

Our Digitalisation Action Plan

Stakeholder update December 2022



Our Digitalisation Action Plan – December 2022 update

Our Digitalisation Action Plan is now reflecting the progress we have made in our digitalisation journey throughout the second half of 2022.

This document provides details on steps we are taking towards fulfilling our RIIO-2 commitments through digitalisation.

We continue to invest according to four Digital Themes we defined in our Digitalisation Strategy and welcome this opportunity to provide transparency and increase the visibility of our work to Stakeholders.

Our Digital Themes



Enhance the experience of our customers



Simplify the life of our employees



Optimise our operations



Explore and Innovate

Optimising Delivery Capability

Digitised Data Capture



Who will benefit



Domestic Customers



Business Customers



Customer Service



Field Engineers



Network Planning

Streamline processes and transform field operations

Service we use to provide

Cadent Field Operations teams used aged technology for data capture in the field related to different job types (e.g. gas escape, repair, survey). This software was inflexible to the needs of the Field Operatives lacking key capabilities such as capturing photographs and creating new surveys quickly and the software is approaching the end of its useable life. Moreover, multiple, siloed systems were used for field data capture that impact overall data quality.

Back Office Operations teams used a different technology for scheduling and assigning of work to field operatives. This software was missing key capabilities such as the ability to track job durations and allow customers to book their own appointments. Furthermore, Cadent Operations is very segmented and it is difficult to assign different types of work to the different subdivisions of Operations (e.g. Emergency, Repair, Connections, Maintenance) which creates resource inefficiency.

Service we provide today

Field Service Management (FSM) was an investment that has replaced end of life IT systems used by Cadent Field Operations teams (Emergency, Repair, Maintenance and Connections). The software has now been replaced with a market leading product that brings many opportunities for future digital capabilities.

Field Service Management now allows us to:

- Enable new capabilities such as customer appointment booking and streamlined field data capture. These capabilities will enhance both the customer and employee experience of working with Cadent.
- Provide a simplified technology offering to our field operatives and increased quality of our operation data.
- Allow back office Operational teams to allocate any type of job, to any field operative, anywhere, thus optimising how operatives' working time is used.

Delivery Plan – Upcoming milestone

- **Milestone: North London Field force field data capture pilot**
 - Milestone delivery: June 2022
 - Success measure: Pilot shows positive results the tool is used day to day and criteria for full roll out to other networks is met
 - Status

Planned	In progress	Completed
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- **Milestone: Roll out field data capture tool to the whole of Cadent**
 - Milestone delivery: July 2022
 - Success measure: The solution is utilised on a day to day basis, support activities transfer from project to business as usual and exit criteria is met and signed off
 - Status

Planned	In progress	Completed
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- **Further milestones:** We expect to articulate further milestones for this in the second half of 2023/24

Strategic intention:

While we are fine tuning the performance and features of the new solution. We will start developing a long term roadmap that will seek to optimise and streamline our data capture solutions landscape. Additionally, we will consider how best to decommission the old systems and technology that has now been replaced.

Using data to manage the integrity of our assets

Deliver a digitised system for risk based evaluation.



Who will benefit



Field Engineers



Network Planning

Bringing together disperse data sources to provide insights enabling data driven decisions which are subjective to the degree of risk identified.

Service we provide today

What we have done so far

The introduction of Pipeline Safety Regulations 1996, resulted in several solutions being introduced for Cadent's LTS pipelines to demonstrate compliance.

It is proving increasingly time consuming to bring all dispersed data sources into one place to quickly analyse threats and the risk level on individual pipelines. Consequently, it is becoming onerous for Cadent to ensure optimal decision making in relation to decisions on extending the life of our assets, detecting impending failure and include external impacting factors such as flood risk etc.

Service in the future

What we will have in place

A solution that will allow us to overlay various information captured or calculated as part of our operational activities into one repository to allow easier data driven insights and a more accurate risk-based approach to maintain these assets. This will see:

1. Reduction in reactive maintenance of asset failures
2. Improvement in asset and equipment reliability
3. Optimised asset maintenance programmes and reduced frequency of cyclic maintenance intervals
4. Provide a systematic process for characterising the risks on our assets.
5. Prioritised investments and resources to optimise efficiency in our operations
6. Reduced disruption from our maintenance activities

How the service will be accessed

The service will be accessed anywhere, anytime by any device to all Cadent Operations, External Contractors and Stakeholders who will be supporting us to innovate as part of our Future of Gas Strategy.

Delivery Plan – Upcoming milestones

- **Milestone:** Deployment of 'Pipeline Integrity Management System' with high and intermediate pressure for East of England network

Milestone delivery:	August 2022
Success measure:	Users have access to base asset information
Status	Planned In progress Completed

- **Milestone:** Risk Methodology information available for East of England network.

Milestone delivery:	December 2022
Success measure:	Risk Methodology and Risk Score allocation available in the solution
Status	Planned In progress Completed

- **Milestones:** Solution available in North West and North London network with west Midlands to be planned in January 2023.

Milestone delivery:	January 2023
Success measure:	Users have access to North West asset information
Status	Planned In progress Completed

- **Future Milestones:** Solution available in all networks by end of Feb 2023 and additional data types to be added to the solution specified. Cadent will be looking to migrate the Cathodic Protection data set which identified if metallic mains have been compromised into the proposed solution. NGN is already leading on this and Cadent will review the lessons learnt and proactively resolve any issues they encountered as part of their work for a leaner migration.

Risks/Mitigations:

- There is a dependency on the other projects, such as GIS solution upgrade, and capacity of staff which could delay some of the milestones being delivered to plan. Our risk methodology information milestone has seen delays due to aligning operational engineers to agree the risk methodology thresholds, priorities and matrix, this has had a knock-on effect with our milestone to making the solution available in our other networks. Similarly we experienced delays in obtaining data from a 3rd party vendor due to resource constraints.
- A decision was made that the project take extracts of the data from Cadent core system for the pipelines in order to mitigate any delay. Whilst this is a traditional waterfall project, the deliverables have been divided into key MVP's (Minimal Viable Product) which releases a working version and value can be realised by the business using AGILE methodology, which can and does result in some milestones being delayed. Our Networks' Go live is incremental to and includes the outputs of the risk methodology and migrations of Cathodic Protection results for each Network.
- There is a risk that Cathodic Protection data is incorrect and the mitigation is to review lessons learnt from NGN who are already leading on this and proactively resolve any issues they encountered as part of their work for a leaner migration.

Digital Twin – Network Pressure and Control Management

Augment human decision-making and identify value for customers by having a more intelligent operation.

Digital twin use case will deliver better understanding of our energy consumption at a more granular and local level.

Who will benefit



Domestic Customers

Business Customers

Field Engineers

Energy Industry and Other Utilities

Service we provide today

What we have done so far

The current Pressure Monitoring and Control systems in Cadent is used to manage a two tier system:

1. The intermediate and high pressure networks are managed by a sophisticated powered telemetry system.
2. The low and medium pressure networks are managed by 10,000 controls and 1,000 mobile dataloggers.

Both systems are independent but provide critical information to control and manage security of supply to our customers, reduce environmental emissions and maintain system integrity and provide pressure data to validate the planning models.

Service in the future

What we will have in place

The creation of a virtual representation to simulate improved network pressure and control will:

1. Provide insight to assist in our commitment on efficiency gains by optimising network efficiency (enables system analysis) using large data set from sensors.
2. Enable better planning (e.g. Future of Gas) by modelling potential connections and network constraints.
3. Accelerate emergency responses and reduce supply interruption frequency and duration.
4. Optimise operational efficiency of field services, providing richer field intelligence to make decisions.
5. Enhance Cadent's operational intelligence and agility of decision making – breaking of operational and data silos across the network and organisation, increasing visibility of and access to data on the network for employees and stakeholders – enable better whole systems coordination.
6. Improve asset performance (do more with less), by monitoring the behaviour of the asset and enriching data from any maintenance activities.

How the service will be accessed

Cadent will look to build Digital Twin(s) in an agile way, wherever possible. This means that small proof of concepts (POC) will be established and run in parallel with the current processes and technologies.

Delivery Plan – Upcoming milestones

- **Milestone:** Engineering and cyber-security assessment for available technology options
 - Milestone delivery: September 2022
 - Success measure: the data collected is deemed feasible and accurate and the mechanism to collect the data is fit for purpose
 - Status: Planned In progress Completed
- **Milestone:** Decide on the most suitable use case for Proof of Concept based on available funding and technology required.
 - Milestone delivery : March 2023
 - Success measure: detailed use case prepared for design
 - Status: Planned In progress Completed
- **Milestone:** Use case design selected This will be aligned to the cadent approved Strategy
 - Milestone delivery: June 2023
 - Success measure: Use cases and benefits demonstrated and approved
 - Status: Planned In progress Completed
- **Further Milestones:** Based on the outcomes of the POC and the identified use cases we are planning to conduct the gap analysis and explore the technologies on the market to determine the best way of advancing on developments for Digital Twin.

Risks/Mitigations:

- There has been an organisational change in Cadent and as resources are settling into the new roles there has been limited capacity to initiate the Strategic Roadmap for Cadent. This has in turn caused some delays to our two open milestones.
- We have however, progressed the collation of details for the use cases and some of the challenges in situ for Cadent and we will conduct workshops and formalise a strategy on the preferable POC in the coming months.

Transforming our people services

Investing in HR Transformation Technologies



Who will benefit



Customer Service



Supply Chain



Network Planning



Field Engineers

Systemisation and automation of manually intensive processes that exist within our current process suite

Service we provide today

Service we provide today

- Multiple solutions with disparate access to our HR processes/HR systems;
- Offline talent management processes which makes succession planning challenging.

What we have done so far

As part of the investments in our internal capabilities we have already implemented some solutions that reduce friction and ease accessing and understanding of our HR records.

Service in the future

What we will have in place

As part of the further improvement, we are delivering:

- Online tool to manage HR cases;
- Self-service access for employees in relation to their HR records;
- Reporting solution to increase employee productivity and increase data driven decision making;
- Automation of the processes for our HR teams;
- Dedicated solution for delivering our People Strategy and Talent Management processes.

How the service will be accessed:

Our HR solutions are going to be available via all Cadent User devices.

Delivery Plan – Upcoming milestones

Completed milestones: Implemented Zoho Case Management, Implemented S4 for Payroll CD2, Established Power BI for HR reporting

- **Milestone: SuccessFactors Phase 1 implementation (PMGM, Compensation and Succession Modules):**
 - Milestone delivery date: July 2022
 - Success measure: Technical Go-Live achieved
 - Status

Planned	In progress	Completed
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- **Milestone: SuccessFactors Phase 2 (Employee Central, Recruitment, Onboarding, Learning) delivery partner selected:**
 - Milestone delivery date: August 2022
 - Success measure: Partner selected
 - Status

Planned	In progress	Completed
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- **Milestone: SuccessFactors Phase 2 deployed:**
 - Milestone delivery date: September 2023
 - Success measure: Deployment Go-live achieved
 - Status

Planned	In progress	Completed
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Risks/Mitigations:

The current Go live date for Phase 2 is an assumption and will be revisited once a more detailed implementation plan is prepared.

The timeline for deployment of SuccessFactors has slipped by one month due to impact of other projects and resourcing on HR Team.

Automation of Manual Activities

Robotic Process Automation (RPA)



Who will benefit



Field Engineers



Network Planning

Ambition to automate manual processes resulting in process efficiency and removal for the potential of human error

Service we provide today

What we have done so far

We have completed an automation initiative using technology as a proof of concept; this proved that automation tools can add benefit to our teams and allow our employees to increase the time spent on value-add tasks, decrease processing times, error-proof parts of our processes and increase the consistency and assurance of the produced outputs.

How to access our current service

The automation capability was created to transact permit charges from Highway Authorities that Cadent incurs during our operational activities.

Service in the future

What we will have in place

We are exploring other processes where automation can add further value to our business. Cadent will deliver a right sized tool to enable automation to be implemented easily at pace and with the appropriate support and controls in place. The ability to create processes that leverage the automation technology is something our colleagues will be able to access themselves without the need for heavy IS technical support or management. To enable this the appropriate controls, training and policy will be created.

How the service will be accessed

The ability to create automated processes will be delivered using the Microsoft Power Platform.

Delivery Plan – Upcoming milestones

▪ Milestone: Feasibility and Use Case Analysis

- Milestone delivery: March 2023
- Success measure : Confirmation that RPA would deliver a benefit that outweighs the cost to deliver
- Status:

Planned	In progress	Completed
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▪ Milestone: Process design for building of RPA BOTs

- Milestone delivery: June 2023
- Success measure: User acceptance testing of the platform
- Status:

Planned	In progress	Completed
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▪ Milestone: Implementation of selected use cases and Training delivered to affected users

- Milestone delivery date: December 2023
- Success measure: Reduction in time to transact a process, reduction in errors/ bad data, consistency in process
- Status:

Planned	In progress	Completed
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Risks/Mitigations:

There is a risk that the business cases for RPA might not be appropriately identified. This risk is mitigated by educating our people on the appropriate application of RPA. There is also a risk that RPA can be applied where system changes should be made; this is mitigated by applying controls in our process that assess each case for RPA.

Due to competing business priorities and dependencies, we have needed to divert resources on to other projects which has subsequently impacted on delivery timescales therefore we have adjusted our milestones.

Evolution of mature Smart Network

Oil and Gas exploration have seen significant operating efficiencies and asset reliability improvements from collecting more granular data, this will provide opportunity for Cadent to improve asset reliability for our Stakeholders.



Sensor telemetry and smart devices to transform the way in which we collect data and deploy commodity sensors across the network.

Who will benefit



Government Authorities and Policy Makers



Network Planning



Energy Industry and Other Utilities

Service we provide today

What we have done so far

The commitment to invest in hydrogen networks and hydrogen blending, brings complexity in operation and billing that our current network is not designed for. Hence, Cadent need to obtain greater insight in the demands from our 11.8 million customers. Currently Cadent have approximately 1,000 loggers which are placed across various strategic points in our network that inform our network modelling tools used to create network designs and operating strategies. There is a growing need to collect more information and adopt new types of solutions and devices deployed within our network.

Service in the future

What we will have in place

The new low-cost smart devices and sensors will collect new data, at different levels/pressures of the network or on new assets and this will enable Cadent's maturity of the smart network by;

1. More real time operation of the network;
2. Intelligent decisions on capacity and our investments;
3. Intelligent asset management decisions such as predictive maintenance;
4. Enable design of all aspects of hydrogen/green gas transition in preparation to create safety and feasibility case for hydrogen;
5. Opportunity to create an asset portfolio of IoT connected devices with alternative communication as moving to agnostic devices will enable a more competitive choice, eliminating single source supplier risks.

How the service will be accessed

The additional data from these sensors will be introduced to increase efficiency by implementation of RPA, Digital Twin and Mobile Application use cases that can be implemented across the key processes.

Delivery Plan – Upcoming milestones

- **Milestone 1:** Complete Proof of Concept (PoC) to roll out new sensor and observe the data from our partner's platform. The sensors have been installed in Stoke areas and are being monitored for next 9 months.
 - Milestone delivery date: August 2022
 - Success measure : Confirmation if new sensors provide opportunity to Cadent to decrease the cost and risk associated with collecting sensor data.
 - Status

Planned	In progress	Completed
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- **Milestone 2: Installation of Street Level pressure sensors across selected areas of our network**
 - Milestone delivery: March 2023
 - Success measure: Successful installation and collection of sensor data
 - Status

Planned	In progress	Completed
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- **Further milestones – exploring available options and funding for acceleration of work:**
 - Exploring opportunities for leveraging funding from Shropshire and Herefordshire Grant to support Net Zero.
 - Shaping plans for installation of 600 smart District governor sensors and across the network.
 - Assessment of opportunity to install sensors around electricity power generation sites that will allow integration.

Risks/Mitigations:

Within this rapidly developing technology we recognise that data collection cost, additional data storage and processing needs to be better understood from the cost benefit perspective. Additionally, the cyber security considerations and impact of the additional insight from data will need to be weighed against our operating strategies and investment decisions.

Using Data to improve our Safety & Sustainability

Implementing a new Incident Management System (IMS) and Environment Reporting System (ERS)



Who will benefit



Regulatory Reporting



Business Customers



Supply Chain



Field Engineers



Energy Industry and Other Utilities



Low Carbon Connecting Parties

Expanding our Safety and Environment data literacy

Service we're moving from

Access to our current service

The Safety, Health, Environment and Security team own and manage various critical processes that enable us to comply with legislation and complete Cadent work efficiently and safely. Part of these processes include a need to:

1. Collate, analyse and report against hazards, near misses and incidents from across the business
2. Collate, analyse and report against Environmental performance data.

The system that was in place up until recently for incident reporting was a manual process that involved colleagues from across the business phoning a call centre and then other colleagues entering data for them. For Environmental reporting, this was also a manual process which involved colleagues capturing, collating and analysing data from multiple sources and spreadsheets.

New Service

What we will have in place

A self-service system available to employees, contractors and third parties to capture and record real time data enabling timely access to the right information. Having a holistic view of our safety data will enable us to better protect our people, our assets and the communities we serve. The system will support Cadent to deliver high standards of environmental performance, enhance the environment, and seeking innovative, sustainable ways to lighten our environmental footprint.

The system will provide interactive dashboards with informative data, future trends and analysis to drive action. This will enable data manipulation and stratification down to levels where action and improvements can be identified and communicated. This system will be a key enabler to deliver Cadent's environmental commitments throughout RIIO-2 and beyond, and support delivery Regulatory Reporting Process and the new Annual Environmental Report.

Delivery Plan – Upcoming milestones

- **Milestone:** Detailed Solution Design
 - Milestone delivery date: January 2022
 - Success measure: Technical approval of the detailed solution design
 - Status:

Planned	In progress	Completed
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- **Milestone:** User Acceptance Testing (UAT)
 - IMS: Milestone delivery date: Delayed to September 2022
 - ERS: Milestone delivery date: Delayed to January 2023
 - Success measure: UAT signed off
 - IMS Status:

Planned	In progress	Completed
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 - ERS Status:

Planned	In progress	Completed
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- **Milestone:** Training and Go-Live
 - IMS Milestone delivery date: Delayed to October 2022
 - ERS Milestone delivery date: Delayed to February 2023
 - Success measure: Deployment of the Solution in production environment
 - IMS Status:

Planned	In progress	Completed
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 - ERS Status:

Planned	In progress	Completed
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Better Supporting Our Customers in Vulnerable Situations

Encapsulating how to support Priority Service Register (PSR) customers and those in vulnerable situations whilst automating the delivery of the necessary supporting services



Aiming to deliver a fully integrated application for use when assisting our customers when in a vulnerable situation

Who will benefit



Field Engineers



Customers in Vulnerable Situations



Supply Chain

Service we provide today

What we have in place

Our engineers rely on published guidance and personal knowledge to support customers in vulnerable situations.

This means there are further improvements that can be made to increase consistency of our safeguarding services to customers, standardisation of support measures we provide relating to customer need and traceability of the support equipment we make available to customers when in a vulnerable situation due to our works.

Service in the future

We encapsulated the guidance and knowledge within a single application that allows our engineers to leverage this information easily and consistently in order to best assist our customers impacted by our works when in an off-gas situation. We aim to integrate this Personal Welfare Decision Tool with logistics providers so once a need is identified within the application the required items are ordered, tracked and monitored as part of the process.

What we will have in place

Fully automated safeguarding support tailored to the needs of our customers. We aim to integrate with our existing applications and with future providers via an API based application that enables automation, traceability and security in the delivery of our support PSR customers, or those in a vulnerable situation.

How the service will be accessed

The service will be accessed via a Web based User Interface by our Field Force.

Delivery Plan – Upcoming milestones

- Milestone: Deliver a limited trial of Personal Welfare Tool to West Midlands network**
 - Milestone delivery date: August 2022
 - Success measure: App in use by engineers in West Midlands network
 - Status Planned In progress Completed
- Milestone: Deliver Personal Welfare Tool to all networks**
 - Milestone delivery: June 2023
 - Success measure: App in use by engineers in all networks
 - Status Planned In progress Completed
- Milestone: Enhance Personal Welfare Tool to provide delivery of services**
 - Milestone delivery: December 2023
 - Success Measure: Cadent network information available as part of the platform
 - Status Planned In progress Completed

Risks/Mitigations:

This requires full cross-partner collaboration. In order to hit each milestone, there are dependencies upon delivery by separate partners. The results of the trail completed in August 2022 highlighted some application performance issues, which are now being addressed to ensure suitability of the tool for our Field Engineers to meet the needs of our PSR customers.

Empowering Customer Self Service Through Technology

Using guided video capture to enable customer self-survey for new gas connections



Who will benefit



Energy Industry and Other Utilities



Field Engineers



Domestic Customers

Trialling video capture in our new connections space within the West Midlands to simplify the survey process

Service we provide today

At the moment surveys always require a physically present Surveyor and our customers have to be available when we come to survey. There are wait times for this service and currently no way for our customers to opt to 'self-survey' in their own time, avoiding the potential inconvenience of a survey visit.

What we have done so far

Our new connections process is made available to our customers currently via telephone or email.

Service in the future

Cadent, in conjunction with VYN is developing a trial of a self-survey video capture application for use instead of a visit from a surveyor to the property. This is a trial of the concept and implementation of this technology and approach. The application is in development and trial phase. As such it is available to pre-selected customers and surveyors within the West Midlands region. Upon the completion of development and of a successful trial we will look to expand the scope beyond the West Midlands.

What we will have in place

A guided video survey tool for new gas connections that has been developed and trialled with both our customers and our engineers and allows our customer to self serve if so desired.

How the service will be accessed

The service will be accessed via an app and via a web application.

Delivery Plan – Upcoming milestones

- **Milestone: Develop the self-survey guided video capture application**
 - Milestone delivery date: July 2021
 - Success measure: Provision of trial to selected customers/surveyors
 - Status

Planned	In progress	Completed
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- **Milestone: Trial the self-survey guided video capture application**
 - Milestone delivery date: August 2021
 - Success measure: Provision of trial to selected customers/surveyors
 - Status

Planned	In progress	Completed
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- **Milestone: Phase 2 of the video capture application**
 - Milestone delivery date: June 2023
 - Success measure: Expansion of the Phase 1 capabilities.
 - Status

Planned	In progress	Completed
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Risks/Mitigations:

This Proof-of-Concept (PoC) investment has been extended to include phase 2 of the video capabilities including uses cases in Mains Replacement and Customer Issue Reporting. This provides an opportunity to explore the benefits of this capability beyond the initial PoC. There is a risk at the end of the PoC, the decision could be made not to proceed, or it will be superseded by other investments.

Enhanced Customer Engagement Channels

Delivering a new channel of engagement and communication with our customers



Who will benefit



Customer Service



Domestic Customers

Leveraging technology to enable our customers to engage with us in ways not previously possible

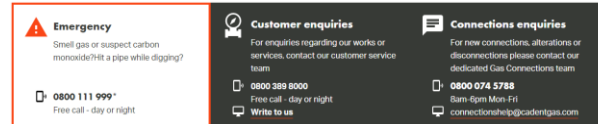
Service intent

Intent and approach to the project

Cadent does not have a customer facing app to allow for engagement and communication. We interact with our customers via the telephone or e-mail. We realised there was a need to explore alternate channels of communication through app-based solutions.

How we proposed service access

The contact details and methods were available on the Cadent website.



Key challenges and learnings

Utilising the Google Cloud Platform, we built a trial application that allowed engagement between Cadent and our customers from a mobile application. A PoC application was trialled on a limited basis internally and with selected customer groups.

Challenges

We expected there to be some manual intervention with the app in the early days of a PoC and addressed this as a mitigated risk.

Learnings

While the application provided some useful functionality, it was particularly labor intensive at the back end, requiring a great deal more manual intervention than was justified when considering the low volumes of customers using the app.

Delivery Plan – Upcoming milestones

- **Milestone: Deliver a limited trial of an App to West Midlands network**
 - Milestone delivery date: January 2021
 - Success measure: App in use by engineers in West Midlands
 - Status: Planned In progress Completed
- **Milestone: Deliver App to all networks**
 - Milestone delivery: July 2021
 - Success measure: App in use by engineers in all networks
 - Status: Planned In progress Completed
- **Milestone: Update App to integrate delivery of services**
 - Milestone delivery: December 2022
 - Success Measure: Cadent network information available as part of the platform
 - Status: Planned In progress Cancelled

Outcome of PoC

When we considered the significant manual work required against the low volume of users using the app, the PoC was not considered a viable option at this time as it did not deliver the value expected. Therefore, the PoC was parked after Milestone 2 and we will continue to review our future options in this space.

Presumed Open Data – Data Triage Process

Design of a centralised process to standardise all data sharing requests and assist the Data Users with data exploration.



Who will benefit



Energy Industry and Other Utilities



Government Authorities and Policy Makers



Low Carbon Connecting Parties



Network Planning

Making access to our Data easier

Service we provide today

What we have done so far

There are currently two channels available for our stakeholders to request Cadent data.

1. Through Energy Network Association's (ENA) Energy Data Request Tool which can be accessed via their website: <https://www.energynetworks.org/industry-hub/databases>
2. By contacting our dedicated mailbox account: box.DataGovernance@cadentgas.com

Service in the future

Opening our data helps to support a more modern, digitalised energy system by creating greater data visibility. This makes our data available to a much wider audience for more innovative uses when combined with other data. This is essential for the continued decarbonisation of the energy system, delivery of net zero emissions and improvements in efficiencies.

What we will have in place

Our ambition is to create a more visible and dedicated area on Cadent's website that allows our Customers and Stakeholders to understand the data that they can access and the process that supports this.

How the service will be accessed

The service will be accessed via a Cadent webpage.

Delivery Plan – Upcoming milestones

- **Milestone: Open Data Request Management Tool live**
 - Milestone delivery: April 2022
 - Success Measure: Tool in place for Cadent staff to effectively receive, manage, and record all requests made
 - Status: Planned In progress Completed
- **Milestone: Review of the type, volume and frequency of the data sharing requests to decide on the best way of automating the process.**
 - Milestone delivery: December 2022
 - Success Measure: Proposed solution articulated to the relevant internal steering group.
 - Status: Planned In progress Completed
- **Milestone: Prepare gap analysis to understand the work required to communicate with stakeholders on the data sharing process via Cadent website.**
 - Milestone: April 2023
 - Success Measure: Gap analysis completed.
 - Status: Planned In progress Completed

Risks/Mitigations:

Cadent has decided to invest in open data portal. Therefore, communicating the process about data sharing via Cadent's website needs to be reviewed in synchronisation with our open data portal development.

Open Data Portal

Digital service to make Cadent data available to stakeholders.



Who will benefit



Energy Industry and Other Utilities



Government Authorities and Policy Makers



Low Carbon Connecting Parties



Network Planning

Making our Data Assets visible

Service we provide today

What we have done so far

Our data is being made available to our stakeholders and partners as part of a reactive process. The relevant requests, after triaging, are being made available via a dedicated file exchange solution, on demand.

This process, while allowing us to securely make Cadent information available, does not support our stakeholders in understanding the data that we can make available. As the relevant Data Assets are bespoke per each request, the preparation of those Assets and relevant supporting information impacts the ability to serve the Data Assets quickly.

Service in the future

Our stakeholders require more visibility of Cadent's Data Assets and the opportunity to self-serve the Data Assets. The Data Assets should be easily accessible and searchable.

What we will have in place

We plan to invest in a digital service that presents the Data Assets that are available to our stakeholders. The service will allow stakeholders to search and understand our Data Assets but also provide a better opportunity to contact us if the Data Assets of interest to them are not yet available through the digital tool and this in turn will help inform our roadmap.

How the service will be accessed

The service will be accessed via a dedicated webpage.

Delivery Plan – Upcoming milestones

- **Milestone: Prepare a gap analysis to understand the scale of required investment.**
 - Milestone delivery: November 2022
 - Success measure: Prepare a conceptual architecture of open data portal service.
 - Status: Planned In progress Completed
- **Milestone: Review the available options to secure the budget for development of the service.**
 - Milestone delivery: March 2023
 - Success Measure: Investment path agreed.
 - Status: Planned In progress Completed
- **Next Milestones:** Next milestones will be determined based on the funding decision that will determine the pace of the initiative design and development.

Risks/Mitigations:

The outcome of the funding review through our regulatory framework will likely not be known until summer 2023 but Cadent will explore alternatives to progress with the investment.

My Heat – domestic heating model

Review and Appraisal of the MyHeat domestic heating model



Who will benefit



National and Local Government and Policy Makers



Network Planning

Enabling easier decisioning on net zero heat solutions in homes

Service Intent

Intent and Approach to the Project

This project aimed to develop a web-based tool that could be shared with regional bodies, including local authorities, to support a quantified assessment of decarbonisation pathways and technology selection.

The tool was intended to provide flexibility for input assumptions and detailed outputs at different levels of regional granularity.

The model outputs include cost optimised energy efficiency investments, replacement low-carbon heating systems, costs and related statistics

Key Challenges & Learnings

The decision has been made to suspend this tool and cease development at the current time due to challenges identified during testing including plans on how it would be deployed.

- Without substantial further investment, the model was unable to run sufficiently quickly - run times of c.2- 5 minutes were deemed necessary with actual run times between 2 and 24 hrs
- The focus on heat leaves a number of important gaps around other sources of decarbonisation that the model was not scoped to address and so the model could not fully fulfil the intended engagement role
- Model design dynamics are unable to constrain deployment of low technology readiness hybrid systems deemed unlikely to see mass roll out by both internal and external stakeholders – this challenged the viability of all model outputs
- On review of modelling approaches, the defined model was perceived as less able to provide external stakeholder confidence in outputs than directly sourcing outputs from authorities third parties which is now the approach we are taking

The model has been archived with full documentation and a scope to remedy key issues identified here. However, it is not currently expected that the model will be deployed for future analysis

Delivery Plan – Upcoming milestones

▪ Milestone: UI development

- Milestone delivery date: December 2021
- Success measure: Internal Sign-off of the model and UI
- Status:

Planned	In progress	Completed
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▪ Milestone: User Acceptance Testing (UAT)

- Milestone delivery date: March 2022
- Success Measure: Acceptance criteria met
- Status:

Planned	In progress	Completed
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▪ Milestone: Model Deployment Plan

- Milestone delivery date: Cancelled
- Success Measure: Agreement on model usage and high-level deployment plan prepared
- Status:

Planned	In progress	Cancelled
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▪ **Future Milestones:** Collaboration leveraging the Hydrogen System Modelling (see next slide) will address the ‘gap’ created by the closure of the MyHeat project.

Outcome from UAT:

The User Acceptance testing has revealed that the proposed tool is not meeting the stakeholders’ criteria and there are more suitable alternative available. The programme of analysis conducted to forecast future scenarios for gas, hydrogen and electricity demand and associated network design will be subject to increased coordination and governance to ensure appropriate planning, development and delivery.

Hydrogen System Modelling Tools

Enable the detailed design of the transition plan for 100% hydrogen.



Who will benefit



Government Authorities and Policy Makers



Network Planning



Energy Industry and Other Utilities

Enable robust decisioning and plans for hydrogen in the future energy system

Service we provide today

What we have done so far

Cadent and the other Gas Distribution Networks are currently working with BEIS to build the evidence for using 100% hydrogen in our gas networks and buildings. We are involved in several hydrogen projects in partnerships with the energy sector. The three main areas we lead on are blending, industrial power and decarbonising heavy transport and more details are available at: <https://cadentgas.com/future-of-gas/hydrogen>

The Net Zero team's focus is on supporting these projects, and the evidence that supports 100% hydrogen through two key areas are:

- **System Transformation & Network Modelling** – Where we provide the feasibility and network requirements to transition Cadent's existing natural gas network into a 100% hydrogen network, through the use of digital modelling tools. Cadent have just progressed two upgrades within our GBNA system to help support the hydrogen system modelling, with the gas volume upgrade now at User Acceptance Testing (UAT) and the Sectorisation upgrade at development stage.
- **Hydrogen Demand Modelling** – We developed our own internal demand model that supports Cadent in producing our own hydrogen and net zero scenarios.

Service in the future

What we will have in place

Through the System Transformation project Cadent will have hydrogen viable network models to support the transformation of the gas network to a blend of natural gas & hydrogen, and eventually to 100% hydrogen. This will be done through GBNA supported by the upgrades to the system. In addition, developing our Hydrogen Demand Modelling into a system-based digital interface allowing Cadent to model future energy scenarios without the need for excel; supporting the Net Zero transition in an easy and consistent format. Some new milestones have been added to support this.

How the service will be accessed

The outputs of the work will be directly shared with BEIS as part of System Transformation.

Delivery Plan – Upcoming milestones

- **Milestone: GBNA Volumes Upgrade UAT**
 - **Milestone delivery date:** January 2023
 - **Success measure:** GBNA can produce volume information at sector without impacting system functionality
 - **Status:** Planned In progress Completed
- **Milestone: GBNA Sectorisation Upgrade**
 - **Milestone delivery date:** April 2023
 - **Success measure:** Automation of the sector creation process based on customer parameters
 - **Status:** Planned In progress Completed
- **Milestone: Discovery phase of digital tool based on existing excel process for modelling future hydrogen demand**
 - **Milestone delivery date:** June 2023
 - **Success Measure:** Acceptance criteria met
 - **Status:** Planned In progress Completed

Risks/Mitigations:

None identified at this stage.

Biomethane Smart Control

Investigate ways of decarbonising country's gas networks



Who will benefit



Government Authorities and Policy Makers



Network Planning



Energy Industry and Other Utilities

Collaboration initiative optimise pressures and compressor operation for biomethane injections

Service we provide today

What we have done so far

We've been supporting increasing levels of biomethane onto our networks for several years now and it's great to see others sharing the excitement about this low carbon gas. More details are available at: <https://cadentgas.com/future-of-gas/biomethane>

Under the OptiNet initiative we collaborate with smart energy technology company and Wales & West Utilities to understand how intelligent control and compressor technology can be used to maximise flows from Biomethane Sites.

To find out more about Biomethane Sites read: <https://cadentgas.com/nggdwsdev/media/Downloads/Biomethane/Biomethane-2022-Update.pdf>

We have investigated innovative ways of boosting the capacity and enhancing control.

Service in the future

What we will have in place

The aim of Biomethane Smart Control project is to develop capability to optimise pressure management and compressor operation as we see increasing levels of biomethane connecting to our network, alongside the installation of new compressors to manage flows.

To enable efficient connection of new biomethane plants to our network, we expect to see compressor installations to move gas up through our pressure tiers. How these compressors are operated alongside other pressure control equipment will play a significant role in enabling more green gas into our networks. This could then shape how we look at releasing capacity going forward.

Delivery Plan – Upcoming milestones

- **Milestone: Learnings from OptiNet project**
 - **Milestone delivery date:** March 2023
 - **Success measure:** validation of the concept of enabling increased biomethane flows by compressing gas on the network
 - **Status**

Planned	In progress	Completed
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- **Future Milestones:** Following the OptiNet project, we will assess ways to deploy within grid compression and smart network control to support increased biomethane injection as part of our usual business operations. These solutions will form part of the suite of available options to unlock capacity in areas of our network that have capacity restrictions.
- With the Green Gas Support Scheme (government financial subsidy mechanism) having a small window of opportunity for investors, Cadent is exploring further deployment opportunities for Reverse Compression with a number of our customers together with the optimal operating model.

Risks/Mitigations:

Project continuation is reliant on conclusions from OptiNet project and funding from Ofgem through our RIIO-2 Uncertainty Mechanism. Covid has caused significant delays to the project, most notably for the manufacture of the compressor. A process to help socialise the cost of compressors and other entry reinforcements will also be vital to remove a key barrier to new biomethane connections.

Baseline Carbon Footprint in IT

Assess the opportunity to drive sustainability through the IT Supply Chain



Collaborate and learn from mature vendors to design and implement sustainable IT vendor strategy

Who will benefit



Government Authorities and Policy Makers



Energy Industry and Other Utilities



National and Local Government and Policy Makers



Supply Chain



Business Customers

Service we provide today

What we have done so far

Currently the IT sector in the UK is immature with respect to acceptability levels for carbon footprint, as well as reporting parameters.

The Carbon Trust has categorised emission types into three different Scopes, and the IT industry has adopted Scope 3 as the most relevant for reporting the fugitive emissions related to services they supply to Cadent.

Cadent is engaging with its main IT suppliers to encourage data gathering, establish monitoring frequency, reporting metrics and where available, document net zero initiatives.

Cadent is investigating the evidence for renewable energy claims with respect to carbon credits, carbon offsetting, green energy purchase agreements and REGO certificates.

Service in the future

What we will have in place

The ambition is to determine the minimum standards all IT suppliers will need to meet to qualify for future tenders. The minimum threshold will require the use of certificated carbon offsetting initiatives as well as Green Power Purchase Agreements as components of the supplier's strategy. Consideration needs to be given to SME suppliers, and whether options to meet Cadent's threshold are realistic

Cadent aims to set Science-Based Targets for Cadent's suppliers as part of the procurement process, with contractual obligations and pecuniary consequences for below-target performance, which will underpin IT sector maturity on how Net Zero is achieved.

Further step would entail reporting on additional metrics e.g plastic waste (handsets/laptops), water usage (for cooling datacentres) and fuel emissions from supplier-Cadent business/logistics.

Cadent will support key suppliers to interact with the resources contained in the Sustainability School and their maturity and progression through the engagement levels (bronze to gold).

Delivery Plan – Upcoming milestones

Milestone:

- Milestone delivery date: February 2023
- Success measure: Widen study group to encompass 60% of IT vendors by Cadent spend

Status: Planned In progress Completed

Milestone:

- Milestone delivery date: June 2023
- Success measure: Widen study group to encompass 80% of IT vendors by Cadent spend

Status: Planned In progress Completed

Milestone:

- Milestone delivery date: December 2023
- Success measure: Increase number of metrics reported to include water usage and emissions related to professional services.

Status: Planned In progress Completed

Risks/Mitigations:

At present, inputting of data is manual and cannot be sustainable every month once 80% of the IT vendor base has been included. There is an inconsistency in monitoring frequency between the vendors. Cadent to decide how frequent reporting is required, to factor this in.

Open to You

Keeping the conversation flowing



Being open and transparent is part of our culture, we would welcome hearing from our customers, communities, colleagues and regulators to improve the value we deliver. Your comments and suggestions on our Digitalisation Action Plan would be valued.

There are multiple ways you can engage with us and share your views and comments



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