

Cadent

Your Gas Network

Appendix 07.02.02

Data & Digitalisation Strategy



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1. Executive summary

At Cadent, we are committed to a gas network that is safe, resilient, and harnessed for the future. Vital to this commitment is the need to modernise energy data. This document sets out our Data & Digitalisation Strategy with a specific focus on how we intend to modernise, make available and drive more value from the data that we hold.

Our data is critical to how we meet our commitments and deliver quality services to our customers, including the most vulnerable. As Britain's largest gas network, our data can also play a valuable role in propelling innovation throughout the sector and planning for a decarbonised and decentralised energy system of the future.

We intend to be a leader in this industry-wide innovation. We will actively seek to engage and build partnerships with our customers, stakeholders, and other energy industry participants to deliver a modern, digitalised energy system that drives competition, enables whole system outcomes, and protects our most vulnerable customers.

The recently published Energy Data Taskforce (EDTF) report has catalysed our approach to data and digitalisation. The report shared a market-wide vision of how the energy sector can maximise the value of data and digitalise the energy system in support of the energy transition. We welcome the report and its recommendations.

Strategic Framework

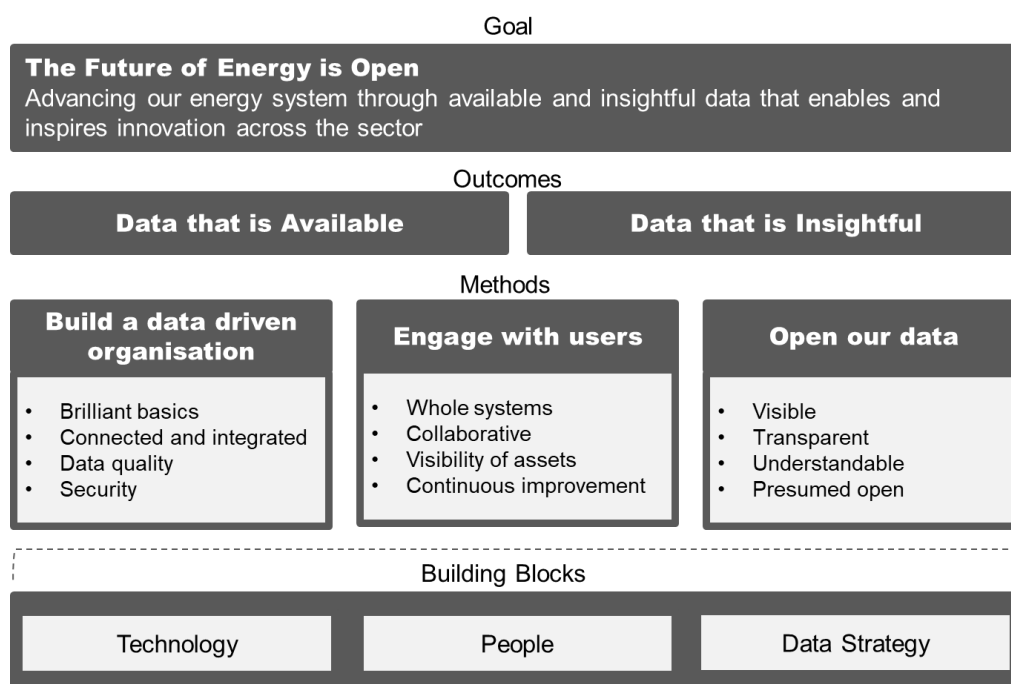


Figure 1.1: Data & Digitalisation Strategy Framework

Our Data & Digitalisation Strategy is animated by the vision that the future of energy is open. We seek to advance our energy system through *available* and *insightful* data that enables our customers, partners, and stakeholders, inspiring innovation across the sector.

This ambition will be addressed through three key methods: *build a data-driven organisation*, *engage with users*, and *open our data*. The methods do not represent a staged approach, rather they are parallel initiatives that will continue to develop as we mature as an organisation.

We are alive to the fact that poor data management practice can lead to severe consequences. To enable our Data & Digitalisation Strategy, we have embarked on a transformation programme across three building blocks of *technology*, *people*, and a robust *data strategy*. We are on a journey to become a data-driven organisation and have set in motion an ambitious programme that will establish data competency in the near-term, and sector-wide data leadership in the future.

We recognise that this is not a one-off activity and have implemented policies that prescribe regular review of our performance led by a central data team (for example data quality, engagement and architecture), as well as facilitate engagement with our data stakeholders. As our capabilities mature, so will our data maturity.

Open data

A more open energy system will uncover new solutions for our customers and accelerate innovation across the sector.

We are already making some of our data available to customers, partners, and stakeholders (for example we share asset data with local authorities to aid with the planning of infrastructure projects). This Data & Digitalisation Strategy seeks to expand the scope of the data we share, contributing insights that bring benefits to our customers and inspiring innovation across the sector.

We commit to the principles that our data will be discoverable, searchable, and understandable. We are building a data catalogue across our business units which would provide metadata in line with industry standards and best practice.

We have also aligned our strategy with wider cross-industry initiatives such as the National Data Strategy and the Open Data Institute. Open data has gathered significant momentum outside the industry and considerable support within the industry through various Government consultations. Cadent intends to be a leader in the transition to open data architecture within the boundaries of our commitment to the security and resilience of our network and data privacy considerations.

We welcome and intend to adopt the principle of ‘presumed open’ – our data strategy commits us to developing an open data framework. In order to mitigate the risk associated with this principle, we are putting in place a transparent ‘data openness triage’ process to assess data sets before deciding to release them. Where open data is inappropriate, our aim will be to preserve the value of the dataset for the greatest numbers of users possible.

Collaboration and partnerships

On top of opening our data, our Data & Digitalisation Strategy commits us to being engaged with our customers, partners, and stakeholders. We intend to be proactive in facilitating industry and non-industry collaboration and invite users to engage with our data in creative ways to tackle pressing issues such as vulnerability and the energy transition. We welcome the opportunity to engage with new sources of data to improve the service we deliver to our customers.

A living strategy

Our Data & Digitalisation Strategy is a living document. We expect to iterate on the strategy in consultation with our customers and stakeholders. We also welcome the opportunity to collaborate with other network companies, learn from each other’s strategies, and develop a cross-industry approach to harnessing and publishing data.

The strategy will also evolve as we progress along the journey toward a state of ‘data leadership’. As we make further investments into the building blocks (for example in advanced analytics or digital twins), we open up further possibilities to exploit our data. We will embed these opportunities into our strategy as they become available.



High level plan

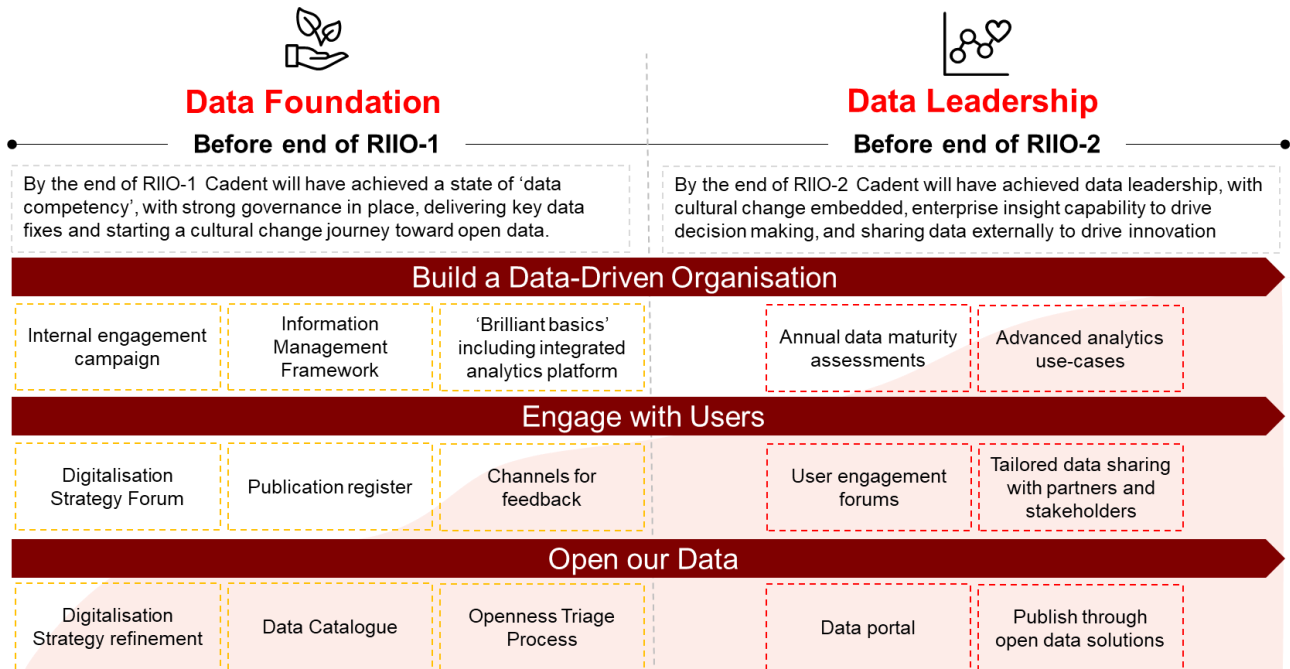


Figure 1.2: Data & Digitalisation Strategy High Level Plan

2. Context

Our energy system is changing. There is a concerted effort to reduce carbon emissions across power, heat, and transport. The system is also getting smarter, more flexible, and increasingly decentralised. Gas, as a major source of heat, will play an important part in this transformation. Future gas networks will need to transport gases from renewable and sustainable sources requiring improved levels of safety, reliability, and affordability.

At the same time, the needs and expectations of our customers are evolving. Our role as network operator and the services that we deliver have been subject to increased scrutiny. Consumer vulnerability has also rightfully come under particular focus with networks expected to do our part. Business as usual is no longer acceptable.

Energy System

The infrastructure and systems which are used to generate, store, transform, trade, transport, and control energy across electricity and gas

The effective management of data will be essential to unlocking the potential of these developments and is absolutely critical if we are to hit our net-zero targets by 2050, and ensure energy security into the future. We are determined to play our part.

A report by the Energy Data Taskforce (EDTF) was commissioned to provide the Government, Ofgem, and Industry with a set of recommendations on the role of data in delivering a *modern, digitalised energy system*. The benefits of digitalisation are clear – opening new markets, improving collaboration across the system, and enabling the sector to realise its full potential.

Digitalised Energy System

Energy System characterised by accessible and integrated data used to generate insights, improve operation, and inspire innovation

We welcome the recommendations in this report and appreciate the leadership shown by the regulator in this space. We are publishing our Data & Digitalisation Strategy in response to the EDTF, as well as in the context of wider initiatives such as the National Data Strategy and the Centre for Digital Built Britain.

We recognise that we can learn from other sectors like healthcare and finance in harnessing the potential that data offers. Data in the energy sector is often fragmented and distributed unequally across many organisations. There is a culture of risk aversion and isolation rather than collaboration and data-driven solutions. And there are many gaps in the data that industry participants collect, use, and store.

Equally, we recognise that we have historically faced our own share of data management challenges culminating in material impacts to our customers and stakeholders.

We are also aware that as Britain's largest gas network, the data we hold can be valuable in propelling innovation and contributing to solutions in the energy sector and beyond. We could be doing more in making this data accessible, available, and insightful to our partners and stakeholders, and intend to do so.

Our Data & Digitalisation Strategy is a statement of intent to address these shortcomings, and to go further by opening our data and actively engaging with the wider community. It is a foundation for our role in delivering a modern, digitalised energy system for the UK.

3. Our ambition

Our Data & Digitalisation Strategy is animated by the vision that *the future of energy is open*. While there are early signs like increased flexibility and smart energy technologies, there is no certainty about what the energy system of the future will look like. What is increasingly clear is the need to utilise the data that we have to drive increasing value for our customers and open up the way the energy sector manages, shares, and uses data. Doing so will drive innovation as well as future operational and investment decisions.

In this spirit, we are committed to advancing the energy system through the provision of available and insightful data that inspires our customers, partners, and stakeholders. This ambition will be met by achieving two key outcomes: *Data that is Available* and *Data that is Insightful*.

Data that is available

We aspire to *data that is available* internally and externally. Data needs to be available to enable us to continue to deliver a safe, resilient network and keep the energy flowing, improving the value we deliver to customers. We are on a journey to transform the way we manage data at Cadent, improving the availability of both new and existing data sets. As we move to a new region-focused operating model, we are making sure that the data we collect and draw insights from is fit for purpose to the needs of our customers in our regions.

We are adopting the principle that the data we hold and publish externally will be searchable, discoverable, and understandable – making the right data available to the right people, in the right format, at the right time. We also look forward to a more open energy system making available data that we can leverage to improve the service we deliver to our customers.

Data that is insightful

We also aspire to *data that is insightful*. The data we capture and publish will be useable and practical, with common structures, interfaces, and standards. We are investing in integrated analytics capabilities that will support discovery of insights from disparate structured and unstructured data-sets. This is vital to improve our operations and deliver a better service to our customers. We will maximise the value that we derive from these insights by sharing relevant datasets with our stakeholders and partners, encouraging them to use our data in exciting and innovative ways.

We will achieve our desired outcomes by *building a data-driven organisation, opening our data, and engaging with users*.



4. Build a data-driven organisation

We want data to be at the core of everything we do at Cadent. As we transform our network into one that is smart, self-sufficient, real-time, and integrated, we need to invest in building a data-driven organisation. We have set out an ambitious program to help us achieve this aim.

A comprehensive data maturity assessment undertaken in March 2019 concluded that we are not where we need to be as a data-led organisation. This lack of maturity has a material impact on the value we can derive from our data and the value that we deliver to customers. In light of this assessment, we developed a Data Strategy in consultation with our Customer Engagement Group (CEG) that articulates how we expect data to support our business commitments going forward.

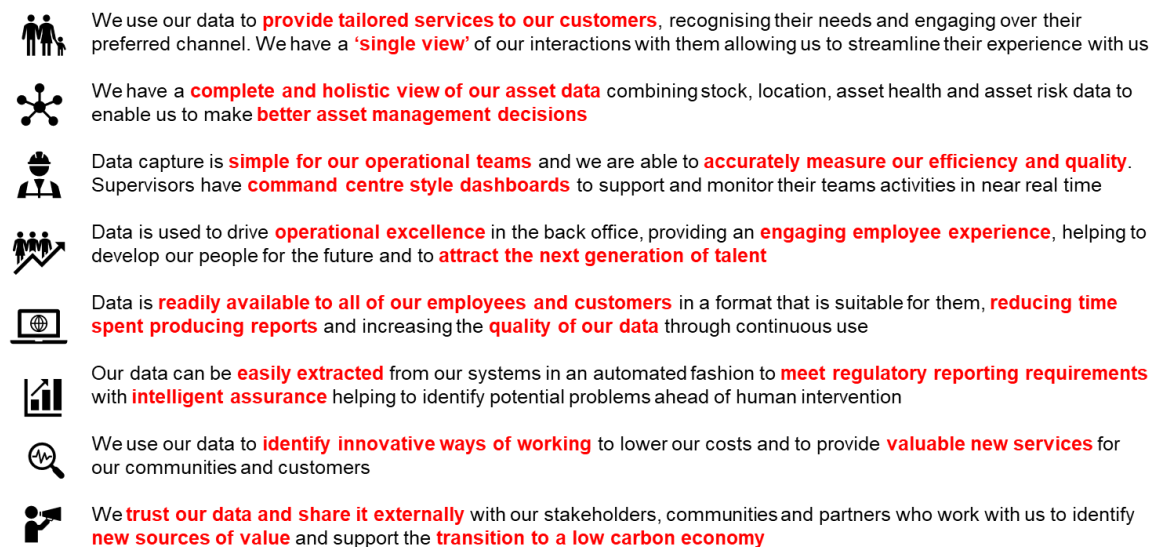


Figure 4.1: Data Vision and Intent

Our planned investments in technology, data, and cyber security will put in place the foundations for data management by the end of the RIIO-1 period (31 March 2021) including a centralised data team, data governance, data quality management, and monitoring. We are building data engagement throughout the organisation, delivering critical data fixes (filling in the gaps), and developing a leading data analytics platform to help maximise the value of our data.

Beyond RIIO-1, the focus shifts to using the foundations to go further. By the end of RIIO-2, Cadent will have moved to a state of 'data leadership' with our data being used to drive internal innovation and enable the wider industry to make better operational and investment decisions.

Data foundations

By the end of RIIO-1 (April 2021), Cadent is committed to achieving a state of 'data competency' by putting in place 'brilliant basics'. A Data Foundation Programme has been sanctioned which includes the following initiatives:

1. Setting up a central data team
2. Governance and architecture
3. Internal engagement campaign
4. Analytics platform
5. Data quality tooling
6. Data Refreshes
7. Feedback mechanisms and training

We have also refreshed our Information Management Framework (IMF) and are setting out an operating model based on industry best practice.

The refreshed IMF will reduce our risk exposure by identifying clear data ownership and governance across the business. Data owners and data stewards have been appointed in each business domain who will be responsible for maintaining data quality and developing a plan to identify data needs, gaps, and quality fixes. A central data team will provide the direction and alignment for information management, working closely with the data owners and stewards to drive engagement and positive data management behaviour across our entire business.

We will embed a culture of continuous improvement into our data programme with regular feedback and inspection mechanisms. For example, Data Governance Forums will provide regular inspection points on a monthly basis. The purpose of the governance forums is to review delivery plans (for example data quality, data engagement and data architecture) and also the management and escalation of data risks and issues.

We have committed to repeating the data maturity assessment annually to track our progress toward a data-driven organisation.

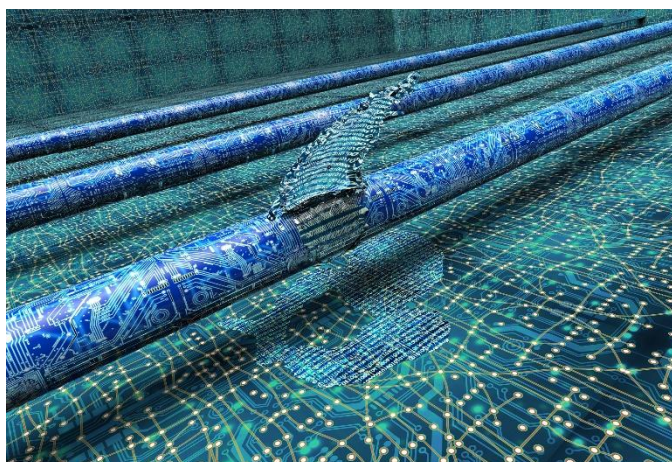
Data leadership

Throughout RIIO-2, our focus shifts from 'competency' to 'leadership'. Along with additional investments to bolster the data programme, we aim to use our foundations to go further. This involves consolidating our analytics platform, identifying advanced analytics use-cases, and investing in strategic initiatives.

We have identified a number of advanced analytics use-cases in our innovation plan including:

1. **Business performance management** – a framework and tooling that allows direct connection of cost to outputs, and associated performance management
2. **Single view of the customer** – a holistic view of the customer across connections, maintenance, repair and replacement work, to include customer contact history, and vulnerable customer requirements to deliver better customer experience and outcomes
3. **Intelligent Asset Management** – a holistic view of asset data, combining finance, work, asset, stock, condition and asset risk data with external data sources to enable better asset management decision making and 'what if' scenario planning

Our roadmap also includes exploring the development of a digital twin of our network – a virtual representation of our assets, and how they interact across our network and with the environment. A digital twin would allow us to run digital simulations of real-world scenarios which could help optimise engineering works as well as plan the future of our network, including decarbonisation and the introduction of new gas sources.



Data leadership will enable us to deliver significant benefits for our customers. These include operational improvements, better insights into our customers' needs, and data-driven innovations to safeguard energy security for future generations.

Our ability to meet our two objectives of available and insightful data will improve as we progress toward a data-driven organisation. We intend to continue to invest in our capabilities across technology, data, and cyber security in order to improve our data maturity and generate insights that can propel the transition to a net-zero energy system.

5. Engage with users

At the heart of our Data & Digitalisation Strategy are our customers, partners, and stakeholders. We have published an Enhanced Engagement Strategy detailing how we are continuing to engage in a tailored and effective manner. Specific to our Data & Digitalisation Strategy, we are committed to engaging our customers, partners, and stakeholders in the following ways:

1. Users led approach to open data with appropriate channels for feedback
2. Collaborate with our partners to advance the energy system
3. Engagement activities with strategic partners

User led

We want to empower users to apply our data in new and exciting ways. To achieve this, it is important that we engage with users from the start to discover what is important to them. We will also ensure that users are able to provide feedback on the data that we publish.

It is also important that users are aware of how our data is produced and the decisions made on how we publish that data so that they are able to challenge us where appropriate. We have committed to making available a publication register that explains to users what data we hold, how to access it, and any limitations to access as a result of our 'openness triage' process. We also intend to open up customer channels either digitally or through data forums to make it as easy as possible for our users to give us their feedback.

Collaborate with other network companies

As this is the first iteration of our Data & Digitalisation Strategy, we invite feedback on how we can improve. We also look forward to collaborating with our partners across the industry to consolidate the way energy system data is managed.

We welcome Ofgem's recommendation of a collaborative digitalisation forum for network companies. Our central data team has initiated early engagement with the Energy Networks Association (ENA) and Catapult in November of this year. We look forward to working with the ENA to facilitate a formal conference with all network companies in early 2020.



We anticipate that greater digitalisation of the energy system will elevate the way that we have historically collaborated with our industry partners, including with the ENA.

The *ENA Gas Innovation Strategy*, published in 2017 with our partners across the industry, explicitly calls out digitalisation as an imperative for future of our network. We are hopeful that this cross-industry effort to open up energy system data will lead to much needed innovation across the sector.

For example, we have a renewed commitment to share network capacity information. How we achieve this will form part of agenda which will be considered by the recently established ENA Energy Data Working Group.

Strategic partnerships

Our Enhanced Engagement Strategy shows how we have grown our network of strategic partnerships over the last year. For example, we have strong relationships with the All-party Parliamentary Group for Hydrogen, Street Works UK, Local Enterprise Partnerships, and the Renewable Energy Association (REA), to name just a few.

Alongside these strategic partnerships, we have also developed and expanded our political engagements at both the regional and national level. We are already reaping the benefits of sharing data as part of these partnerships. For example, by sharing operational data with the Greater London Authority High Level Infrastructure Group we were able to improve the planning of engineering works across the region.

Our Data & Digitalisation Strategy will allow us to strengthen our partnerships, opening up possibilities for coordination, operational efficiencies, and innovation through smart sharing of data.

6. Open our data

The EDTF report identifies a culture of data exclusivity as one of the barriers to a smart and flexible future energy system. Cadent is committed to being part of the solution not the problem. We are moving our current default for data accessibility from 'closed' to 'open'. We agree with the EDTF's observations that more open data reduces friction across the sector encouraging innovation, operational excellence, and transparency.

From our own experience, many of our analytics use-cases would be made impossible without being able to leverage external/3rd party data. We welcome the possibility of others using our data in creative and unexpected ways to solve problems across the spectrum.

To this end, we are putting in place mechanisms to open our data and make it available to our customers, partners, and wider stakeholders. Two key initiatives are creating a *data catalogue* and *setting up a data-openness triage process*.

Data catalogue

We have commenced with activities to build a data catalogue as part of our data foundation programme. This is aimed at improving the visibility of data that exists across our organisation.

Visibility of data at Cadent is not yet where it needs to be. The data maturity assessment found isolated approaches to data management across different business areas which limits the opportunity to combine data to provide data and analytics.

The data we open should be both available and insightful. The data catalogue will collate our data into a single, searchable location enabling parties to easily find out if data exists and where it is held. This is an essential step in our shift toward 'presumed openness'.

As part of establishing our data catalogue, we are also carrying out a critical data assessment to identify data that is most critical to our operations. Part of this analysis will include assessing who the data set may be useful to and for what purpose. This will support a demand-based prioritisation for opening our data.

We remain open to the EDTF report's recommendation of sector-wide common metadata standards. Our data catalogue is being developed to industry best practice and is flexible enough to adapt once a common framework has been agreed. Cadent looks forward to discussing options for industry wide standardisation with our partners and stakeholders.

Openness triage

While there are significant benefits to presumed openness, there are circumstances where open data is inappropriate. This can be for issues including privacy, security, consumer impact, or commercial sensitivity. Often however, these issues can be mitigated through anonymisation, redaction, or some other transformation. It may also be appropriate to limit rights or access so authorised parties can safely use our data to create value.

For this reason, we welcome the EDTF's recommendation to adopt an openness triage process which will consider a range of risk factors and apply the appropriate mitigation mechanism.

This process will be transparent with each decision tracked and published, open for feedback and challenge.

Our proposed triage process will identify issues in the following areas:

1. **Consumer privacy** – where data is personally identifiable either directly, or becomes identifiable indirectly through combination with other data
2. **Security** – where data creates a security risk either to our network or to wider public security
3. **Commercial sensitivity** – where data relates to the private administration of Cadent or relating to commercial contracts between Cadent its partners, including where data concerned is owned by 3rd parties
4. **Negative consumer impact** – where data is likely to drive actions which will negatively impact our customers or other stakeholders, including data subject to any ongoing legal or regulatory investigation.

Our central data team along with the data owners will manage this process, including the maintenance of a publication register. Where the triage process identifies an issue, we will aspire to preserve the value of the dataset for the greatest number of users possible. This might involve anonymising, redacting, restricting rights, or restricting access to specific data sets.

Here we will adopt the Open Data Institute's *Data Spectrum* which suggests different ways to make data available:

1. **Open** – available for all to use, modify, and distribute
2. **Public** – publicly available but with some restrictions on use
3. **Shared** – available to a limited, authorised group of participants possibly with some use restrictions
4. **Closed** – data that we will not share externally

Alongside the triage process, our RIIO-2 plan includes investments in data protection and cyber security. This is important because it enables us to share data securely, controlling access where required, and ensuring that the integrity of our data is maintained.

Engagement

We continue to work with the ENA & Catapult, amongst others in the sector, to align our views and thoughts with the wider industry. We are also mindful that our data could be beneficial outside of the energy sector and will also consider sharing our data within the wider built environment industries and initiatives. Engaging with these groups now, will ensure a unified approach to working with stakeholders that could drive benefit from data from across the whole energy sector in the shortest timeframes.

As part of our commitment to stimulate and grow our own internal use of data, we are planning to engage with a number of external partners and academic institutions, one of which will be the Open Data Institute (ODI). This work will begin to show us how we can benefit from combining our own data with other open data sources, to drive new insight and improve efficiencies. We can see immense value in facilitating small proof of concepts in the data space to inspire further innovation within the business.

Making our data available

We are already sharing some of our data externally. However, this data is only available to partners and stakeholders on request (for example, one-off requests for large scale asset information associated with major redevelopment works).

We recognise that this does not align with the aim that data will be discoverable, searchable, and understandable. We are therefore exploring ways to make our data more easily accessible (for example, a data portal on our website). We are also exploring the possibility of publishing through open data solutions such as the Energy Data Centre, UK Data Archive, or Data.gov.uk.

During 2020 we will be publishing the first iteration of a data catalogue to show what data sets are available and to whom. While we work on developing a channel for data publication, we welcome our partners, stakeholders, and customers to get in touch should they wish to access these data sets.

Our Data & Digitalisation Strategy will be updated as we progress in the journey toward opening our data.

Making our data insightful

We are committed to publishing data that is practical and beneficial to our users. We aim to publish our data with purpose, explaining to our users what it is for as well as caveats on how it should/should not be used.

We expect the quality of our data and insights to improve as we mature as a data-driven organisation. We also have a data quality improvement plan focused on both the accuracy and insightfulness of the data we hold. We will work with our customers, partners, and stakeholders to understand their expectations and improve the data we provide.

7. Our commitments

Our Data & Digitalisation Strategy conveys our determined ambition to advance the UK's energy system through maximising the value of the data we hold. Throughout this document we have made a series of commitments showing how we will achieve that ambition. These commitments are summarised below.



Build a Data-Driven Organisation

1. Achieve 'data competency' by the end of RIIO-1 (31 March 2021)
2. Embed a culture of 'continuous improvement' through robust data governance
3. Annual data maturity assessments
4. Invest in advanced analytics and innovative tooling to maximise the value of our data



Engage with Users

1. Maintain a publication register providing information to users on the data we publish
2. Open up customer channels and make it easy for users to feedback on our data
3. Collaborate with other network companies to improve digitalisation across the energy system
4. Look for ways to share data with our strategic partners



Open our Data

1. Move our default position on data sharing to 'presumed open'
2. Build a data catalogue with common metadata standards to increase visibility of our data
3. Set up a transparent openness triage process
4. Where access needs to be restricted, preserve value for the greatest number of users

8. Appendix 1 – Ofgem guidance alignment

#	Ofgem Guidance Items	How have we covered it
1	Actions being taken to align with the recommendations made by the EDTF	<ul style="list-style-type: none"> • Throughout • For more detail see Appendix 2
2	Consideration of making available metadata	<ul style="list-style-type: none"> • Section 6: Open our data • Data catalogue to leading practice and being open to industry wide metadata standards
3	Workforce planning with respect to ensuring digital, data and technology capabilities, demonstrating that these have a credible path to being in place to meet the needs of the Data & Digitalisation Strategy now and in the future	<ul style="list-style-type: none"> • Section 4: Build a data-driven organisation • Explanation of data foundation program and data owner/steward model with governance forums
4	Approaches to user engagement and feedback on the Data & Digitalisation Strategy	<ul style="list-style-type: none"> • Section 5: Engage with users • Channels for feedback and user forums
5	Approaches to continuously improving the Data & Digitalisation Strategy	<ul style="list-style-type: none"> • Throughout • Refer to Data & Digitalisation Strategy as a living document that will evolve as capabilities improve and feedback received
6	Reporting their current understanding of user needs	<ul style="list-style-type: none"> • Section 6: Open our data • Data catalogue and critical data assessment
7	Delivery plans to meet users' needs: cost, benefit, options, validation, prioritisation	<ul style="list-style-type: none"> • Section 6: Open our data • Data & Digitalisation Strategy to be updated as listed initiatives enter detailed planning
8	Preferred corporate ways of working when delivering digital and data services	<ul style="list-style-type: none"> • Section 4: Build a data-driven organisation • Central data team to embed data programme throughout the wider organisation
9	How network digitalisation is being coordinated between network companies	<ul style="list-style-type: none"> • Section 5: Engage with users • Collaboration forum in 2020
10	How digitalisation strategies are contributing to and aligning with wider initiatives	<ul style="list-style-type: none"> • Throughout • Reference to Smart System Strategy, CDBB, Open Data Institute
11	Energy system digital architecture needs and associated delivery plans	<ul style="list-style-type: none"> • Section 4: Build a data-driven organisation • Data foundation programme
12	Preferred corporate digital and data best practices, such as to realise user needs-driven data visibility, data interoperability and implementation of the EDTF recommendation that energy system data is presumed open	<ul style="list-style-type: none"> • Throughout • Presumption of openness, critical data assessment, and user engagement • Data & Digitalisation Strategy Framework

9. Appendix 2 – EDTF recommendations alignment

#	EDTF Recommendation	How have we covered it
1	Digitalisation of the Energy System	<ul style="list-style-type: none"> • Throughout • See Strategic Framework, Section 2: Context, and Section 3: Our Ambition
2	Maximising the Value of Data	<ul style="list-style-type: none"> • Section 6: Open our data • Data catalogue and strategy for making our data available
3	Visibility of Data	<ul style="list-style-type: none"> • Section 4: Build a data-driven organisation • Section 5: Open our data • Cadent are exploring channels (including external channels) to publish data
4	Coordination of Asset Registration	<ul style="list-style-type: none"> • Section 5: Engage with users • Working with our partners and stakeholders on future industry wide standards • Industry wide initiatives to be incorporated into strategy when details become clearer
5	Visibility of Infrastructure and Assets	<ul style="list-style-type: none"> • Section 5: Engage with users • Data will be made available to a high standard. • Industry wide initiatives to be incorporated into strategy when details become clearer