needs and demonstrable value enabled.

From the start, SGN has recognised the important role played by the DWG in determining the challenges and opportunities of delivering digitalisation and data-driven solutions and services. also It provides a focal point for collaboration across the networks (and beyond) and a forum where our industry stakeholders can engage and inform.

SGN is committed to supporting our industry's journey to net zero, improved operational efficiencies and enhanced customer-driven value. One of the ways we are achieving this is through our continued leadership, collaboration and visible support of the DWG.

3.2 Our digital readiness

Ofgem recognises that the energy sector is lagging behind other sectors in developing and delivering digital-led innovation and transformation and recognises that this is an important enabler to facilitate the future energy system. Our industry and our own maturity in digitalisation and data sharing will need to continue to develop and mature. This will ensure our ability to deliver repeatable, sustainable and optimised digital and data services that provide real benefits to customers and stakeholders throughout GD2 and build solid foundations for GD3.

There is significant research and evidence to bring to life how the utility industry will significantly benefit from digital business in the future. The attached graphic summarises some of the key use cases and outcomes that can be achieved with digital business;

Digital business is the way to manage the utility market of the future

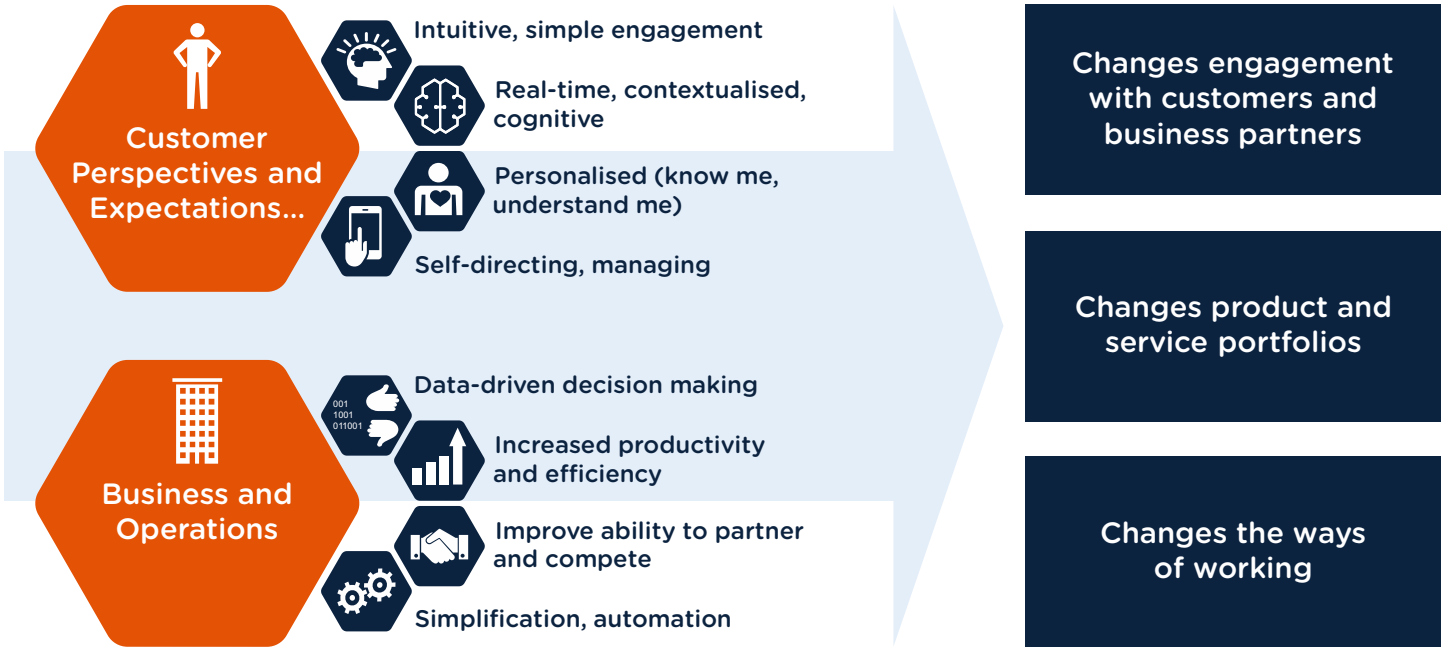


Figure 3: Based on Gartner 2020 - Future of digital business in utility market

However, the UK utilities digital maturity generally is low, as evidenced in the attached capability maturity model created by Gartner. This highlights that overall, our industry is at a very low level of maturity i.e. between Level 1 and Level 2 maturity.

Capability maturity model for utilities - post 2020

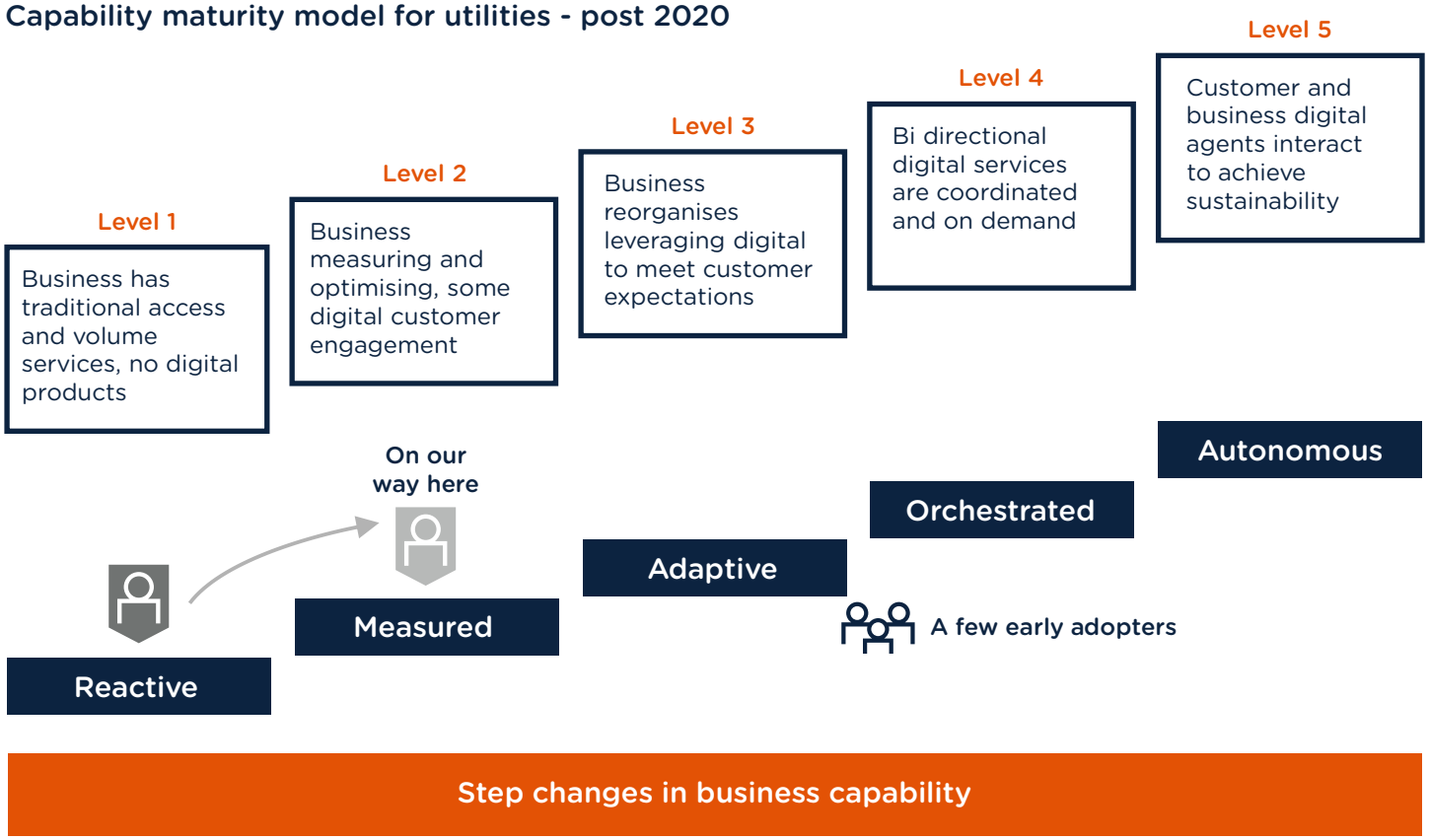


Figure 4: Based on Gartner 2020 - Capability model for utilities

3.2.1 SGN's digital readiness assessment

This year, SGN has undertaken a Digital Maturity assessment and a summary of the key findings is provided below. They show that across the main digital enablers within our business, our maturity either needs significant focus or remedial work to accelerate at scale.

Digital execution scorecard summary heatmap

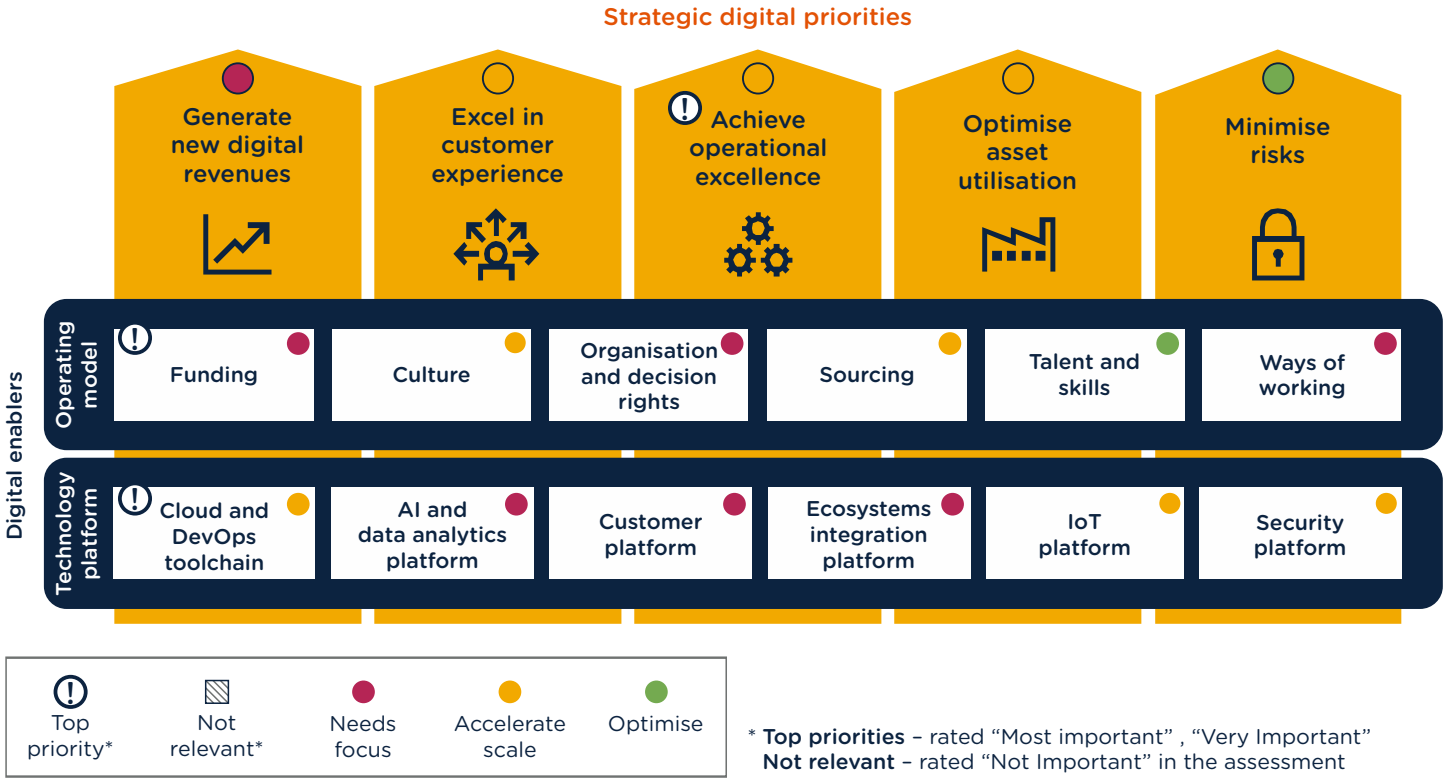


Figure 5: Gartner's assessment on SGN's digital readiness

3 Background

This assessment has identified a number of areas where improvement would be beneficial, and these are highlighted with either a “red” or “amber” status in Figure 5. A more detailed description of our status against each area is included within Appendix B;

- **Funding** across the industry is below market levels and the method of funding through a project driven approach does not provide the flexibility and agility needed for a digital business model.
- **Organisation:** A truly transformed digital organisation is based on small cross-functional teams that are self-sufficient and largely independent to deliver value to users and customers. SGN has implemented this in places but not at scale.
- **Ways of working:** Customer centric design and delivery methods are required in delivery approach. Greater use of personas, design thinking, and journey maps are encouraged.
- **AI and data platforms:** Faster and federated analytics, AI and ML is recommended. SGN’s use of a data lake has only a few use cases so far.
- **Customer platforms:** Digital leaders provide customers and employees real-time data access to customer-related data delivering omnichannel experiences.
- **Ecosystem integration:** Adoption of APIs as the main drive for integration with third parties is a strategic capability. SGN has limited adoption of API architecture. There are some examples of this but it is not present at scale.

The assessment also noted areas where process is observed but further scaling is recommended, as follows:

- **Culture:** Digital operating models require new leadership models and strong commitment to change traditional behaviours and culture. We know that SGN and our industry more generally is a traditional and risk averse one, for very good reason.
- **Sourcing:** A further refinement of sourcing capabilities in line with evolving digitalisation is required. Agile working and digital supply chain drive changes required in sourcing capabilities.
- **Cloud and DevOps:** SGN has a strong story in cloud adoption but we have more to do in the delivery of automation and microservices.
- **Security:** Achieving higher compliance with security policies significantly reduces risk but can challenge the balance of security with speed and agility.
- **IoT:** Exploitation of Industrial Internet of Things (IoT) to further accelerate the digitalisation opportunity, especially in developing digital twin capabilities.

The assessment also noted the digital skills strategy of building in-house capabilities is an area of strength that would need to be optimised going forward.

Whilst this assessment shows that there are many areas where digital maturity is low or would benefit from improvement, we have been undertaking a significant amount of work over the last 3 years to drive this maturity forward (see **IT Totally Transformed**). Our significant progress achieved through a focused programme of work highlights that although digital maturity and digital transformation is extremely challenging and resource intensive, it is achievable over time.

3.2.2 Data maturity assessment

Without credible and available data feeding the system, all our digital technology, intended to provide customer focused services and optimisation, will deliver limited benefit.

To that end, SGN has conducted a data maturity assessment based on Gartner's maturity model.

Data strategy	Data governance	Data management
Data leaders must define a Data Strategy that provides the long term or ongoing plan for realising an Enterprise Data Governance & Management vision and needs 3 main components: a plan for structures to execute the strategy; commitment from the enterprise and a roadmap for Enterprise Data Governance & Management	Data leaders must ensure that decision rights and accountability for acquiring, valuing, creating, storing, using, archiving and deleting information are specified adequately. Such a data governance framework includes the principles, guidelines, policies, processes, standards, roles & metrics that ensure information will help the enterprise to achieve its goals.	Data leaders must ensure that elements are in place to implement an Enterprise Data Management solution. The DM framework to support this should include establishing a coherent, enterprise-wide data architecture, integration and Master Data Management culture as well as establishing Data Quality best practice.
Data Vision/Strategy	**Data Gov Framework**	**Data Architecture/Modelling**
Culture & Awareness	**Policies & Procedures**	**Integration & Operability**
Value Creation	**Metrics/Measurement**	**Master/Reference Data**
	Ownership/Stewardship	**Data Quality**
		Data Lifecycle
		Metadata Management

Figure 6: SGN's data maturity assessment

As the Modernising Energy Data (MED) report highlights, data is clearly becoming a key asset for networks to apply in delivering these recommendations. Creating an enterprise data culture requires technology solutions, data skills and organisational adoption of best practice. SGN has made sound progress over the past 18 months in rolling-out some foundational data governance and management capabilities, including our data management framework and a well-established data governance model. However, in line with an overall acknowledgement of the data immaturity across the energy sector, there is clearly more work and investment required. As with our Digital Maturity assessment, there are specific areas where maturity is low and investment of time and resources is required.

3.2.3 Digital skills maturity assessment

Digitalisation within any organisation requires a set of skills to ensure objectives are delivered. SGN uses the globally acknowledged SFIA (Skills For the Information Age) Framework[2] for Digital Transformation to inform the people strategy required for delivery of Digital Transformation. A high-level assessment against the framework is illustrated in the below figure, indicated by Red, Amber and Green dots for low, medium and high levels of skills maturity in these areas:

Digitalisation strategy, innovation and investments	Digital culture, skills and capabilities	Digital and data transformation, change and governance	Digital technology enablers
Skills needed for agreeing on target business outcomes and strategies, plans and investments required to deliver.	The skills needed to assess and develop the required culture, skills and capabilities for digital transformation.	The skills needed to implement effective enterprise governance models for new digital business, effective change management, building in security to operating models and technology platforms and delivering benefits and a sustainable, scalable business model.	The skills needed to execute digital technology enablers during the delivery stages.
Strategic Planning	Organisation Capability	IT Governance	Business Analysis
Innovation & Emerging Technology Monitoring	Sourcing	Information Security	Solution Design
Demand Management	Organisational Design	Financial Management	Technical Design
User Experience	Learning & Development	Data Management	Visualisation & Analytics
Enterprise and Solution Architecture	Performance Management	System & Change Lifecycle Management	Data governance & quality
Business Process	Data Culture	Programme Management	Methods & Tools

Figure 7: SGN's digital skills assessment against SFIA framework.

Investment in our employees is key to achieving the Digitalisation Strategy. Digital enablement of the workforce, talent recruitment, skills development and upskilling our existing workforce will all be necessary to support SGN's digital transformation. We are already beginning this journey by focusing on a number of key aspects to change and improve our digital culture and skill sets. We have laid this out in more detail within section 4.6: Developing Capabilities.

[2] https://sfia-online.org/en/sfia-7/sfia-views/digital-transformation-view?path=/glance

Our GD2 plan highlights the key investment areas where additional skills will be required as part of improving our current digital capabilities as well as developing new ones. We realise that there are areas where acquiring these skills will be difficult due to the high demand, both within and outside our industry. In particular, skills associated with data analytics, cyber security and niche technologies, such as Industrial IoT, are extremely hard to find, recruit and retain. The EDTF report highlights the importance of developing and acquiring skills as part of delivering a digitalisation strategy;

> "The energy sector has been slow to harness the potential that data offers and has, in some ways, been left behind" .... *"Organisations should focus on data talent development"* and *"It is hard to get the right combination of data, energy and engineering talent".*

It is important to highlight the risk of a misalignment between regulatory funding and investment in RIIO-2. As set out in our response to the draft determination we consider there to be current gap within our funding regime where 'investment' in digitalisation is seen as a capital funding requirement. As previously highlighted, the development of our digital capability requires ongoing and sustained investment in process, culture and most importantly, people. It is important to recognise the importance of operational resource and talent development, and the potential implications of not adequately resourcing operational resource.[3]

Regardless, we will continue with our current approach for skills development which primarily relies on internal education and training of existing staff as well as offering graduates a career path in areas such as data science, analytics, architecture, cyber security and data management. This is a slower approach to building our digital skills and we will continue to work closely with our technology partners and strategic vendors to source the digital skills we need for our programme of work.

3.2.4 Technology readiness: building the foundations for digitalisation:

IT Totally Transformed: 5 Pillars of Change

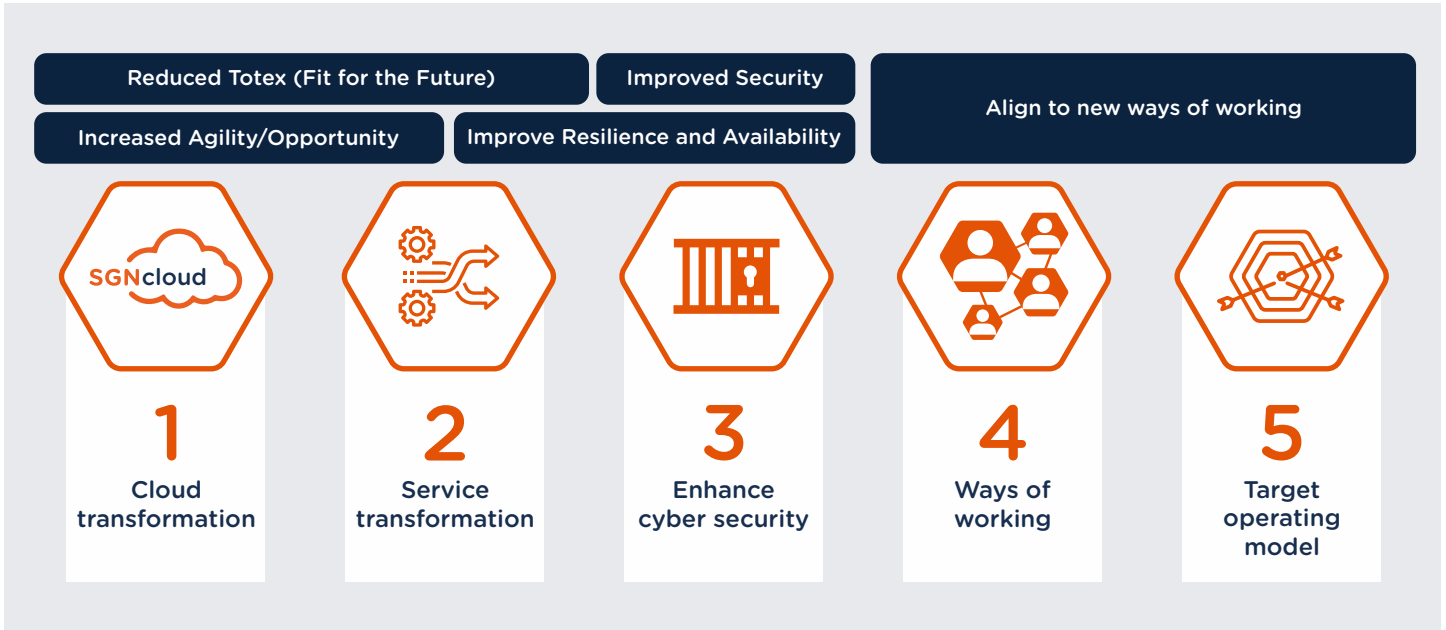


Figure 8: IT Totally Transformed: 5 Pillars of Change

[3] Please note that this is drafted prior to the publication of the final determination, We are reflecting our understanding of the draft determination and this may be addressed in final determination.

3 Background

IT Totally Transformed

Over the last three years, SGN has undertaken a major IT and digital transformation programme. Our primary driver is always to provide the best technology services that protect our people and our customers. Our goals have been underpinned by five core workstreams, each supported by multi-year programmes of work. These are essential foundations to us delivering digital transformation;

1. Cloud transformation

Our team has implemented an 'all-in' cloud strategy through a multi-year migration and automation programme. This strategy migrates services to global best-in-class providers and has resulted in most of our IT estate, including a new and secure network service, integration platform and use of management tools and automation, being rebuilt. The programme has delivered improved security, durability and agility as well as supporting new ways of working such as analytics, and real-time network monitoring - critical to support our longer-term digitalisation strategy. Over the last 12 months we have successfully completed the remaining migration of the majority of our on-prem estate resulting in over 90% of our workloads running in the cloud.

SGNcloud

2. Service transformation

Our IT services have been radically overhauled for the better. We have implemented a new SIAM service, service desk and associated tooling with our service provider Fujitsu. We have implemented a new application and infrastructure support function with HCL and moved all associated services away from the previous providers. We have replaced over 4,000 devices used by our field force and former office-based staff. Our IT service customer satisfaction levels are now above industry standards and the highest we have achieved at SGN.

3. Cyber security programme

Cyber risk remains one of our highest corporate risks. A multi-year investment programme has resulted in a step change in Cyber security capability thanks to, physical separation from our part-parent company's IT estate (SSE) and implementation of SGN's own Managed Security Service (MSS) and security management.

We have now entered phase 4 of our multi-year programme of investment. Phase 4 will include the continued improvement of our MSS and in-house capability as well as risk reduction through the use of more advanced security capabilities available on our new cloud platforms.

4. Ways of working: digital agility and engagement

Ultimately, we have amended our delivery and engagement models to achieve digital change faster, at lower cost and in the right way. We have done this by shifting our change delivery models to lean and agile, business-owned digital strategies. We now have Director-led, strategic change workstreams with genuine cross-functional teams involved in delivery. We moved away from technology aligned programmes to director led workstreams linked to overarching business objectives; **Green Growth, Operational Excellence and Customer Service**. Our partner and supplier ecosystem is a fundamental part of building our digital capability. We have significantly developed our business engagement approach. We have introduced innovation days where we bring technology partners in to get creative and challenge convention, utilising new agile techniques like design thinking and cross-functional team daily stand ups; and running regular, formal leadership engagement sessions throughout the year to ensure we are doing the right things for our business and for them to stay informed on digital strategy, performance and change.

5. Digital skills and our target operating model

Digitalisation requires investment in skills and capabilities (see section 4.5 Developing digital capabilities). We have enhanced SGN's internal technology capabilities, supported by strong new hires and new supplier partners. In 2018 we defined a new target operating model which has now been delivered. We have completed our people restructure and new technology Centres of Excellence have been established, along with 'on demand' development and testing services. We introduced new roles, redefined others and welcomed new recruits to the team. The six new Centres of Excellence prioritise technical specialties, such as analytics, cloud, mobility, productivity and networking and communications. We achieved all this whilst reducing costs and our reliance on external providers.

4

Digitalisation strategy for GD2

4.1 Digital strategy and transformation approach

Our overarching business strategy for the next 5 years is defined in detail and included in our GD2 Business Plan: **A plan for our shared future** https://www.sgnfuture.co.uk/wp-content/uploads/2019/12/SGN-RIIO-GD2-Business-Plan.pdf. Our plan has been created and shaped by extensive stakeholder and customer feedback which has culminated in three commitments, underpinned by seven customer priorities. These align to Ofgem's output categories of *meeting the needs of consumer and network users, maintaining a safe and resilient network* and *delivering an environmentally sustainable network.*

Our strategic commitments are:

Making a positive impact by:

- Providing excellent service to our customers
- Supporting those who are vulnerable in the community

Delivering a safe and efficient service by:

- Keeping the gas flowing
- Acting safely
- Keeping the cost down

Building a shared future by:

- Delivering energy solutions for the future
- Minimising our environmental impact

4 Digitalisation strategy for GD2

Our approach to applying digital transformation to this strategy is based on our broader change management framework. As with our overarching business plan, the process of digital transformation starts with understanding and articulating our stakeholder expectations and needs, leading to the creation of our digitalisation strategy. Below is a simplified illustration of how our strategy drives our overall approach to digital delivery. This is driven from an outside-in basis but delivered and realised from the inside-out.

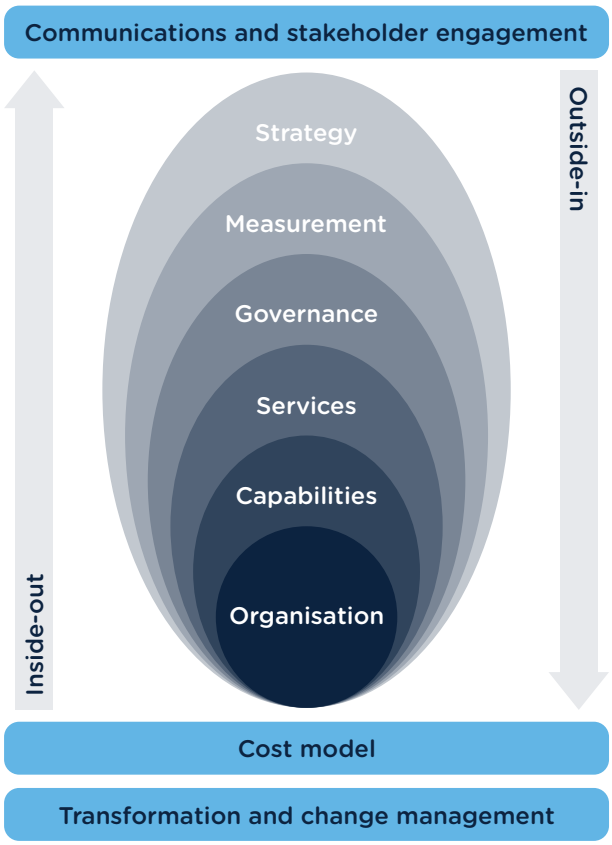


Figure 9: SGN's approach to operating model development

What is our strategy?

How do we measure success?

How do we govern for success?

What services do we offer to be successful?

What capabilities do we need for the offered services?

SGN's digitalisation strategy is a means to gather and fulfil the requirements and expectations set by the various stakeholders set out within this document and to drive innovation within our sector through digital means. Our strategy is evolving and will continue to take into account changes affecting our industry and new technology opportunities that emerge.

It is important to note that the digitalisation strategy will be underpinned by final determination that is expected to be released shortly. This define the funding, the associated licence requirements for the next 5 years and any reopeners that may enable further funding for unanticipated changes during that period. Our digitisation strategy will need to align to that.

4.2 Our digital transformation framework

Our strategy is defined and delivered through a digital transformation framework that has been developed and refined over the last three years. This framework provides the fundamental building blocks required to deliver large scale digital change and is summarised below:

Figure 10: SGN's digital transformation framework

This section of the document defines our approach and our achievements to date, relating to each of the seven digital building blocks.

4.3 Needs driven – stakeholder requirements

SGN has a series of well-established feedback forums involving a broad cross-section of stakeholder groups which provide us with insights relating to our business plans and priorities for RIIO-GD2.

In the context of the Modernising Energy Data strategy being adopted across the energy sector, it is fair to conclude that stakeholder opinions on everything from decarbonisation/energy futures, vulnerable customers and sharing data, invite healthy debate and in some instances a variance in views.

Unsurprisingly stakeholders gave a clear and consistent message relating to SGN's exploration and development of alternative means of heating and the supporting digital solutions. Below is a sample of stakeholder feedback and their requirements:

> Our stakeholders are asking us to do more and at a faster pace, which will require the provision of the means to facilitate the exploration of solutions that they want both now and in the future, to solve the challenge of decarbonisation whilst protecting our customers.
>
> **RIIO-GD2 business plan appendix Energy Futures – Energy System Transition**

4.3.1 Mapping data provision

Our Gas Entry Connection customers[4] were also asking for enhanced visibility of biomethane development; sharing details of gas injection flows, grid pressures and forecast demand and capacity data to be made available along with mapping data aligned to those assets.

Mapping data came up again for our Third Party Connections stakeholders[5] to provide them with better insights on network usage and capacity.

SGN is actively engaged in progressing a proof of concept UK-wide map of network assets, through our extensive relationship with Local Authorities and the ENA Data Working Group. Information on capacity and demand is not something that is easily available currently but is a stakeholder requirement needing further consideration.

4.3.2 Vulnerable customer data

When delivering services for our vulnerable customers we ensure appropriate communication and minimal disruption during our operational activities. The Priority Services Register (PSR) has been launched across the energy sector with the objective of providing vulnerable customers with the option to register with the PSR and their information shared amongst network companies only, to understand those customers who will require additional contact and support when planning and undertaking network business.

From the focus groups interviewed, there is broad support for the PSR concept with specific customer data being shared across networks.[6] It is believed that a common PSR register between Energy companies will make lives easier for vulnerable customers.

In 2016 SGN worked with other network companies including electricity DNOs and water companies to establish independent data sharing agreements which give vulnerable customers the option of a single sign up

A single register	Data sharing between providers
Benefits: • Greater awareness of and access to services • A "one stop shop"	**Benefits:** • Opportunity for automatic access to services • Remove need for consumers to proactively seek support • Alleviate burden of explaining their circumstances multiple times
Concerns: • Data security • Consent • Risk of losing existing good practice • No pre-existing relationship, therefore need to build trust	**Concerns:** • Data security • Consent: what is being shared, to whom, and for what purpose? • Accountability and responsibility for protecting and updating • Practical barriers to sharing different formats of data

[4] Source: Biomethane & Gas Entry Connections Customer Survey (17 respondents)
[5] Source: Third Party Connections Report 2019
[6] Simpler registration for consumers in vulnerable situations Source: IPSOS 2018 – 40 interviews & 2 vulnerable consumer focus groups & 15 stakeholders

for support (e.g. SGN, UK Power Networks with Thames Water, Western Power Distribution with Severn Trent Water). Stakeholder concerns have been raised about the GDPR implication of this wider sharing and this may have a negative effect on the ability of the sharing of personal sensitive data between the energy and water companies. Consequently, a Data Protection Office (DPO) forum was created in January 2020 with ENA, Energy UK and network operators and suppliers, with the following aims:

- to promote best practice between organisations;
- to support cross-industry work, such as the development of the Priority Services Register to incorporate other utilities; and
- to provide a means to develop codes of conduct, if required, for the energy sector.

Overall, our Stakeholders have expressed strong support for a national PSR platform and rated it as one of their three highest priorities to investigate further.

- *"Remove the need for consumers to proactively seek support"*
- *"Greater awareness of, and, access to services"*
- *"Alleviate the burden of explaining their circumstances multiple times"*

However, this was very much coupled with concerns expressed around GDPR and downstream compliance of the data along with the security of data in terms of storage and transmission;

- *"Accountability & responsibility for protecting & updating"*
- *"Consent – what is being shared, to whom and for what purpose"*
- *"Data Security"*

Given this is a high priority for stakeholders, SGN and other Industry parties are progressing the appropriate systems and processes to enable data exchange of PSR data. This will also form part of our ongoing action plan.

4.3.3 Customers' priorities

When testing SGN's Business Plan development, we asked a customer focus group to comment on areas for investment and the level of priority they placed on them. One identified area was:

"Investment in data sharing technologies and initiatives to support the broader use and development of information as a public good"

The 207 Customers asked during this 'Business Plan Acceptability Testing' forum included representatives of current bill payers, future bill payers, hard to reach/vulnerable and small to medium enterprise (SME). The customer feedback indicated that investment in data sharing was not viewed as a priority area for SGN. This perception of this group, although we do not necessarily agree with it, is at odds with the work under way and the industry's strategic adoption of Modernising Energy Data. Whilst there is recognised and clear benefits to consumers from decarbonisation and innovation, there is a challenge to be addressed in demonstrating the value and benefits associated with data sharing to the customers and stakeholders who will pay for it.

4.3.4 Stakeholder advisory panel

As part of our ongoing engagement across our stakeholder forums, SGN has and will continue to reach out in terms of their priorities and expectations for RIIO-GD2 but also in relation to delivering digital and data solutions and services. One of these forums is our Stakeholder Advisory Panel and its members have been hugely supportive and have informed our approach and plans moving forward.

The output from these planned engagements will continue to be referenced and shape SGN's digital and data programmes, not just in respect of what is undertaken but the benefits and value it must deliver.

4.3.5 Technology advisors

In the development of the GD2 business plan, the Customer Engagement Group (CEG) advised SGN to seek advice from technical and industry experts to validate the areas of technology investment required in the future, in particular towards the end of the price control period. This request was made to give confidence that our predicted and planned levels of spend were appropriate, well targeted and in line with expert analyst predictions. Our technology plans have been benchmarked, reviewed and validated by Gartner, a globally recognised and leading technology advisory company.

Beyond Gartner's independent advice, we have sourced multiple highly respected technology advisors and partners in order to provide further evidence of the need to prepare our company and its operations for the significant technology changes that will occur between now and 2026.

Commitment 1

We will continue to seek and gather stakeholder feedback on digitalisation requirements and progress the development of these ideas in partnership with our industry peers.

4.4 Digital strategy

SGN's digital aspirations are driven by value creation opportunities for our customers and stakeholders. Our specific commitments to Ofgem and to our seven key customer priorities are fundamental to our digital aspirations and the framework which we operate within. A simplified linkage between our business strategy and our digital technology strategy is illustrated in the following chart:

Our three commitments and the seven customer priorities underpin and align to Ofgem's output categories of 'meeting the needs of consumer and network users', 'maintaining a safe and resilient network' and 'delivering an environmentally sustainable network'.

We will make a positive impact by	
SGN Business Plan	**Digitalisation enabler**
Providing excellent service Supporting those vulnerable in the community	**1) Delivering business value** increased agility, customer focus and enabling business value
We will deliver a safe and efficient service by:	
SGN Business Plan	**Digitalisation enabler**
Keeping the gas flowing Acting safely Keeping costs down	**2) Increase optimisation and efficiency** **3) Enhancing cyber security**
We will build a shared future by	
SGN Business Plan	**Digitalisation enabler**
Delivering energy solutions for the future Minimising our environmental impact	**4) Drive readiness and innovation** including addressing the five key challenges outlined by the Energy data taskforce

5) Focus on Analytics and Insights

Figure 11: SGN's digital aspirations

4.4.1 Technology roadmap

Over the last 2 years, SGN has created digitalisation foundations by investing in technology, processes and people to provide the building blocks of the platforms for digitalisation and open data initiatives of the future.

This has resulted in a significant IT Transformation programme, as summarised previously. This programme has rebuilt our IT architecture and delivered;

- An increased and enhanced communication network using MPLS,
- A new integration platform utilising API (application programming interface) architecture, process brokerage and message bus capabilities;
- A complete migration of our core application estate to highly scalable, secure, resilient and highly available public cloud infrastructure running on Amazon Web Services (AWS).
- We have evolved our management of the applications by introducing some elements of automation in infrastructure and application delivery and our maintenance processes by using Continuous Integration / Continuous Delivery (CI/CD) pipelines.
- We have also recently created an organisation data lake (albeit with only a few use cases delivered to date)

These investments, along with the people and process changes introduced in the last two years, are a fundamental enabler for SGN to deliver the digitalisation and open data solutions defined and prioritised by our stakeholders.

The technology roadmap underpins our vision and strategy

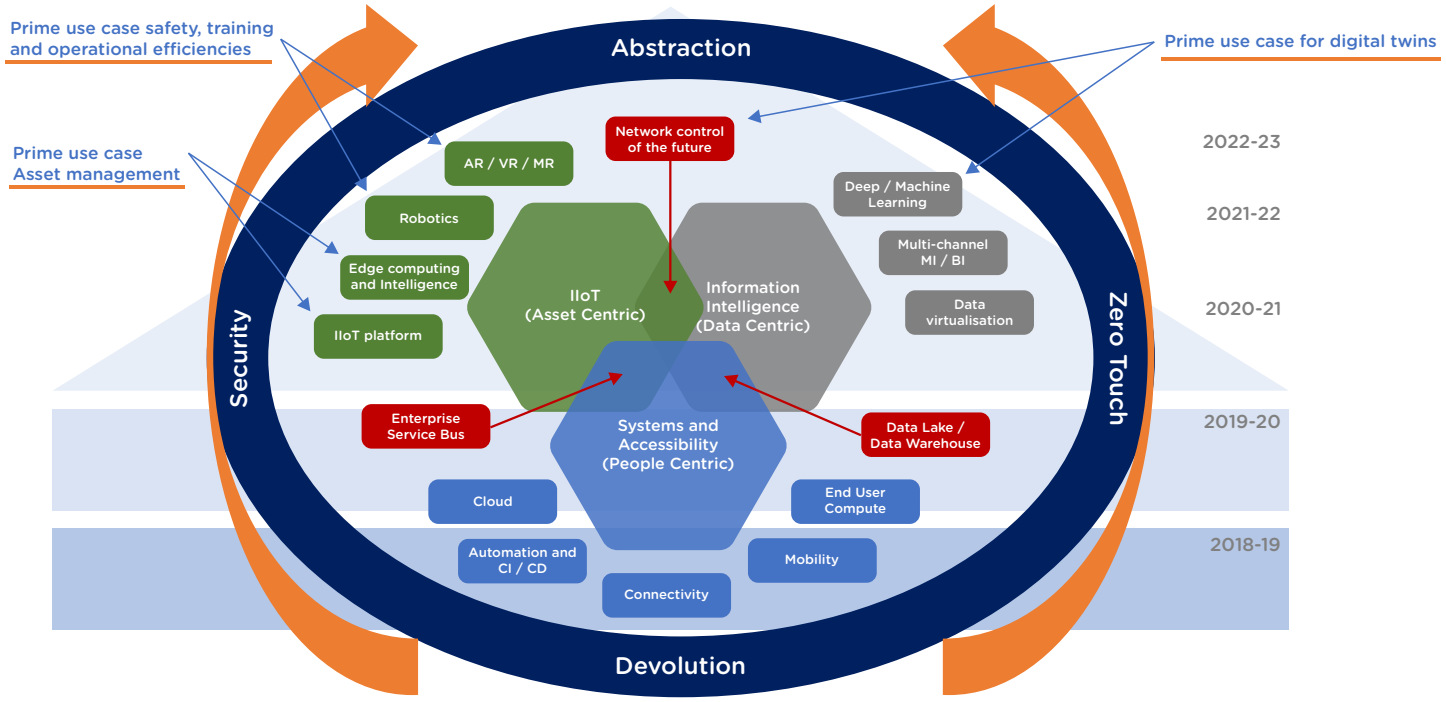


Figure 12: SGN's technology roadmap on a page

Our future technology roadmap includes further capability development in connectivity, exploring and exploiting further Industrial IoT, robotics and artificial / augmented / virtual reality. Our innovation projects undertaken in GD1 (see **Digital innovation** section), highlights the numerous opportunities and benefits associated with Industrial IoT within the energy networks sector. This is further evidenced in the advice and research undertaken by globally recognised technology advisors as evidenced within our business plan https://www.sgnfuture.co.uk/wp-content/uploads/2019/12/Appendix-011-SGN-IT-Cyber-Resilience.pdf We will further explore and develop capabilities in artificial intelligence, machine learning and derived learning. These technology roadmap plans are subject to our GD2 funding plans.

Commitment 2

We will deliver a digital strategy that provides a direct support to delivering a safe and efficient service, creating a positive impact on the society we serve and delivers a shared future. We will revisit our strategy every two years to ensure these principles are adhered to and continue to align with stakeholder priorities.

4.5 Operating model

Digitalisation can require a radical re-think of how an organisation operates and is structured and, in some cases, requires a fundamental change in the operating model. The UK Energy sector is under an element of operating model disruption through de-centralisation and de-carbonisation requirements. This in turn is demanding digital solutions, products and platforms, many of which do not exist today and may result in new operating models to support delivery. SGN's digital readiness assessment, presented earlier, highlights a need for capability improvements in this area, which is consistent with our industry as a whole.

4.5.1 Energy Futures and Greening the Gas

SGN's proposed programme of work around Energy Futures and in particular, our projects to develop and demonstrate hydrogen for heat, will require completely different technology and digital architecture than available today. We already know though the growth in the number of biomethane plants across our network, that access to information about our network is essential to producers. Our need to co-manage multiple gas qualities, gas production and storage sources and a variety of new inputs and offtakes from our network will demand different digital platforms, some of which may be shared with other organisations, and the provision of data to facilitate this will be key.

4.5.2 Changing market conditions and stakeholder expectations

Stakeholder and consumer expectations, as highlighted in section 4.2, will require new products and platforms to be developed. Where these requirements are common to the industry, centralised or common operating models to deliver these products must be explored and where appropriate delivered in the best interests of consumers and stakeholders to ensure cost efficiency and market simplification.

There are also opportunities to exploit new and different types of partnerships relating to digitalisation and data sharing. Our work with the Greater London Authority in developing the London Underground Asset register is possibly one of the best and most recent real-life examples of this. See section **4.8: Digital solutions: benefits driven digital solutions, products and services**.

4.5.3 Planning for the unknown

2020 will live in all our memories as an unprecedented year. As the global pandemic took hold of the UK and lock down was enforced, many businesses and industries struggled to survive in such a radically altered environment. At SGN, we continued to provide our essential and safety critical services throughout the lock-down period and our business, like many others, was forced to work in ways never planned for or expected.

The company's reliance on digital technology and IT services, and the teams responsible for ensuring continuous and adequate service to maintain operational performance was amplified beyond any previous experience. However, during this time, our team rose to the challenge and provided new and modified services to keep our business operating and our customers and employees safe. Some notable achievements during this time include;

The COVID-19 pandemic is an extreme illustration of the need for digital solutions to facilitate and deliver new operating models that are essential for the provision and continuity of energy services. This example has also taught us that no matter how much we plan, we must be prepared and responsive to address uncertainty and the unknown.

Commitment 3

We will continue to explore and develop new operating models with other organisations such as the GLA and the Data Working Group. In 2020/21, we will lead the workstream for GDN Data Triage services.

4.6 Developing capabilities

Energy system digitalisation will require significant cultural change in SGN and across the energy sector.

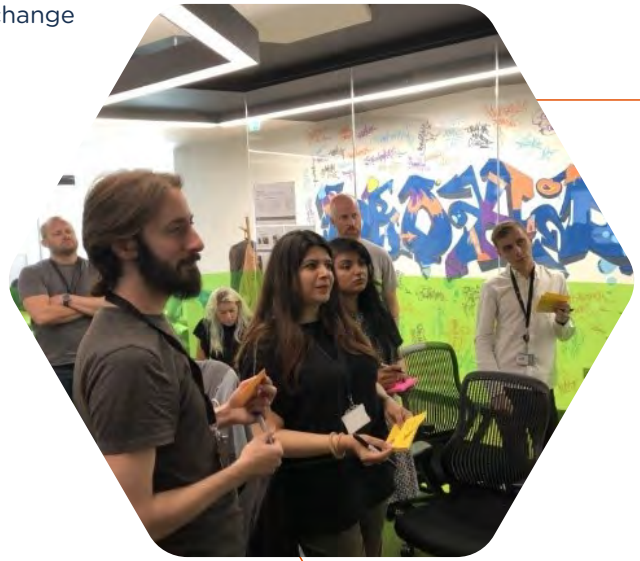
To achieve the specific focus of digitalisation strategy requested by our external stakeholders and our regulator, we need to achieve an internal 'data culture' as part of a wider 'digital culture' that our organisation needs to embed, grow and mature.

The EDTF report highlights the importance of developing culture and skills as part of delivering a digitalisation strategy;

> "The energy sector has been slow to harness the potential that data offers and has, in some ways, been left behind" .... *"Organisations should focus on data talent development"* and *"It is hard to get the right combination of data, energy and engineering talent".*

Investment in our highest value asset (our employees) is key to achieving the digitalisation strategy. Digital enablement of the workforce, talent recruitment, skills development and upskilling our existing workforce will all be necessary to support SGN's digital transformation. We are already beginning this journey by focusing on a number of key aspects to change and improve our digital culture and skill sets, listed below.

- We are building an in-house Data and Analytics capability which has already delivered a number of exciting examples of the power of data and insight to our wider organisation.
- The creation and development of a dedicated change management team with the required skills and framework to enable transition and adoption of change within our organisation, including digital change.
- Our IT organisation has recently insourced a number of key technical skills to support the creation of digital Centres of Excellence.
- Investment and delivery of a learning management system to support training and learning across the entire organisation
- Development of our embedded internal digital training team and training partners to focus on providing ongoing support and guidance to our wider workforce in the adoption and utilisation of digital technology (see 4.6.1).



4.6.1 Supporting digital skills development

As part of our assessment, we have identified that one of the highest priority areas is to address the digital skills of our operational workforce who make up the vast majority of our employee base. A dedicated team is assigned to develop the digital skills across our business with a focus on a blended learning approach to give our people the best chance to succeed with new technology. However, the COVID-19 crisis has seen major change in our approach to training and as illustrated below, the volume of engagement and the uptake from our colleagues is significant.

Digital training in numbers

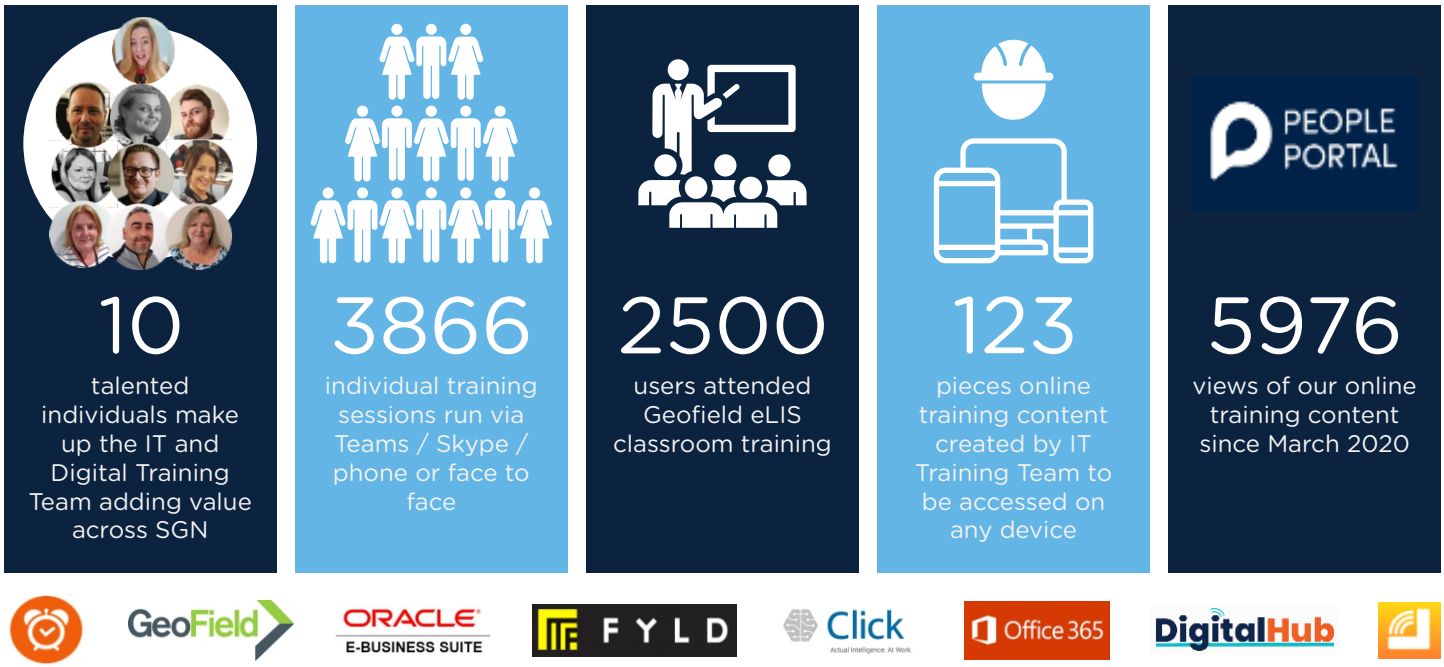


Figure 13: Digital training in numbers.

In addition to the above, SGN is working closely with a number of key partners to learn and adopt new ways of working and embed change management practices and practical skills required to improve digital maturity. Over the last two to three years we have worked with organisations such as Amazon, Microsoft, Deloitte Digital and Boston Consulting Group Digital Ventures to learn from these world-leading innovative and digitally mature organisations. We have adopted much of their best practices within our own organisation, such as running design thinking sessions with our operational colleagues and network engineers and exploring the possibilities of digital transformation. We will continue to leverage this wider talent pool throughout GD2 by working closely with our digital partners and technology leaders, with a specific focus on cultural and working practice changes that we can embed at SGN.

This year we reassessed our digital maturity with Gartner (see section **3.2 Our digital readiness**) and we will develop our digital skills development plans accordingly. As we progress into GD2, with the expectation that key stakeholders will require us to place even more emphasis on further developing these digital skills, we will continue to refine and update this plan.

Commitment 4

We will continue to improve our digital culture by developing digital talent, educating and training our staff in digital skills and ways of working. We will monitor this through our digital readiness and digital skill assessments.

4.7 Cyber security

As a UK Critical National Infrastructure (CNI) provider, we consider cyber-crime and the associated disruption to be one of our greatest corporate risks, something recognised by our regulator Ofgem and our shareholders. Information Security (IS) is an integral part of our business operations and an integral part of building safe, secure and resilient digital services for other stakeholders and external parties to access.

Information security strategy on a page

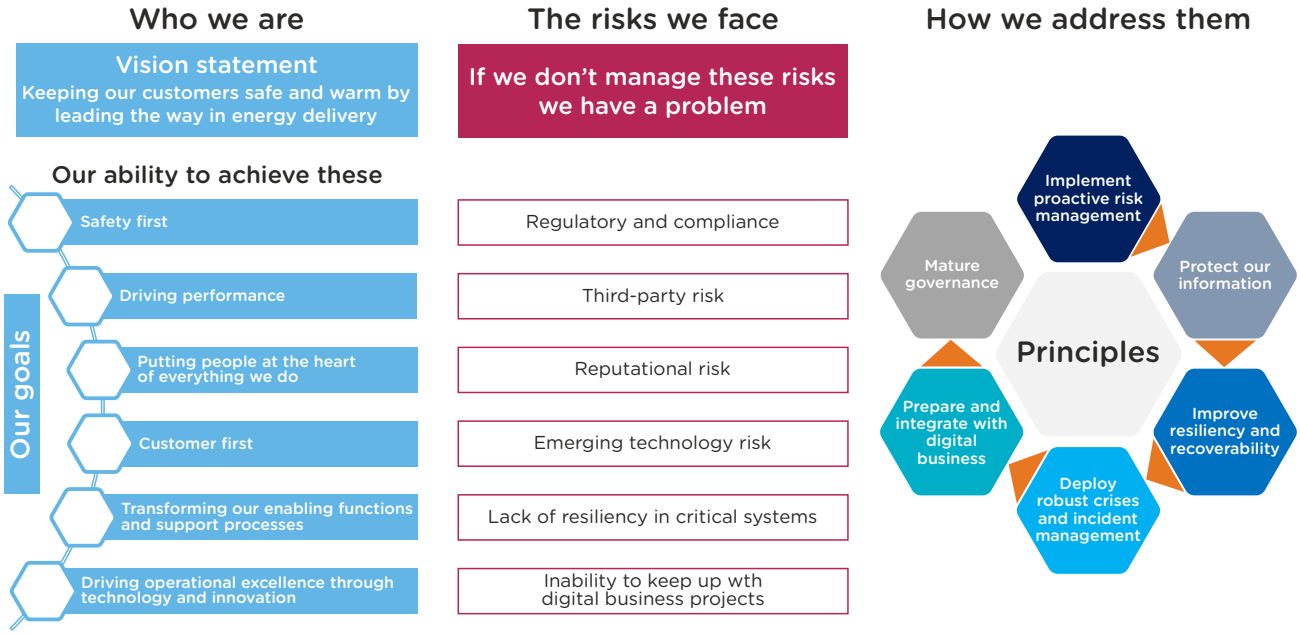


Figure 14: SGN's information security strategy on a page

Framework we have adopted

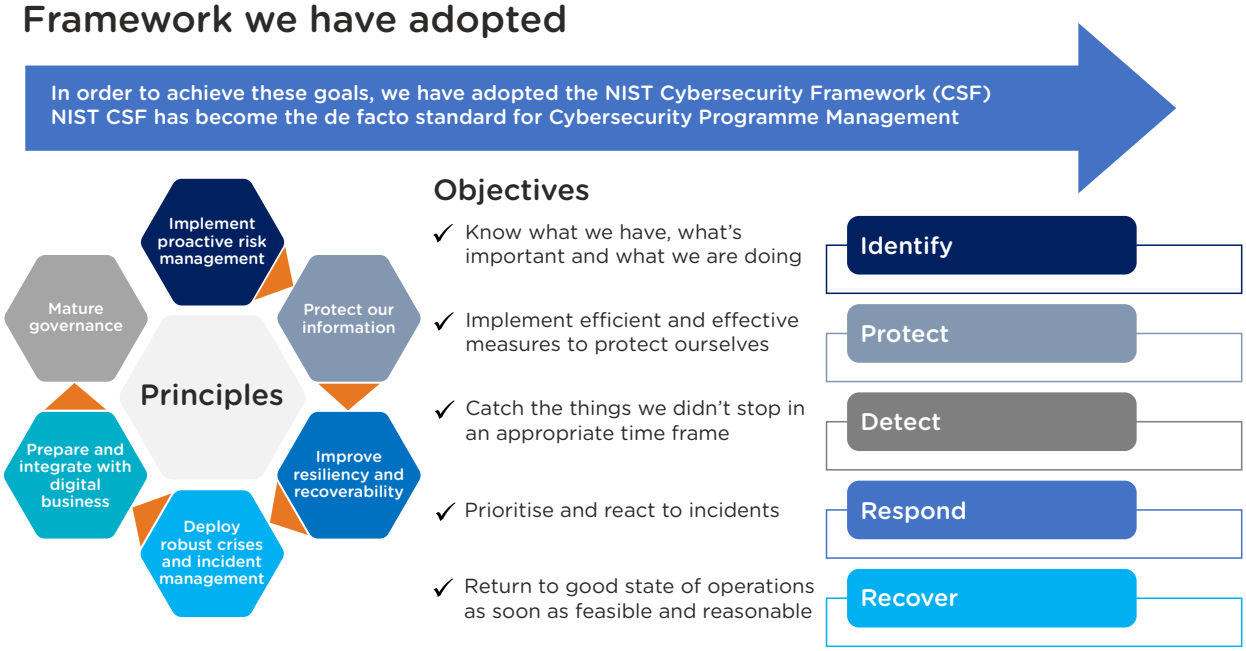


Figure 15: SGN's information security framework on a page

Building the bridge to action

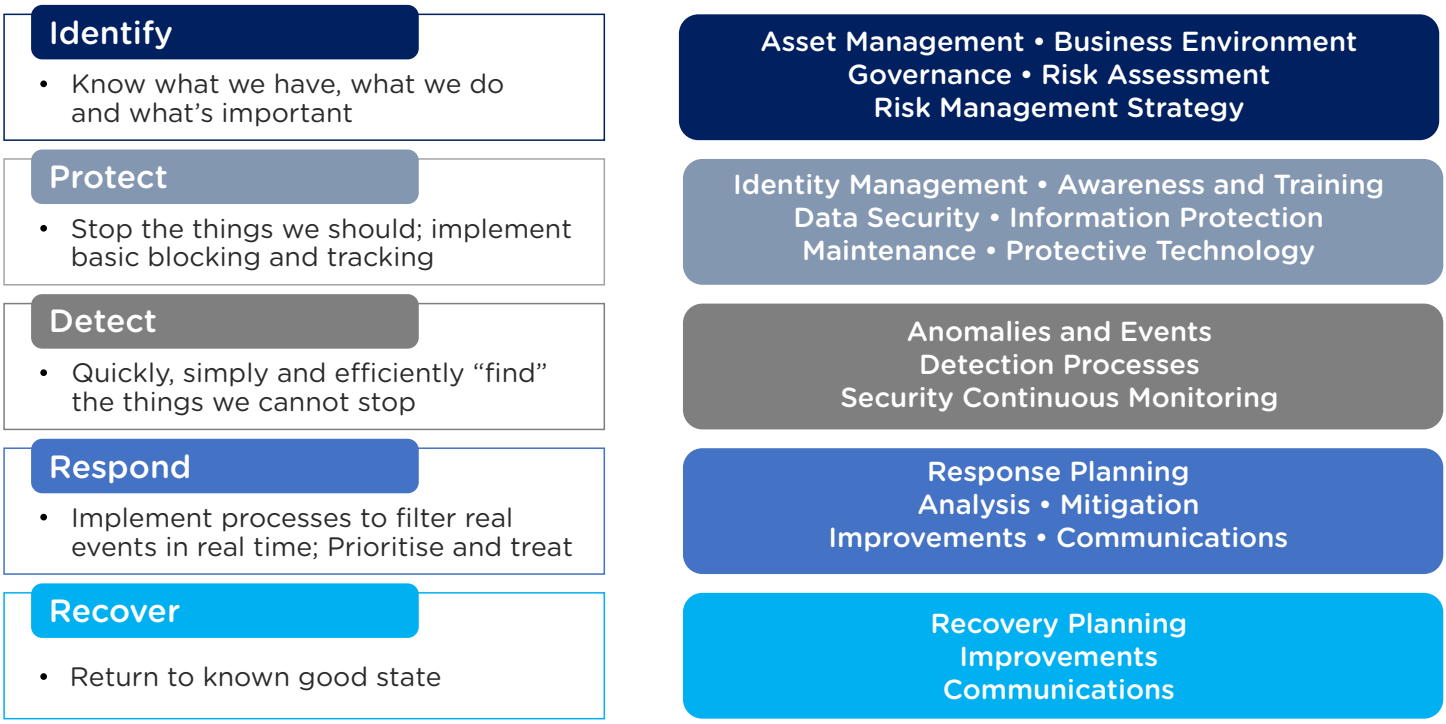


Figure 16: Building the bridge from information security strategy to action

We have undertaken an ongoing and multi-year investment programme in cyber security, critical to delivering our company mission to keep our customers safe and warm. The results of this programme have already significantly moved the dial on improving our cyber security capability;

- We've developed strong, collaborative relationships with the National Cyber Security Centre (NCSC), the Department of Business, Energy and Industry Strategy (BEIS) and Ofgem's Cyber Security team.
- We achieved ISO27001 certification for smart metering commercial venture and for our CNI Gas Control business area.
- We were one of the first UK utility companies to achieve Cyber Essentials Plus accreditation.
- Our move to the cloud has enabled a step change in our security capability (both Physical and Cyber) and removed a significant risk associated with shared services and infrastructure with our part-parent company.
- Our programme achievements were previously recognised at the UK IT awards when we won Security Programme of the Year.
- We have undertaken a company-wide awareness and training programme for all employees who are our last line of defence.

As part of our regulatory funding regime for RIIO-2 we have worked very closely with Ofgem in defining and improving our Cyber Security investment plans for the next five years. This includes the rationale, context and evidence to support these plans and forms part of an ongoing dialogue and resubmission which is due at the end of this year and will be subject to Ofgem's final determination.

Commitment 5

We will continuously improve our cyber security capability. We will develop our digital security skills, train our people on cyber risk management and demonstrate this through compliance to our security accreditations and regular assessments.

4.8 Digital solutions: benefits driven digital solutions, products and services

At the time of writing this strategy, SGN has not yet received confirmation of GD2 funding allowances as part of the final determination and therefore cannot make commitments on investments and tools within the first year of GD2. It is important to highlight that the current proposed funding levels highlighted within the draft determination and the associated cuts to funding, in particular operational funding required to develop internal digital capability, will severely jeopardise investment in this area and could divert scarce funding to a "keep the lights on" IT function. We are focussed finding the balance between driving down costs to protect consumers and ensuring that the necessary investment is provided to progress the digitalisation agenda.

SGN has demonstrated a very strong track record when it comes to digital solution delivery and a summary of what we've achieved over the last period are highlighted below (4.8.1 to 4.8.8). It is important to note that some of these platforms and solutions continue to deliver digitalisation benefits that are likely to carry forward into the next price control.

4.8.1 Fyld

FYLD is a digital platform that empowers utilities field teams and managers to make data-driven decisions in real-time, leading to enhanced safety management, productivity and quality assurance. This year we have seen the evolution of our Digital skills and Design Thinking approach with our business colleagues and partners which has resulted in the launch of a completely new digital, mobile platform, using speech and image recognition and AI and ML. This solution has been designed and developed by a cross-functional SGN team in partnership with a digital venture company (BCG DV), part funded by one of our shareholders. In May 2020, the Fyld product and service was launched and is now available on the open market for other customers. This will result in financial benefit as well as improved safety performance within our business. Visit https://www.fyld.ai/ for more details on this hugely exciting and radically different digital capability.

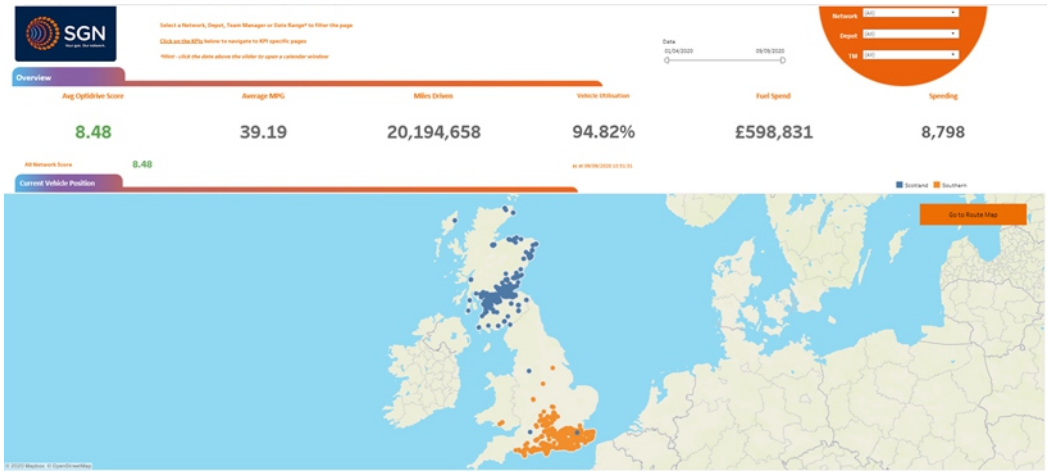
The success of this new digital venture was recently highlighted when the product won Emerging Technology of the Year at the 2020 UK IT Industry awards.

4.8.2 Analytics and insight: Analytics and Data PlaTform - ADaPT

We have recently created a new Analytics team recruiting highly skilled and talented individuals from local universities and data analysts whilst retaining and developing previous team members. Value has already been delivered through insight dashboards for our business and last year we launched our new enterprise analytics data platform (ADaPT). Its first use case involved the use and analysis of fleet MI and data to better manage our vehicle fleet and has delivered significant financial benefits.

Our teams are exploring the benefit of harvesting "dark data" (information collected but not used for insight or decision making) from our SCADA system which has been previously unavailable for insight or analysis to benefit high-value use cases with cross functional, business led initiatives. For example, we are in the process of delivering important company insights on fatigue and developing operations performance dashboards in partnership with our business.

Building this capability is a fundamental enabler to wider digitalisation and the freeing up of benefits to stakeholders and organisations external to SGN.



4.8.3 Geofield

Geofield is an industry-leading digital mapping and data capture application specifically designed to give mobile users near real-time access to maps and data in the field. Over the last year, we have completed deployment of this mobile, geospatial solution that provides up-to-date digital views of assets to our mobile workforce. As it's a two-way app, our engineers can also capture new data about those assets which is then fed back into core asset management systems. The solution provides significant benefits to SGN including:

- improved safety through better accuracy of asset records
- the ability to digitally record leakage investigations which can then be reused by other teams working on the same asset
- the ability for field staff to correct asset location information (red lining)
- the ability for operatives to capture data on 3rd party damage to assets and work on independently managed assets so that this can be recharged to the relevant parties.

The final stage of the roll-out of this solution will complete in early 2021 and will help drive down operational costs by removing manual processes from replacement and connections projects and further improve customer and employee safety through more accurate and up-to-date information.

Image source: https://www.gov.uk/government/news/new-digital-service-to-minimise-disruptive-roadworks

4.8.4 Street Manager

We have implemented a new tool at the request of the Department of Transport called Street Manager. Street Manager was created to help local authorities and the Highways agency coordinate with SGN and other utilities by sharing data real time data on street and roadworks.

Street Works allows planning, management and communication of street and road works through Open Data and conforms to NRSWA (New Roads and Street Works) and the Traffic Management regulations use of permits.

It has been brought in to align the many organisations who manage Electronic Transfer of Notifications (EToN) through their own applications, with the aim of providing a common platform.

The Department of Transport indicated that Street Manager would bring the following benefits:

- Better managed road works delivering time savings and reduced congestion. Data in Street Manager would support more collaboration and joint working in areas such as performance and durations monitoring and assessing impacts on congestion.
- Open, accurate and up-to-date data on live and planned works made available for use by technology companies in journey planning apps, satnavs, etc. Other new products could be developed for all road users.
- In addition, open data could be used to innovate, manage the network, and link in with the full range of new digital initiatives e.g. 3D, virtual mapping.
- Less duplication, greater efficiency and better value for money for local authorities and utility companies.
- A single service on a modern technology platform enabling us to continue to improve services in response to changing user needs. It is fully compliant with legislation.
- One version of the truth and decisions that are informed and supported by data.
- Better reporting and performance management.

SGN raised approximately 50,000 permits in the past year with the Highways Authority, with multiple inbound and outbound transactions per permit. The total number of transactions over the past year has been 288,239.

4.8.5 Local authority data sharing

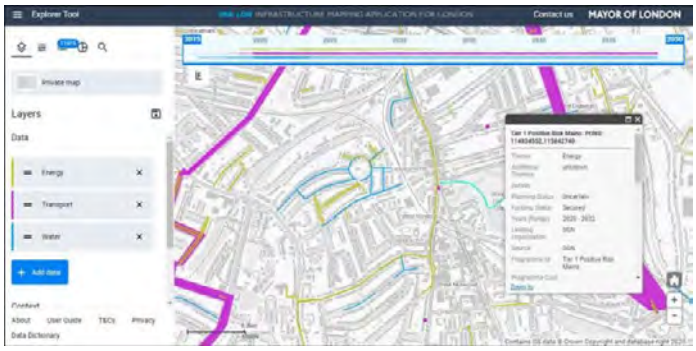
SGN has long been sharing data on its assets, infrastructure planning and proposed works with local authority and government organisations within our operating footprint, in order to support their planning processes and cross-infrastructure coordination efforts.

In recent years, there have been a number of London-centric initiatives instigated by the Mayor of London's office, the Greater London Authority (GLA) and the Geospatial Commission among others, where SGN has participated and will continue to engage and share our data.

- **Infrastructure Coordination Service (ICS)**

  Established under the GLA, the objective of the ICS is to encourage increased levels of coordination between utility companies in order to minimise impacts of planned and "in progress" works.

  The GLA has developed the Infrastructure Mapping Application (IMA), and is overlaying data that SGN and other utilities have supplied on planned works in order to identify potential areas for coordination of activities. We are further exploring ways to enhance our own processes through adoption of this solution and its data.

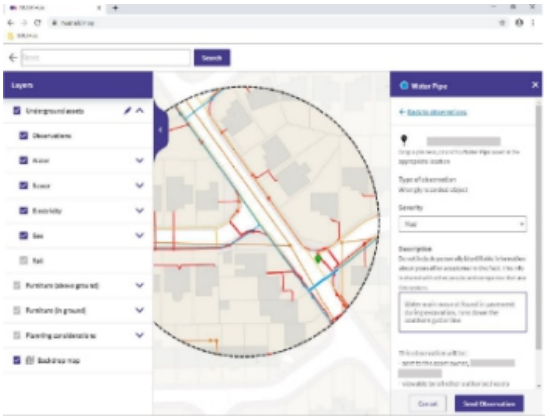


- **London Underground Asset Register (LUAR)**

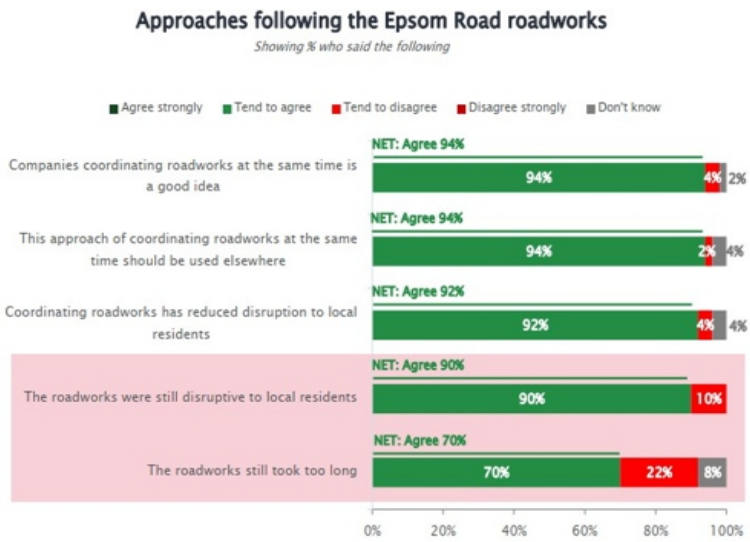
  LUAR is part of a UK-wide pilot funded by the Geospatial Commission to deliver a National Underground Asset Register Hub. SGN has been partnering the GLA and Geospatial Commission on this pilot project for the last 18 months, providing our underground asset data to the LUAR platform so it can deliver its primary use-case on safety through visibility of underground infrastructure assets across London.

  Learnings from the LUAR pilot are being reviewed with a view to establishing the next phase and SGN will continue to support the ongoing evolution of a valuable new asset information platform for London.

  We have been actively demonstrating LUAR to our operational teams to identify additional use-cases, particularly for our unplanned works where visibility of underground assets is key.



Sample residents survey



- **Streetworks collaboration proposal**

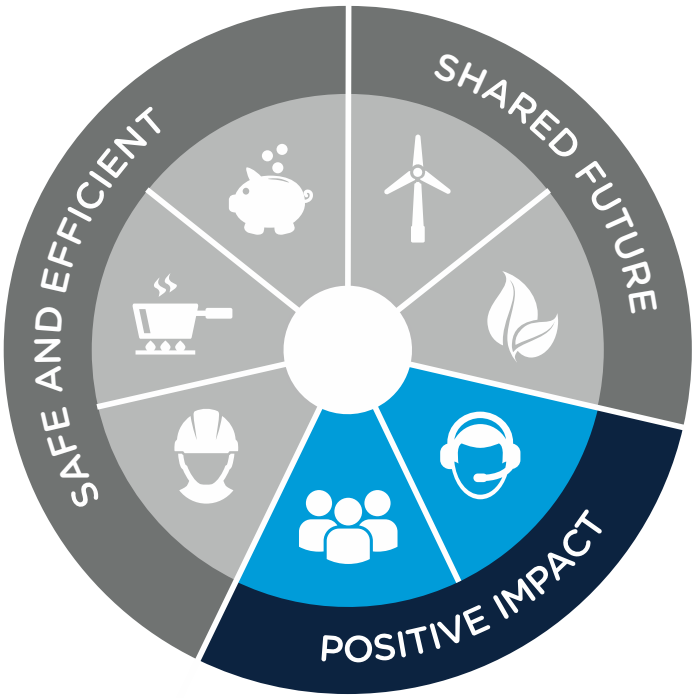
  "Co-ordinate with local councils and utility companies to ensure disruption is kept to a minimum – for example, not digging up roads multiple times" SGN Domestic and SME customer qualitative research workshops 2018

  This initiative responds to direct feedback from our customers and has been developed in collaboration with our distribution network colleagues in Cadent. The objective is straightforward: reduce the impact of streetwork activities for our customers through sharing of planned work project data and joint working.

  We have developed a case study with other utility sectors and Croydon Council, using collaborative working at Epsom Road in Croydon as a proof of concept, highlighting the demonstrable reductions in on-site work-time and costs through collaborating on major infrastructure projects in this way. Feedback from directly impacted residents was overwhelmingly positive and in support of adopting this approach.

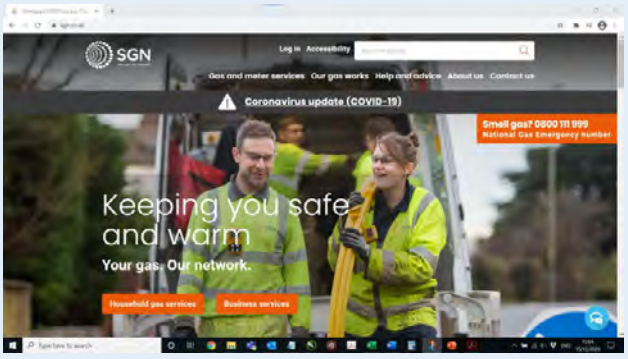
4.8.6 Customer experience (CX) projects

SGN is leading the industry in customer satisfaction levels, and we're always looking at ways to improve both their and our colleagues' experience. Our digital strategy is aligned to and enables our customer and stakeholder goal to ensure we are the No.1 UK gas distribution network (GDN) for customer service. Throughout 2019 and 2020, we continued to achieve the number one slot in Ofgem's customer satisfaction metrics, partly due to the CX transformation programme which has heavily relied on the use of digital services.



This programme, which is now in its third year, implemented new and industry leading digital platforms that enable and continuously improve customer interaction and experience, including:

- **SGN Alert** – a cross-organisation platform notifying local communities of emergency, repair, or replacement work or incidents in their area.
- **10/10** – a mobile app for employees to proactively seek and obtain direct customer feedback and a satisfaction rating. This is notified in real time to management and any feedback acted on immediately.
- **Priority Services Register (PSR) delivery** – the ability to identify and assist vulnerable customers in our community. This is particularly important as we provide special attention and care to these vulnerable customers during major incidents or work. It also allows us, with the customer's permission, to pass on their information to other organisations and support groups.
- **Customer Experience management platform** –We have implemented a platform to provide a single view of the customer across all social and digital platforms.
  This has enabled live chat with customers and offers a seamless and overall improved customer experience.
- **Video capture** – We are the first utilities network to implement a video messaging service for our new connection customers. Our engineers capture video of the work they've carried out and send it to the customer, so they can see what has been done if they're not at home. They can then query any aspect of the work quickly and easily.
- **Our external digital presence:** As part of our continued improvement of our digital presence for customers, in 2019 SGN re-platformed and enhanced our customer website. Part of this exciting refresh of our customer's digital experience with us was the delivery of new accessibility features, such as language change settings to support 104 different languages, audio features for those with reading difficulties and text and magnifying features for the visually impaired. Live Chat was also implemented offering an additional digital route of communication for our customers.



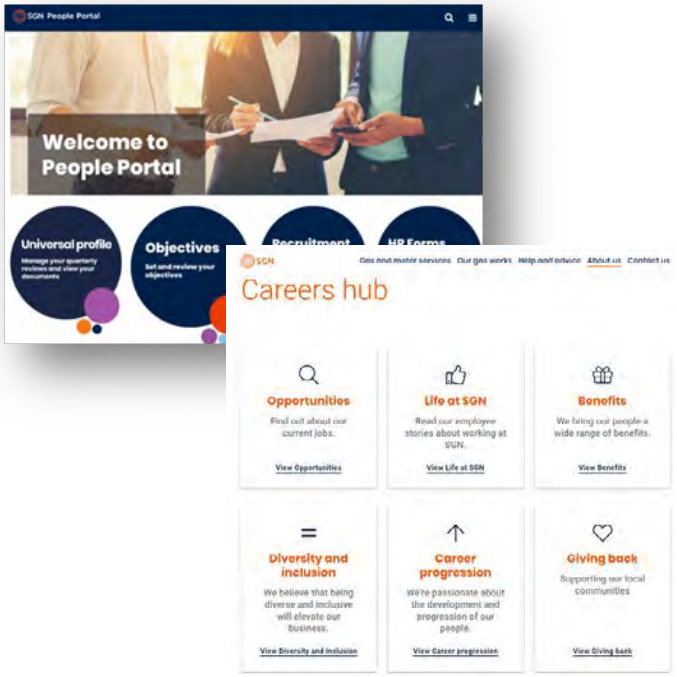
Our CX digital services have been influential in enabling our Customer Experience Awards success in 2020 SGN was awarded three awards at the UK Customer Experience Awards 2020 which assesses companies from all different sectors and industries. These were:

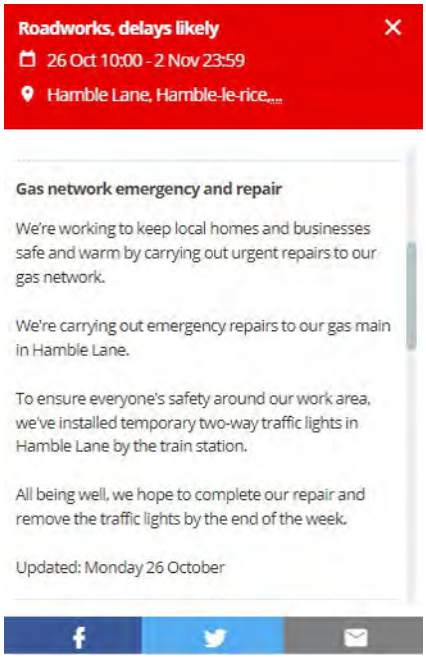
- **Contact Centre – Gold award**
  Customer service is in our DNA and we're proud the judges highlighted the wonderful work our Customer Experience Centre does to help us deliver 10/10 service. Our team of 55, split across Perth and Portsmouth, answer 90% of calls in 30 seconds. They help keep our 14 million energy consumers safe and warm by responding to over 206,000 queries a year over the phone, email, live chat, two-way SMS and social media.
- **Customers at the heart of everything – Silver award**
  The judges were impressed with all the work we do to support our customers, especially our vulnerable customers, and said we demonstrated how employee engagement and customer satisfaction go hand in hand. We evidenced how we go above and beyond to provide extra help to those who need it most and ensure our communication and processes are accessible to all.
- **Customer centric culture – Silver award**
  We're thrilled the judges recognised our commitment to delivering great customer service is strong throughout our entire organisation. Great customer service is in our vision and is one of our five values.

  We looked at sentiment from customer surveys and focus groups, as well as feedback from our teams during interviews and workshops, using it to highlight some of the many examples of the outstanding service we deliver and just how much it means to our customers.

4.8.7 People Portal

In 2019 we launched a new digital employee platform called the People Portal. In addition to managing some of the basics around staff management such as objectives, recruitment and staff details, 2020 saw the addition of a digital learning platform. Our new e-learning hub has proved invaluable during the COVID-19 crisis at a time when staff could not attend learning physically and enabled us to upskill and continue to develop our talent, including digital skills, at a time when many were forced to stay at home.

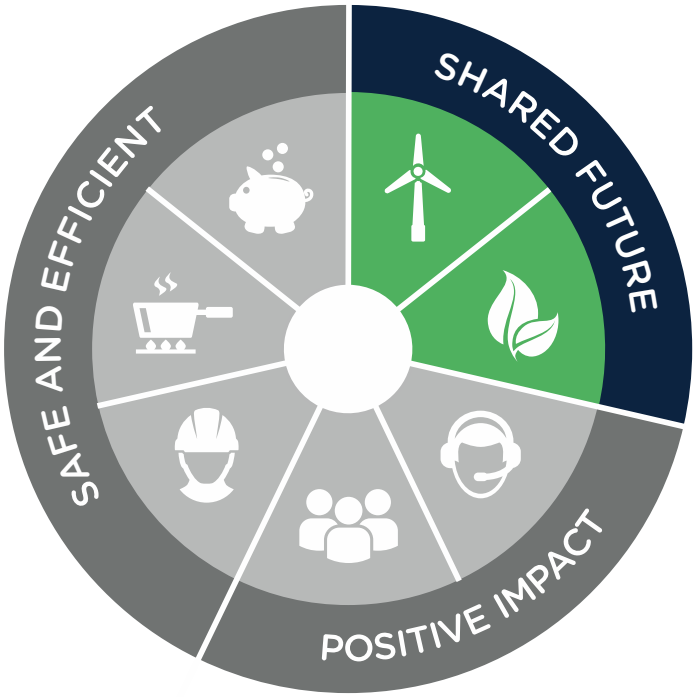




4.8.8 One.Network

We are utilising the One.Network platform to assist customers with information concerning possible transport disruption. The platform holds basic information for other Utilities and local authorities indicating the company at site and the general job type. We have increased this functionality by adding pro-active communications against SGN jobs. This includes an explanation of the specific job type as well as the likely duration of works and provides a greater level of information to customers, potentially avoiding direct contact between the customer and the SGN Customer Services team.

We are also investigating the further use of One.Network's traffic management tool which includes Highway Authority, utility and other relevant (including Covid-19) data input. This provides insights into the most time effective routes to site, navigating to avoid congestion and roadworks. This would be link to the GPS head units in vehicles.



4.8.9 Digital solutions and data sharing in GD2

In addition to evolving and exploiting the digital platforms and solutions highlighted above, progressing the recommendations of the MED report will require further work at an industry level to establish common data sharing standards and curated data. Developing the skills and secure infrastructure and governance arrangements to maintain, share and exploit large data sets will also be required.

The development of an industry specific data architecture framework, common standards and meta data models will ensure a consistent understanding of what data is to be shared and how it should be accessed. This is essential to deliver data interoperability across industry and to a wider set of stakeholders.

We will be specifically progressing the proof of concept work on the National Energy System Map (NESM) and this is defined in more detail in section 5.1.12 Digital mapping.

The security and protection requirements will have to be rigorously assessed and enforced to address the risk of data loss or privacy infringements (and lack of consumer and user trust). Digital solutions that collect, store, process or use open data will need to demonstrate appropriate levels of security and privacy arrangements to mitigate these risks whilst still fostering innovation.

Commitment 6

We will continue to deliver new digital solutions and demonstrate active progress against Ofgem's nine principles for digitalisation.

4.9 Digital innovation

We have a strong track record of digital innovation and delivering benefits to our consumers and wider stakeholders. We have presented highly ambitious plans to our regulator relating to Innovation and Energy Transition and Vulnerable Customers over the next five years. These innovative projects will require digital innovation to underpin their success. Examples of our digital innovation are highlighted and evidenced below.

4.9.1 Incident app

As part of our innovation programme, we have delivered a highly innovative digital platform to improve the way we manage incidents using a mobile-friendly app that provides all the information and tools in one place to make informed decisions and respond to changing situations. It allows our First Call Operatives (FCOs) to capture and process information on the status of customer contacts and vulnerable customers. This secure, paper-free way of managing incidents helps us work more efficiently, allows faster and more efficient recharge for 3rd party damage and ensures we provide appropriate care to all priority customers in a gas supply incident of any scale or complexity. The app has been trialled throughout the year and is now being trained and rolled out at all our depots.

Benefits:

- **For customers:** A quicker, more coordinated response from SGN during an incident. Priority customers get the extra help and support they need.
- **For FCOs:** The simple and intuitive interface on the OCA FCO app is easy to use - no more paper forms to fill in during an incident.
- **For managers:** Less time spent managing paperwork and updating other people, more time managing teams. Near real-time incident data helps managers make faster and better decisions in changing situations as they can monitor and allocate work remotely. Supports increase in flexible working. Managers can easily visualise and report on incident data and increased accuracy of records helps us demonstrate what we knew, what we did and when we did it.
- **For customer experience and stakeholders:** Easy access to and reporting of incident data in near real-time. Improved visualisation of priority customers from a range of different data sets including PARD and PSR. Coordinated communications to and from stakeholders using email, voice. Saves time during an incident and frees up staff for more critical, value-adding work supporting our customers.

4.9.2 Digital innovation - Technology Hackathon (Raspberry Pi)

Last year we held a Technology Hackathon at SGN to promote digital innovation and collaboration across our business. This provided a great opportunity to see ideas flowing around how simple digital solutions such as Raspberry Pi can solve long-standing business problems. It stimulated collaboration across multiple departments and our networks, ideas generation and some great prototype demonstrations following the introduction of Raspberry Pi into our business context.

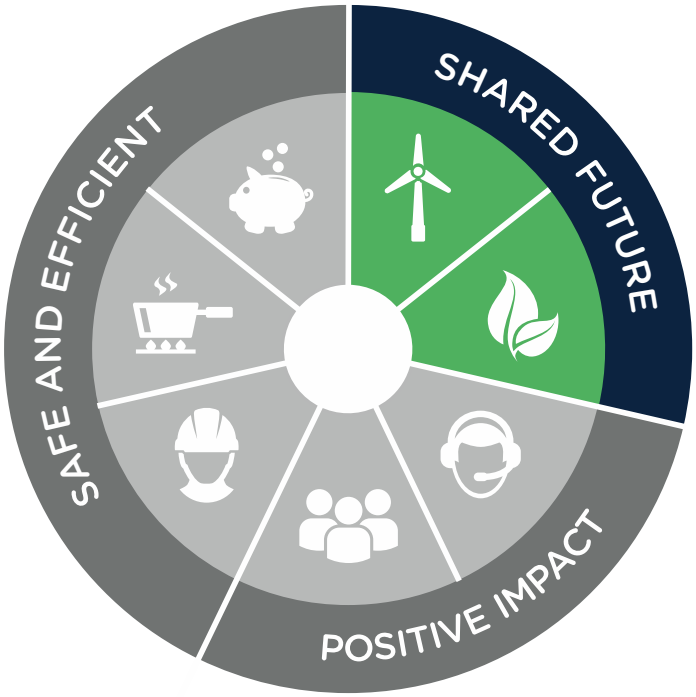
4.9.3 Telecommunications innovation – BGAN – Broadband Global Area Network

This research is to look for alternative solutions for the soon to be phased out ISDN/PSTN technologies which will impact Telemetry for tier 1-3 sites and UHF replacement for ageing technology. BGAN has potential for significant savings for the entire sector.

4.9.4 On-going collaborative innovation projects

We have undertaken and developed a variety of innovation projects, all of which have introduced digital innovation with respect to data collection, data use and utilisation of connected devices and IoT. A summary of these projects is included in the table below:

Project name	Digital overview	Link to project detail
Advanced gas detection	The objectives of the project are to produce a portable gas detection device to detect methane and CO gases and determine if readings detected on site are from a natural gas leak. These readings automatically link to geospatial positions as a digital record of work.	smarternetworks.org/project/nia_sgn0064
Remote pressure control and management	The project is delivering the ability to remotely adjust gas pressures via connected pressure management devices.	smarternetworks.org/project/nia_sgn0122
Remote site monitoring	This project is developing probes which can be left at sites and will send automatic gas readings to the cloud to aid management of potential gas escapes.	smarternetworks.org/project/nia_sgn0110
Automated Pressure Tester	This device aims to help ensure the accuracy and consistency around gas pressure testing and the data recording process while removing the potential for human error. It enables automatic updates to our asset records via a suitable cloud-based service.	smarternetworks.org/project/nia_sgn0079
Osprey Pressure Validator	A wireless, battery-powered remote monitoring unit that fits inside bollards, posts and meter boxes and monitors gas pressure up to 100mbar.	smarternetworks.org/project/nia_sgn0021
Robotics – CIRIS and CISBOT	In addition to repairing and inspecting our pipes whilst significantly reducing customer disruption these robots provide in pipe inspection video data as well as other data relating to potential corrosion and / or asset health.	smarternetworks.org/project/sgngn01
Real Time Networks	This project has resulted in essentially making part of our distribution network “smart” by applying weather, flow, gas quality and demand sensors across the Medway region of our distribution network. The additional application of these sensors provides SGN with significantly more data and information from which we can assess our forecasting and demand management models.	smarternetworks.org/project/sgngn03



4.9.5 Digital innovation - Energy Futures

Data is very quickly becoming the most valuable and useful commodity in the transition to net zero. For SGN, and the wider energy industry, more extensive and advanced data acquisition and management will be critical in transitioning away from fossil fuel energy sources to net zero alternatives, such as hydrogen. The modern energy landscape is characterised by an ever-changing energy supply to meet an ever-changing energy demand.

Change in the GB gas industry and in energy systems will accelerate, with the drive to fully transition to low carbon energy sources such as hydrogen and biomethane gaining pace in order to achieve net zero in the required timeframe. The industry must be able to model the gas networks of today and effectively plan, model and operate the low carbon gas networks of the future. Data acquisition and the utilisation of smart technologies is critical to achieving this.

With this in mind, a key theme of SGN's Energy Futures programme in GD2 is to develop whole system solutions with the energy landscape beyond the gas sector to ensure optimal low carbon solutions are implemented to its customers and emerging technologies are explored and incorporated in the network of the future.

Our stakeholders want us to look beyond the network value chain in terms of investment planning. There is a clear need beyond the normal delivery of the regulated workload to be responsive to the emerging needs of customers and stakeholders to encompass the ethos of a whole system in line with our Whole Systems Charter. The Charter sets out the commitments we are making to work closely with whole system partners in the RIIO-2 price control to optimise customer outcomes.

Our approach has been ratified by stakeholders during one-to-one discussions, panel seminars and other stakeholder engagement events. They advised that we should be addressing a whole system challenge with cross-sector (transport, electricity) and cross-vector (biomethane and hydrogen, etc.) collaboration.

SGN has proposed several highly ambitious, yet essential projects in our GD2 plans, to drive the decarbonisation agenda for heat. Although not yet confirmed in Ofgem's final determination, these projects will require fundamental changes to the technology and digital solutions required to support them. The table below summarises the digital opportunities associated with each.

Project	Objectives	Digitalisation outcomes
Mainland Statutory Independent Undertakings (SIU's)	Feasibility studies for all 4 mainland SIU's as test beds for blends of hydrogen up to 100%	Opportunity to monitor real network operation with real customers with collection of data, aiding further projects.
Gore Basin - Isle of Wight example of within grid compression	Blueprint study into maximised capacity for green gas through reverse compression	Smart sensor for the compression of biomethane into higher pressure networks when demand is insufficient to meet biomethane generation. Data collection is crucial in providing dynamic operation of compressor into higher pressure networks.
Green Billing for Industry	Blueprint study into avoided propanation for industrial supplies	The project will utilise the input of innovative sensor installations such as bidirectional flow metering to reduce the requirement for propane enrichment.
Ebbsfleet, smart control of biomethane in the network	Blueprint study into maximised capacity for green gas through smart control systems	Smart solution allows the set point control of the injection facility with district governors to prioritise green gas into the network. Data collection of network pressures will be vital.
Centralised entry for green gas	Feasibility study into optimised location for centralised green gas entry system	Data collection is necessary to locate the optimal location for injection of green gas and how much green gas would be injected at this location.
TOUT impact assessment (RTN)	Assessment of the impact of time of use tariffs to reduce demand in whole system	The collection of data will be crucial in understanding the impact of time of use tariffs on consumer demands for the network.
Local Authority Whole Systems Projects -selected from 135 councils	Need for regional studies to provide optionality in local government/authority areas	This project will involve the collection of data on a local scale to evaluate the options of transitioning away from natural gas. Local demand data, building efficiency and other data sets will be needed.
Demand side management	Research and demonstration of dual gas/electric fuel switching applications and demand side management	Data collection needed for times of generation and use of demand side response to shave peak demand periods. End use data of consumers. Real time data collection allowing accurate billing of gas use in cheaper time periods with demand side response.
Gas to Power - exercise to determine optimal location for peaking plant locations	Research and demonstration of strategic peaking plant with DNO/DSO	Data collection required to locate the optimal locations for peaking power plants.

Project	Objectives	Digitalisation outcomes
Domestic Combined Heat and Power (CHP) - strategic interventions (Gas to Power)	Research into CHP technologies and their ability to facilitate cross sector solutions for energy system balancing and demand forecasting	Demand data collection required to provide values for the capacity needed to provide system balancing through CHP.
Offshore vs Onshore hydrogen generation regional analysis	Development of the optimal network entry for production of hydrogen from onshore or offshore wind generation	Value of data from wind farms including capacity, locality, strike price, intermittency or curtailment to assess the amount of hydrogen that could be produced and at what price.
Gas control of the future	Feasibility study and demonstration for new control requirements, methods of communication, alarms, security of supply and safe control of operations. Reflecting change of use through peaking plants, increased complexity of billing, smart control systems and energy management	Data collection is crucial to correctly control new smart systems and provide accurate billing for the consumer. With a transition from natural gas to biomethane/hydrogen data collection on gas consumption and point of use is vital to provide information on the change of use of existing infrastructure.
Real-Time Networks - phase 2	Testing of hydrogen sensors and variation in gas quality utilising RTN	Need the collection of data for hydrogen within the network, influencing gas quality and consumer bills. Collection of data in real time can minimise network constraints and maximise commercial returns of network actors.
Gas quality data provision	Study to identify how to provide large industrial users with gas quality forecasts	Forecasting of gas quality involves the collection of gas composition data.
CH4 to atmosphere reduction R&D	R&D of leakage from above ground installations	Data collection on leakage rates, localities.
Control systems	Project looking at instrumentation and communications systems for whole systems optimisation	Real time visibility of local system management through sharing of operational data between GDN and DNO control rooms to optimise flow and system pressures and provide better offtake profile notices to the electricity system operator.
CNI NWG Network (telecoms) Working Group	Project looking at addressing industry wide solutions to meet with the challenge created due to the decommissioning of ISDN/PSTN lines by Openreach by 2025	Common telecoms and connectivity models for the industry, addressing alternative power solutions for sites without adequate power, sharing of locations and engineering efforts required for the change.

Commitment 7

We will develop, deliver and demonstrate digital innovation through our approved Energy Futures programme of work.

5

Delivering Digitalisation

5.1 Open letter considerations

5.1.1 Governance

Ofgem guidance: Governance:

"providing clarification on senior ownership, accountability and board-level responsibility for delivery of the digitalisation strategy and action plan. We view this as top priority and a key enabler. We believe it is appropriate for digitalisation to be a routine part of board-level working and board-sponsored governance".

SGN is fortunate to have Board-level sponsorship and guidance from Laura Sandys CBE, who as previous Chair of the Energy Data Task Force (EDTF), has played a crucial role in establishing and driving the MED recommendations across our industry. Along with the rest of our Board, Laura is ideally placed to continue actively sponsoring and advocating the key elements of this sector strategy and SGN's alignment and active part within it. Our board are fully aware of SGN's digitalisation strategy and action plan and will maintain oversight of it.

Our Non-Executive team have also actively contributed to and approved the publication of this strategy and, with our Director of IT and Innovation as the nominated Executive lead, this strategy has been brought together with contribution and input from all Directorates across our company. Our Executive and senior management team have been informed and engaged since the initial launch of the Modernising Energy Data programme which has enabled us to shape our digitalisation strategy and roadmap.

SGN has well established data governance sponsorship and forums that are in place to oversee compliance and risk aspects of our data. The data governance board consists of senior managers and leaders from across our business and reports into the steering committee which is formed from SGN's Executive team members.

The forums are part of our corporate governance framework and a standing agenda item for both has been the MED programme from its launch last year along with alignment to the proposed new license obligations on digitalisation, Data Best Practise Guidelines and data sharing that are in the process of being defined for RIIO-GD2.

Our data governance framework encompasses key elements such as roles and responsibilities, policies and standards and has been based on recognised best practise frameworks like Data Management Body of Knowledge (DMBoK). Our framework has been fully endorsed by our Executive team.

A key outcome of our Executive team's sponsorship of our data governance framework is that we have implemented roles and responsibilities across our business. Our Executive team have appointed Data Owners and assigned Data Custodianship; Data Stewards have also been appointed to provide visibility of day-to-day data priorities and processes are being rolled out to underpin the responsibilities defined for each role.

In addition, a data governance charter and suite of policies have also been defined and published which layout SGN's approach to the governance and management of its data. Again, these are endorsed by our Executive team.

The establishment of this capability is in its early stages, but sound progress has been made and continuous improvement is in progress.

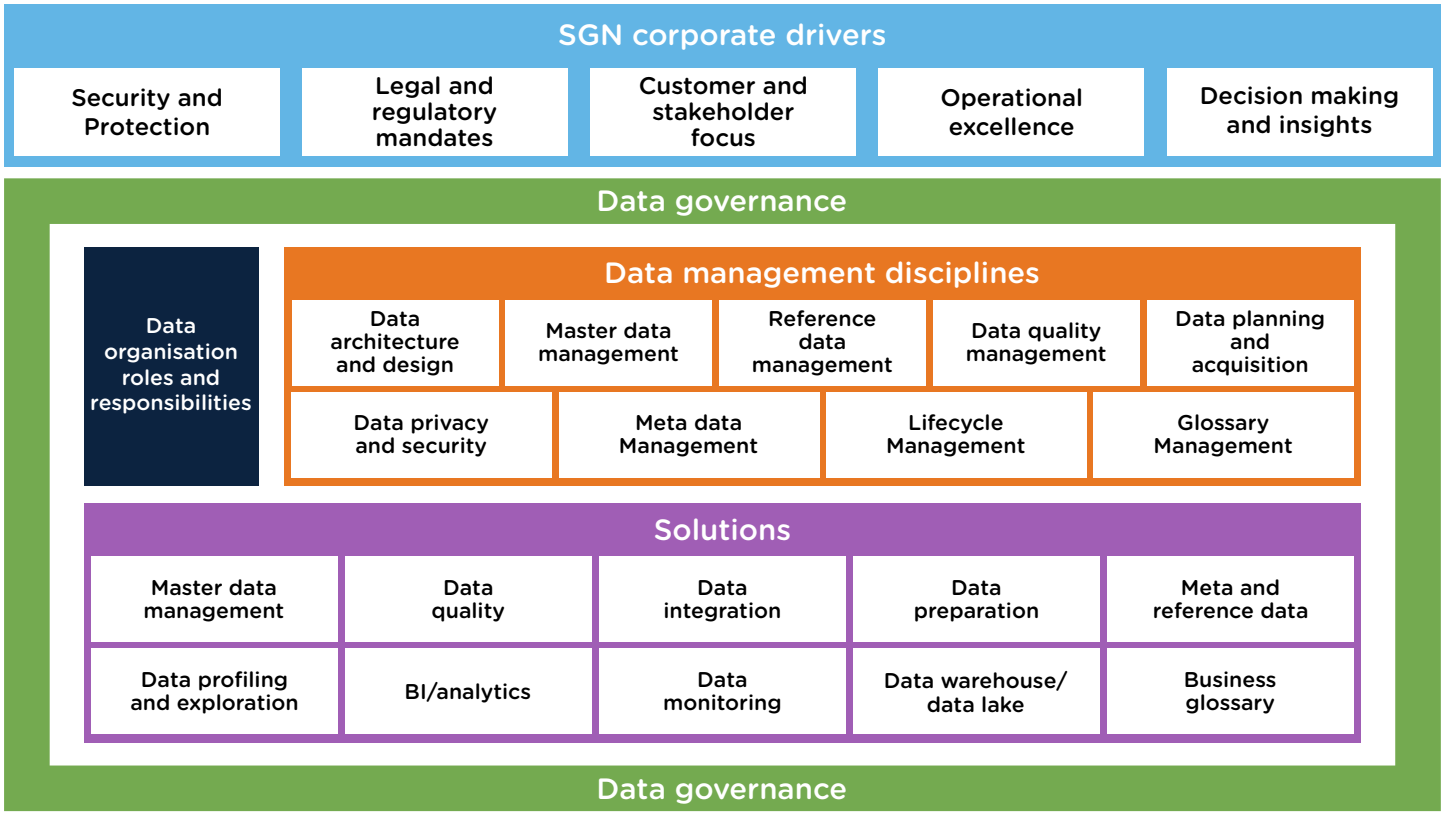


Figure 17: SGN's data disciplines summary

The advent of RIIO-GD2 heralds two new license obligations focusing on data: in addition to the requirement to publish a Digitalisation Strategy and Action Plan, there is the requirement to align to the Data Best Practice Guidelines and Open Data Sharing. SGN's establishment of foundational data governance capabilities will stand us in good stead to meet and develop these capabilities. At the time of writing this document, compliance guidance notes for both have not been published but we will actively contribute to the consultation process in order to help shape and develop these.

There are 12 data guidelines which have been designed, in consultation with the industry, to bring about consistency across the energy networks in the management of their data, along with a comprehensive delivery of open data sharing. We have defined our status against each within the section below titled "Data Best Practice Guidance".

5.1.2 Needs driven

Ofgem guidance: Needs driven:

"identifying how each planned activity is driven by stakeholders'/users' needs. Include evidence for how all planned investments and ongoing services relate to the needs of their direct users and also how their ultimate benefits similarly relate to wider stakeholders' needs and therefore the objectives of the strategy. We urge an open-minded view as to who the 'users' of energy systems data might be. For example, we anticipate that increasingly the users of energy system data are intertwined with many other systems, such as those of other utilities, finance, transportation and housing".

We have detailed our stakeholders' needs and our response including benefits within section 4.3 1: Needs driven – stakeholder requirements.

5.1.3 Coordination

Ofgem guidance: Coordination:

"describing how planned activities will be coordinated with other organisations. Going forward, we would like to see a commitment to identifying opportunities to improve interoperability and the delivery of data and digital services through coordination or potentially collaboration. This may be through sector-specific or cross-sector working. We would also like network companies to think about collaboration opportunities outside the energy sector. This might include sectors such as housing, transport and telecommunications and the potential to link up with complementary initiatives in those sectors".

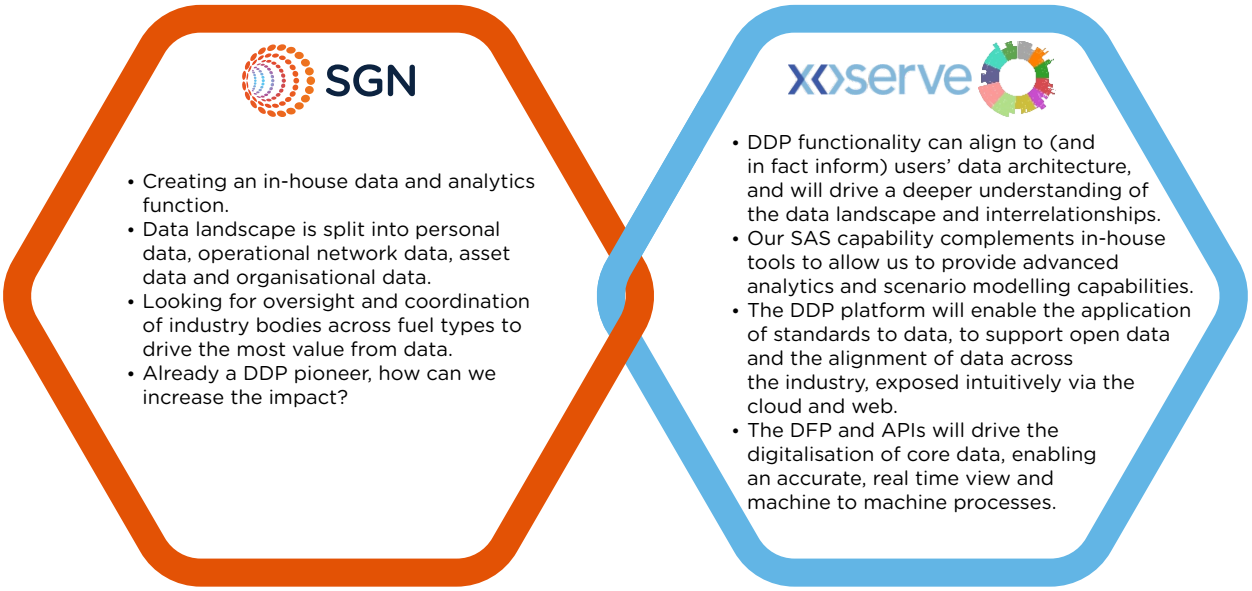
SGN has always been proactive in seeking opportunities to partner with other organisations both within the energy sector and outside of it. This approach has fostered innovation, opportunities and great ideas in our response to trying and adopting new proposals, ways of thinking and emerging technologies. We have provided several examples of coordination and collaboration both within and outside the energy sector;

- 3.1.3 Collaborating to deliver digitalisation and open data
- 4.3 Needs driven – stakeholder requirements
- 4.8 Digital solutions: Benefits driven digital solutions, products and services
- 4.9 Digital innovation

As previously highlighted, strong relationships have also been fostered with local authorities in support of their journey towards net zero, development planning and reducing the impact of operational activities across their area. To that end, SGN has in place over 100 data sharing agreements with local authorities.

We have endeavoured to explore ways to develop a more integrated approach to planning to meet such growth and establish a clear view of local government decarbonisation strategies. In addition to creating enhanced relationships with local authority planning departments, and a greater understanding of planned change, our engagement has also encouraged the sharing of data across each other's planning platforms, in turn allowing us to integrate data directly into our planning models. As well as supporting longer-term strategic planning this has also meant day to day activities across a range of processes can be planned in full recognition of the most up to date information around growth and development, further enhancing our aim of achieving the fully holistic approach.

XOServe: - XOServe is a manager of specific gas data, asset data, consumption and forecasting information and will continue to be essential as we develop value-creating solutions and insights. XOServe has extensively invested in and developed its data capabilities with a view to enabling not just day-to-day visibility and analysis on centralised gas data, but also to supporting and enabling the delivery of big challenges facing net zero and digitalisation programmes. XOServe has a unique role in coordinating and delivering energy industry data needs and we believe there is a huge opportunity to exploit this position, the people and technology investment already made and the capability that has been developed around energy data management and digital product and service provisioning.



5 Delivering digitalisation

Whilst there is still much to do to digitalise the energy industry, the gas networks have been investing in XOServe as the Central Data Service Provide (CDSP) for the Gas Sector - supporting recommendation 2 of the EDTF in maximising the value of data - to build an industry wide Data Discovery Platform (DDP). The DDP is an online cloud-based product which enables SGN to access, report, explore and visualise data which has historically been held centrally by the CDSP, in the context of the wider industry. This revolution in data access is creating new ways in which the operational teams within SGN are using our data to support our business and domestic consumers.

Visualisations and access to these data sets in real time currently help SGN operational teams in the following ways:

- The identification and management of shipperless and unregistered sites;
- Increased efficiency in managing gas safety checks
- Increased efficiency in the management of incidents including GSOP payments
- Identification of miss matched data between IGT and DNs
- Identification and resolution of previously undiscoverable data quality issues.

As the platform is embedded further into our operation, new ways in which value can be driven are being discovered.

As part of the business plan for the CDSP, SGN is expecting to continue to invest in the development of the product to further support maximising the value of data. We believe that combining data sets from across the energy industry can bring a deeper understanding of consumer behaviour and allow us to cleanse our data to more effectively serve consumers. This type of access to data also allows us to start to answer the bigger considerations for digitalisation of the energy system, such as needing to deliver security, value and sustainability for GB consumers. Key areas of value will be in:

- the achievement of net zero targets
- the efficient development, maintenance and utilisation of our national infrastructure, funded by consumer funds
- the understanding of consumer needs and behaviours to ensure the service delivered is fit for purpose and sensitive to any specific needs
- the ongoing operation of a competitive market that delivers choice and value in an equitable way at the point of consumption.

Finally, by being able to interrogate a variety of data points from several sources, we can develop proactive and predictive tools that highlight the needs of specific consumers. Intelligence on the requirement for priority services gathered by one network can be shared with other service providers to facilitate a better experience for the end consumer.

SGN will continue to partner with XOServe, not just to exploit gas data but to share expertise and technology with the industry to support the delivery of net zero and other customer focused solutions.

5.1.4 Workforce planning

Ofgem guidance: Workforce planning

"providing details on a workforce plan for effective business transformation, such as upskilling, recruiting skills, diversity and embedding these into the operating model. We recommend that workforce plans are included".

This subject is fully addressed within sections **3.2 Our digital readiness** and **4.6 Developing capabilities**

5.1.5 Define success

Ofgem guidance: Define success

"reach a common understanding with network company stakeholders of what success looks like, and reflect learnings from this into the digitalisation strategies and action plans. This will help to reduce uncertainty about what effective digitalisation looks like and whether it has been achieved. This will require network companies to work with one another, as well a wide range of stakeholders to clarify expectations".

SGN's digitalisation framework process starts with stakeholder expectations. This process, described in section **4.3**, drives definition of success early and incorporating any strategic changes that be required in definition and fulfilment of the strategy viewed from stakeholder and sponsor perspective. SGN is an active contributor to the Data Working Group which shapes and drives industry alignment. Our intention is to continue working with the industry in driving common programmes such as the asset visibility, data triage process for open data and defining interoperability mechanisms. SGN also runs an active Customer Engagement Group (CEG) and Stakeholder Advisory Panel (SAP) who provide specific opportunities and help to clarify expectations which in turn feed into our project outcomes.

5.1.6 Service design

Ofgem guidance: Service design

"demonstrate adherence to recognised practices when creating and improving data and digital services. We recommend the network companies explain the practices and standards they are adopting when investing in their services. For example, at Ofgem, service design follows the service manual provided by the UK Government's centre of excellence, Government Digital Service (GDS)21. We note, where Ofgem takes a view on service design, GDS will be our default point of reference. We will similarly use our RIIO-2 Cyber Resilience Guidelines to inform our position on this theme".

As highlighted previously, under our "IT Totally Transformed" programme, we have invested and delivered new capability to improve our digital services. We have partnered with a globally recognised and IT industry leader to deliver a service integration and management (SIAM) framework that uses the industry standard ITIL (Information Technology Infrastructure Library) to manage technology assets in conjunction with our cyber security framework, described in earlier sections and below. All our service designs must follow this framework. We continue to introduce new digital services safely and securely using this framework, without any negative business of customer impact. We use the SIAM framework to transition our digital solutions to live products and services and then manage them on an ongoing manner.

For digitalisation projects, we will use this framework to ensure the readiness of digital products and services covering key aspects such as availability, security and reliability of the services. Recovery from local and/or wider failures, and the ability to factor in ongoing technical capacity needs. All digital delivery projects are subject to a project lifecycle that ensures services considerations are included in design, costed in projects and verified from time to time.

Management of information security risk is a core component of all service designs and consequently, we apply the NIST Cyber Security Framework to this. We are obliged to adhere to and report on the Ofgem driven Cyber Assessment Framework (CAF) to demonstrate compliance and management of all aspects of cyber risk.

5.1.7 Measure progress

Ofgem guidance: Measure progress

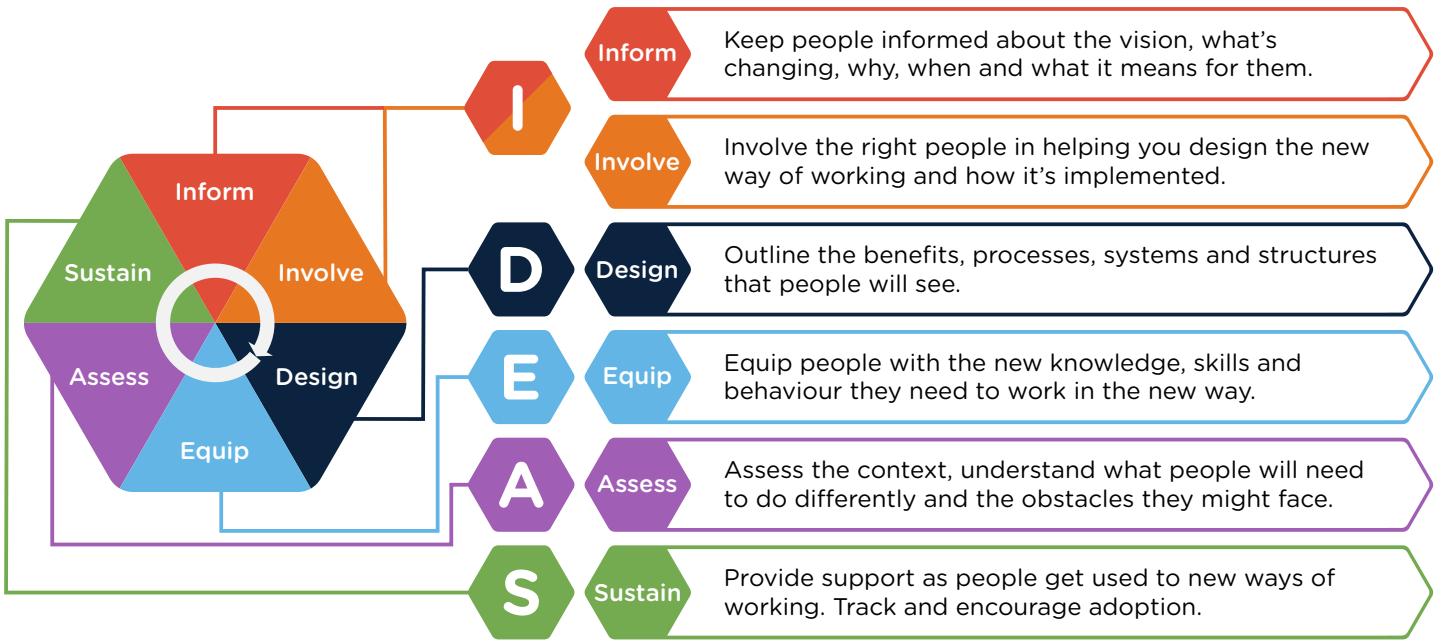
"set objectives and include a framework for assessing progress towards those. Review and report on that progress. We encourage targets to be a balance between robust governance for sustained long-term benefits and rapid progress that delivers value to service users as early as possible. This might also include activities such as benchmarking against services outside of the energy sector to ensure digitalisation opportunities are not missed. We also expect updates to the digitalisation strategy and action plan to include a roadmap of the action plan".

Idea	Feasibility	Implementation	Go-Live	Benefit realisation
• Define Problem Statement • Prioritise and sequence • Portfolio review • Resource allocation	• Business Assessment • Solution Assessment • Approach • RAID • Cost Benefit Analysis (CBA)	• Initiation • Architectural Review • Analysis and design • Build and test • Deployment	• Business launch • Warranty/Service Transition • Benefits realisation • Project Closure	• Adoption • Ongoing training and support

Our mature project governance framework, outlined above, is rigorously applied to all projects, not least those aligned to delivering our digitalisation strategy. Benefit cases are defined and detailed as part of the Feasibility stage of all projects and will not be progressed without this benefits case defined and agreed.

Business change management

SGN has developed a change management framework to support the planning and delivery of business change. The process reduces business risk by ensuring that the impacted areas are ready for change. Our change management framework will require digital projects to define a benefit realisation plan which will be tracked, monitored and reported on as part of our project and programme governance.



We will track digitalisation benefits as part of this project governance and benefits realisation tracking framework.

5.1.8 Data best practice guidance

Ofgem guidance: Data best practice guidance

"The MED programme is developing principles-based guidance. Work-in-progress drafts of the guidance are publicly available. Going forward, Ofgem is minded to create a licence condition for network companies to follow this guidance in the RIIO-2 price controls for transmission, gas distribution and the Electricity System Operator starting in April 2021, and separately for the RIIO-ED2 price control starting in April 2023. We recommend the network companies review the guidance, engage with the associated consultation process and consider including a commitment to follow its expectations as part of their digitalisation strategy and action plan update".

Elements of the data guidelines are already in place and new specific requirements for data governance and management will require further development and investment throughout GD2. At the time of writing, detailed compliance guidelines are yet to be published. However, transitioning from our current maturity levels (as highlighted within section **3.2.2 Data maturity**) to "best practice" will be a multi-year programme of work and is highly dependent on broader industry progress, funding arrangements and the specifics of the guidelines once these are made available.

We have listed below a high-level view of our current status against each data guideline.

Data guideline	SGN status
1. Datasets described with industry standard metadata	We are working with the ENA Data Working Group to align to industry standard
2. Data, Metadata - use common terms	We are working with the ENA Data Working Group to align to common descriptions
3. Custodians - ensure datasets are discoverable	GD2 roadmap deliverable
4. Custodians - ensure datasets have supporting information	GD2 roadmap deliverable
5. Custodians - learn and understand the needs of data users	Engagement established and ongoing throughout GD2
6. Identify roles played by stakeholders of the data	Engagement established and ongoing throughout GD2
7. Data quality improvements prioritised by customer need	Engagement established and ongoing throughout GD2
8. Data relating to common assets presumed open by default	Engagement established and ongoing throughout GD2
9. Custodian - open data triage process	We are working with the ENA Data Working Group to align to industry framework
10. Data - Interoperable with other data and digital services	Part of SGN digital transformation and ongoing through GD2
11. Protect data in accordance with best practice	SGN's mature cyber programme is ongoing
12. Ensure data is stored - to maximise sustaining value	Part of SGN digital transformation and cyber programme and ongoing through GD2

5.1.9 Modernising Energy Data Access (MEDA)

Ofgem guidance: Modernising Energy Data Access

"This part of the MED programme is an Innovate UK funded competition, which is from their Prospering from the Energy Revolution (PfER) programme. The competition is seeking a solution to the inter-operation of data between data/digital services provided by different organisations, particularly where the barriers to market entry are high. The solution delivered might reasonably be beneficial to the network companies' and therefore should be considered for inclusion in the digitalisation strategies and action plans".

SGN is fully aware of and involved in the PfER programme. We have previously been participants in the competition workshops and will continue to work collaboratively to assess solutions. Where relevant and beneficial to stakeholders, we will make use of the platforms(s) and services delivered.

SGN has closely followed the two key developing solutions:

- Siemens Yoda (Your Online Data Architecture): focuses on data architecture where in Data Publishers & Data Consumers can gain interoperability. It is also dealing with critical licencing mechanisms required to interoperate. SGN is monitoring and contributing to the development of the services. As part of the interoperability, we hope to develop common ontologies that will address common data language, searchability and data hierarchies.

- Icebreaker One: This is a model that is comparable with Open Banking Standard, the aim is to bring coordination between the various energy data projects. SGN is actively looking forward to developing this capability.

5.1.10 Energy data visibility discovery

Ofgem guidance: Energy data visibility discovery

"As part of the MED programme, BEIS has asked the Office for National Statistics (ONS) to carry out exploratory work on how to deliver services for effective data visibility across the energy sector. We recommend the digitalisation strategy and action plan update includes how the network company will work to continuously improve the visibility of its data and how this will be coordinated with other organisations, including this MED programme work".

SGN is actively engaged on the MED programme. We have provided several examples of coordination and collaboration inside and outside the energy sector;

- 3.1.3 Data Working Group
- 4.3 Needs driven – stakeholder requirements
- 4.8 Digital solutions: Benefits driven digital solutions, products and services
- 4.9 Digital innovation

Additionally, the work we have undertaken as part of our digital and data maturity assessment and subsequent analysis (highlighted in section 3.2) provides us with clarity around the main areas requiring attention and improvement to address capability gaps, improve visibility of data and prepare for future data sharing arrangements.

5.1.11 Asset registration

Ofgem guidance: Asset registration

"The EDTF report highlighted many challenges that relate to a lack of coordination over how energy system assets are logged in registers and how these registers are made available to energy system data users. One practical step likely to improve users' experiences with asset registration services is for service owners to follow the principles of the Data Best Practice guidance. We recommend the network companies clarify their views on their own needs from and responsibilities for asset registration services. We would like network companies' to clearly articulate whether Data Best Practice guidance can support meeting these needs and responsibilities. If they see merit, we expect Data Best Practice to be integrated into updates to their digitalisation strategy and action plan".

We are fully aware and supportive of the plans for open data that may require sharing data between GDNs, DNOs and other stakeholders, for the wider benefit of customers and stakeholders. To support such future open data initiatives such as common asset registration, we have defined and proposed the building blocks requiring specific investment to support and deliver data best practice. We have listed specific projects within our GD2 plans to deliver open data objectives. In particular, we have listed and provided details in four key areas which are fundamental to prepare the foundations for the delivery of best practice;

- Open data
- Analytics, AI and ML
- Data governance and quality
- Integration

We have highlighted previously our activities targeted at providing a common and shared asset platform, such as our work with the GLA, and we will continue to explore and progress where possible the delivery of common asset registration services.

5.1.12 Digital mapping

Ofgem guidance: Digital mapping

"This is an ENA-led effort that is prototyping a digital mapping service that is to provide an online geographical map overlaid with energy system assets and information associated with them. A prototype of this has been delivered in a short space of time and we view it as a good proof of concept basis for demonstrating the 'art of the possible'. This customer-facing service critically depends on wider work, such as underlying technical architecture and data modelling. We would like to see the updated digitalisation strategy and action plans defining the relationship between this service and associated digitalisation activities. We would also like to see explained how this service is being coordinated between the network companies and with complementary initiatives (for example those that we have referred to throughout this letter). As mentioned before, we would like network companies to identify and address barriers rapid delivery more extensive functional digital mapping".

SGN uses services from ESRI for Geographic Information System (GIS) mapping of our assets. We also participate in data sharing arrangement with Ordinance Survey. These are the key foundations enabling SGN's active participation in the digital systems mapping initiatives.

SGN is an active member of the ENA Data Working Group (DWG) and we have regular participation in workshops and meetings where these services are designed and deployed. The DWG is undertaking a proof of concept for this digital mapping service, known as National Energy System Map (NESM). Although there are a number of regional-based representations of this data, this will be the first time a UK-wide representation will have been provided in a single platform. A number of stakeholder groups have requested this resource.

We are also actively working with the DWG on the data triage framework, designed to facilitate further data sharing across the industry. Our digitalisation strategy will take input from these initiatives as we shape its development to meet such commitments.

6

Conclusions and next steps

6 Conclusions and next steps

Delivery of our digitalisation strategy is fundamental to us and our industry, being a critical component of our ability to respond to and deliver our net zero challenge, driving operational efficiency and delivering better customer value.

Our strategy and its fulfilment has sponsorship from the Executive Directors and our Board.

This document has highlighted how our Digital maturity will require significant investment and improvement to address the decarbonisation challenge and in particular, the development in digital skills and training of our most valuable asset, our people. We cannot underestimate the enormous challenge we face, particularly in a climate of reduced funding, although we are committed to delivery.

We use the following five principles to guide us in demonstrating the importance of this commitment to all the relevant stakeholders.

Leading from the top:

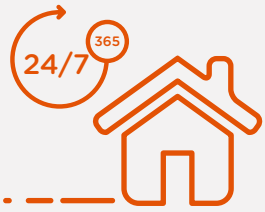
SGN understands that strategic intent must come from the top for it to sustain and grow,. Our Non-Executive Board member Laura Sandys CBE will ensure Board responsibility and oversight of the Digitalisation Strategy and our Director of IT and Innovation will be our Executive lead. They will have the full support of our Board and Executive team in executing the strategy.

Collaboration as a priority:

We are committed to working across our industry and the whole system for energy, with other network companies, shippers, generators, regulators and innovators, to develop digitalisation across the sector. To enable this, we will actively participate in the EDTF, ENA DWG and other working groups.

Demonstrate our progress:

SGN is committed to demonstrable progress against our digitalisation strategy. A progress summary will be published to key stakeholders biennially and this will be made publicly available for all key stakeholders.



Bring benefits to consumers:

One of the most important success factors of our digitalisation strategy is to drive better value for our stakeholders and customers. We are committed to prioritising the use cases that drive value for our customers and a wider set of stakeholders.

Drive innovation:

A long-term benefit of driving digitalisation across our sector is that it will force innovation across the entire ecosystem. We will continue our strong track record in innovation as set out in our plans for GD2. Our commitment goes beyond the boundaries of SGN through sharing innovation with other network companies as well as participating in cross sector innovation projects.

6 Conclusions and next steps

6.1 Uncertainties with the strategy: Key challenges and threats

Funding: As part of the RIIO-GD2 price control, we have submitted a number of documents in support of meeting our digitalisation strategy commitments. As the final determination on GD2 is not known (at the time of writing) there is dependency and risk associated with the funding required to deliver this strategy.

Changing and evolving requirements: The overall open data requirements and the implementation of EDTF recommendations are at an early stage of maturity. We expect to work jointly with the industry on these initiatives that will evolve and develop over time. This evolving landscape may have a potential impact on our overall plans and the digitalisation strategy.

Digitalisation vs Business as Usual: Balancing the need to "keep the gas flowing" during digital transformation is a difficult challenge. We have numerous commitments and indeed legal and regulatory obligations to meet day to day. This is over and above the delivery of this strategy. Whilst we see this strategy as a key enabler to running our business more effectively, prioritisation on what is tactical and essential vs strategic initiatives will be a risk to the delivery of this strategy.

Presumed Open vs Data protection and security: A clear message throughout GD1 and into GD2 has been the need for networks to deliver services in consideration of their customers, and especially to customers in vulnerable situations. As an example, the Priority Services Register (PSR) was developed to ensure vulnerable customers received the most appropriate care and interaction with us as we carry out works on our network. This was initially launched 2018, at the same time General Data Protection Regulation (GDPR) passed into law. The PSR process and solution relies on a level of personal information (about the vulnerable customer) to be collected and shared amongst utility companies to enable them to adapt to their customer's needs.

In delivering a customer-centric solution to a very real problem, the industry must walk a challenging path in balancing the use of customer data whilst adhering to legislation and society's interpretation of that legislation, as well as the inherent risks therein.

"The inclusion of the word "data" also serves to cause people to proceed with caution – even though they could clearly see it would be of a non-personal nature. Given the recent media coverage of all issues GDPR related, many just immediately become uncomfortable at the prospect."

Business Plan Acceptability Testing
Phase 1 – 207 Customers

6.2 Our digital commitments

In summary, we commit to deliver the following:

Commitment 1 We will continue to seek and gather stakeholder feedback on digitalisation requirements and progress the development of these ideas in partnership with our industry peers.

Commitment 2 We will deliver a digital strategy that provides a direct support to delivering a safe and efficient service, creating a positive impact on the society we serve and delivers a shared future. We will revisit our strategy every two years to ensure these principles are adhered to **and continue to align with stakeholder priorities.**

Commitment 3 We will continue to explore and develop new operating models with other organisations such as the GLA and the Data Working Group. In 2020/21, we will lead the workstream for GDN Data Triage services.

Commitment 4 We will continue to improve our digital culture by developing digital talent, educating and training our staff in digital skills and ways of working. We will monitor this through our digital readiness and digital skill assessments.

Commitment 5 We will continuously improve our cyber security capability. We will develop our digital security skills, train our people on cyber risk management and demonstrate this through compliance to our security accreditations and regular assessments.

Commitment 6 We will continue to deliver new digital solutions and demonstrate active progress against Ofgem's nine principles for digitalisation.

Commitment 7 We will develop, deliver and demonstrate digital innovation through our approved Energy Futures programme of work.

This Digitalisation Strategy will be made available on our website sgn.co.uk. We will publish updates on a biennial basis. Any query or request for information related to this digitalisation strategy can be made through the channels available on our website.

Appendices

A Digitalisation guidelines (issued Nov 2020)

	Guidance	Rationale	Our response
1	Prioritise benefits to stakeholders who pay for the products and services and which are in the public interest	Prioritise benefits to stakeholders who pay for the products and services and which are in the public interest The audience of the Digitalisation Strategy and Action Plan must be reasonably able to understand who the stakeholders are thought to be. Including what benefits they seek; what their implied needs are. Stakeholder personas to be used where not specific/known stakeholder group.	We have demonstrated within this strategy that stakeholders' views are gathered and benefits prioritised See section **4.3 Needs driven – stakeholder requirements**
2	Ensure products and services identified work towards a defined vision	How initiatives collectively realise the vision for Digitalisation The Digitalisation Strategy readily allows for the rationale and benefits case for each product and service to be understood and it is demonstrable how these are derived from the needs of stakeholders.	Our company vision is defined within section 4.1 and we have shown how our digitalisation strategy is directly aligned to this. We have also attempted to align this strategy to the vision shared by the EDTF and Ofgem in their Open letter
3	Validate intentions and plans using stakeholder feedback	Validation and assurance are treated as ongoing activities. This includes providing reasonable opportunities for all stakeholders to have their opinions be known and understood. Digitalisation Strategies will set out how they take account of stakeholder needs and be updated in response to the feedback provided.	We have demonstrated within this strategy that stakeholders' views are gathered and prioritised, see section **4.3 Needs driven – stakeholder requirements**
4	Deliver benefits early and prefer iterative improvements to products and services	designed to ensure the product and services being delivered take advantage of opportunities to provide a portion of the benefits stakeholders seek early.	As part of our digital working practices, we have adopted and promote the use of Agile working practices and delivering digital solutions based on a Minimal Viable Product approach helping us to access benefits faster as well as failing fast where the readiness for change is low. As our maturity assessment has highlighted, this exist in pockets within our organisations and is an area for improvement. However, this approach was applied to a number of very successful projects in particular, our Fyld mobile solution.
5	Make it easy to understand the status of and how to access products and services	The DSAP clearly identifies the products and services that end-users can benefit from and how they can access them. The DSAP make it easy for end users to understand the products and services that are available to them, as well as those that the company plans to make available. Where services or products are expected to be developed or improved over time, the DSAP should identify those and, where possible, the different stages of development or improvement.	Digital Products, such a Fyld and our Incident App, are designed with high level of attention given to the user experience driving adoption of the products with minimum training and highly intuitive use of the solution. Future products and services that will follow, will benefit from this approach. Identification of future products and services will be sourced through our engagement with the customers and stakeholders via the variety of forums highlighted within this strategy and through initiatives such as the ENA DWG.
6	Ensure visibility about the nature and status of actions in the Digitalisation Action Plan	Key information is provided about each action on the Digitalisation Action Plan. Among the key information is clarity about the current standing of actions, including which are completed, in progress and planned to be delivered in future.	The publication of our Digitalisation strategy highlights several commitments which will be tracked and reported against. A more detailed action plan will be developed as the industry consultation and refinement of the accompanying guidelines are undertaken.
7	Performance is measurable and there is shared understanding of success	Performance measures are agreed and validated with stakeholders before delivery begins and progress against these measures are made available to stakeholders. Performance measures are included for all specific actions in the Digitalisation Action Plan.	We will work with Ofgem to better understand, develop and deliver this principle.
8	Coordinate with the wider ecosystem of products and services	Products and services must be designed in a way that ensures interoperability with the wider marketplace of digital services, both within and out with the energy sector.	We will work with Ofgem to better understand, develop and deliver this principle.
9	Indicate the associated risks and mitigations for the delivery of products and services	By providing stakeholders with a clarity of the risks associated with the delivery of products and services Digitalisation Strategies and Action Plans will enable more robust engagement on prioritisation to occur.	We will work with Ofgem to better understand, develop and deliver this principle.

B Digital maturity status

Our Digital Maturity assessment has highlighted a number of areas where our maturity is either low or requires improving. The tables below define SGN's status against each area covered in the assessment.

Areas in need of Focus are:

	SGN's current status
Funding	Revenue associated with digital services is negligible. Digital commerce and Platform business is less relevant to the core operational business and the funding mechanisms associated with achieving this is undefined. IT spending focusing on "run-the-business" does not allow an organisation to generate space for business modernization and transformation at the required pace. Traditional budget allocation based on project-based approval does not fit with the need of greater flexibility and agility required for digital businesses.
Organisation & Decision Rights	A truly transformed digital organisation is based on small cross-functional teams that are self-sufficient and largely independent to deliver value to users and customers. The ability to extend the Cross-functional collaboration beyond IT is key to reduce barriers and achieve "fusion teams". Organisations who are leaders in digital execution have adopted business-IT led teams, improving significantly the business engagement and elevating the role of IT from order takers to business contributors. SGN has implemented this in pockets and notably, the response to the COVID crisis was possibly the best illustration of this enabling capability. This needs to be developed at scale.
Ways of Working	Design methodologies such as Design thinking, persona mapping and customer journey maps are fundamental shifts in the way organizations tackle digital innovation. Scaling agile practices beyond a few pilot areas requires teams to master agile technical practices and tools. Business applications and digital platforms require a fast pace of change to cope with innovation and experimentation required for digital business. SGN has undertaken design thinking and agile delivery but this is in pockets and largely only when unconnected to the core enterprise.
AI and Data Analytics Platform	Moving AI/ML usage beyond the experimentation stage requires companies to evolve their business applications from operational and analytical purposes to natively embedding new capabilities. Most advanced organizations are fusing AI/ML in different business areas. Transformed digital organizations can leverage a data platform that can enable the full exploitation of all data generated from and outside the organization. SGN has implemented a data lake and analytics platform but use cases are so far, only few. There is one platform leveraging AI/ML technology therefore, adoption is low.
Customer Platform	Digital leaders provide customers and employees real-time data access to customer-related data delivering omnichannel experiences. Digital leaders leverage well-designed and implemented user experiences and modern patterns for user interactions. Limited adoption of those practices and technologies may result in unsatisfactory customer experience and reduce customer/user adoption of new digital interfaces.
Ecosystems and Integration Platform:	Adopting automated integration Partners and Suppliers allow leading organizations to extend their value chain and the value delivered to customers. Adoption of APIs as the main drive for integration with 3rd Parties is a strategic capability to quickly expand and optimize the portfolio and enhance customer experience. Adoption of modern integration patterns based on standardized APIs and real-time data feeds enables fast and flexible implementation of several use cases, accelerating value delivered to customers, partners and enterprises. SGN has limited adoption of API architecture. There are some examples of this, but it is not present at scale.

B Digital maturity status

Areas of progress but further scale needed are:

	SGN's current status
Culture	Culture is constantly recognised by Leaders as the main barrier to embrace digital at scale. Traditional fixed-mindset culture, risk-adversity has in parts been substituted by new behaviours such as customer-centricity, autonomy, ownership, collaboration and adaptability but more work is needed. Digital operating models require new leadership models and strong commitment to change traditional behaviours and culture. We know that SGN's and our industry's more generally, is a traditional and risk averse one, for good reason.
Sourcing	Sourcing and Procurement processes are accelerated and allow faster involvement of those innovators (either digital giants or niche providers) to accelerate the pace of digital transformation. We and most organizations heavily rely on external service providers for well-defined and predictable services and associated costs. Traditional contracts, based on a well-defined statements of work and rigid roles, are no longer suitable for those organizations that are transforming their delivery model towards Agile and DevOps and can constitute a barrier to achieve a greater agility across IT. SGN and all Networks are required by law to comply with the Utility Regulations with regards to sourcing and at times, this can be in conflict with the principles of digital sourcing.
Cloud and DevOps Toolchain	Adoption of Public and Private Cloud technologies is a foundational capability for any digital business. Elasticity, Automation and Scale provided by the IT infrastructure are uniquely characterizing organizations that are winning for a superior business agility, speed to market and innovation. SGN has a strong story in cloud adoption however has more to do in the delivery of automation and microservices. The adoption of DevOps toolchain is a key accelerator for frequent delivery without compromising stability. It significantly improves delivery team productivity. DevOps adoption within SGN is very limited.
Security Platform	Scaling out innovation and digital capabilities requires the need to balance speed to market and the risk of exposing assets and technologies to ecosystems and customers. Achieving higher compliance with security policies significantly reduces risk. Introduction of digital workplace technologies and mobility help progressive organization to achieve superior collaboration and productivity. The proliferation of end-user devices and BYOD policies and more connected "things" at the same time shall be carefully balanced with the increasing security risks. SGN has a high level of end-point security compliance and is above average with respect to application security and risk compliance.
IOT Platform	Digital leaders are able to create a digital twin of the organisation by connecting things, people and business. For asset-based businesses, such as SGN, being able to connect physical assets and devices, monitor and remote control them is key to fully benefits from digital transformation. Progressive organisations leverage advanced analytics and AI on sensor / device-generated data to optimize operations, utilisation and finally enable new business models. SGN has a percentage of connected assets in particular the Transmission Network is connected, monitored and managed in digital form. This is not the case however for the vast majority of the Distribution Network.

An area of strength that requires further optimisation was:

	SGN's current status
Talent and Skills	Digital progressive organisations' most precious resource is people and their unique capabilities, therefore leading organisations' quest for talent in digital is never been higher, combined with the renewed focus on continuous learning. Limited digital skills and digital dexterity hinder an organisation's ability to thrive in Digital era. The most successful digital organisations have renewed their focus on growing in-house capabilities for digital transformation to gain strong competitive advantage, retain core intellectual property and achieve greater commitment, agility and speed of execution. A heavy reliance on external resources (Contractors and Service providers) overtime impede organisations to fully own their technology assets related critical design and development decisions.

C Game changing technologies affecting utilities

Gartner is a globally recognised, independent, IT advisory firm. They undertake an annual survey of CIOs across many industries to understand their priorities for the coming year and beyond. A number of questions are asked, but in this specific instance CIOs were asked an open-text, unprompted answer about which technologies they see as having the potential to impact utilities.

The technology area receiving the highest attention from utility respondents (33%) is data analytics (including predictive analytics). This is in line with the utility priority of optimising asset performance and utilisation. From weather monitoring to network operations, analytics and predictive analytics are seen to be major levers today and going forward.

The second-ranked technology area is Artificial Intelligence (AI) and Machine Learning (26%). These technologies in utility asset operations and maintenance are viewed as a means of driving further value from assets, using Machine Learning to provide faster responses to changes in circumstances and, potentially, squeezing more production or longer life from assets. We are also seeing increased AI adoption in the customer domain, although in its rudimentary form, such as Robotic Process Automation (RPA).

Based on the asset-intensive nature of utilities, and the need for remotely monitored operational integrity of delivery and generation assets, IoT receives the third-ranked slot (17%)- the subject in another engineering justification paper submitted by SGN. The instrumentation and connectivity of grid-based generation and network assets, as well as assets at consumer premises (from smart meters to home energy management and automation), generates a lot of potential use cases and areas of impact within utilities and in particular, distribution networks.

These technologies are directly related to open data and whole systems initiatives as they are an enabler for future activity in this space. Improved ability to manage the network and associated data opens the door for working differently with other utility organisations and achieving wider objectives such as sustainability, de-centralisation, de-carbonisation and democratisation of energy choices.

Game-Changing Technologies

Percentage of Respondents

	Utilities (n = 99)		Top Performers (n = 230)		Typical Performers (n = 2,329)		Trailing Performers (n = 276)	
1	Data analytics (including predictive analytics)	33%	Artificial intelligence/ machine learning	40%	Artificial intelligence/ machine learning	25%	Artificial intelligence/ machine learning	24%
2	Artificial intelligence/ machine learning	26%	Data analytics (including predictive analytics)	23%	Data analytics (including predictive analytics)	25%	Data analytics (including predictive analytics)	21%
3	Internet of Things	17%	Cloud (including XaaS)	12%	Cloud (including XaaS)	10%	Cloud (including XaaS)	14%
4	Cloud (including XaaS)	10%	Digital transformation	10%	Internet of Things	10%	Internet of Things	11%
5	Automation	8%	Mobile (including 5G)	7%	Digital transformation	9%	Digital transformation	7%
6	Mobile (including 5G)	5%	RPA	6%	Mobile (including 5G)	6%	Industry-specific	5%
7	Business intelligence	4%	Internet of Things	6%	Automation	5%	Business intelligence	5%
8	Industry-specific	3%	Blockchain	5%	Blockchain	4%	Automation	5%
9	RPA	3%	Automation	3%	Industry-specific	4%	Blockchain	5%
10	Information technology	2%	Information technology	3%	Business intelligence	3%	Mobile (including 5G)	5%

Base: All answering, excluding "prefer not to answer"; n varies by segment
Showing the 10 most common answers per segment, coded open-text responses, multiple responses allowed
Q: Which technology area do you expect will be a game changer for your organization?
ID: 368223

Game Changing Technologies - © Gartner 2018

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