

Our Digitalisation Action Plan

Stakeholder update June 2023



Our Digitalisation Action Plan – June 2023 update

Our Digitalisation Action Plan is now reflecting the progress we have made in our digitalisation journey throughout the first half of 2023.

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 colleagues



Optimise our operations



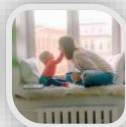
Explore and innovate

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 used to provide

Our 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. 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, our operational teams are 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 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 colleague experience of working with us.
- 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 data capture pilot**
 - **Milestone delivery:** June 2022
 - **Success measure:** pilot shows positive results the toll used day-to-day and criteria for full roll-out to other networks is met
 - **Status:**

Planned	In progress	Completed
---------	-------------	-----------
- **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
---------	-------------	-----------
- **Milestone: Simplification of current technology**
 - Milestone delivery: December 2023
 - Success measure: removal of duplication of data capture and adding in automated pre-population of data for some fields
 - Status:

Planned	In progress	Completed
---------	-------------	-----------
- **Milestone: Decision to be made for the direction of the technology landscape for field users.**
 - **Milestone delivery:** March 2024
 - **Success measure:** a decision will be made that will move from our current landscape to a simplified one where the design is centred around the user experience.
 - **Status:**

Planned	In progress	Completed
---------	-------------	-----------

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 our Local Transmission System (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 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 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:** 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: April 2023
 - Success measure: Users have access to North West, North London and West Midlands network asset information
 - Status

Planned	In progress	Completed
---------	-------------	-----------
- **Milestones: Go Live Cathodic Protection new Data Logger App and migration of Uptime into Synergi for Network to complete the full deployment of the Pipeline Integrity System.**
 - Milestone delivery: July 2023
 - Success measure: Full delivery of Pipeline Integrity System including CP module and loggers' data capture capabilities
 - Status

Planned	In progress	Completed
---------	-------------	-----------
- **Future Milestones:** We will be migrating the Cathodic Protection data set which identified if metallic mains have been compromised into the proposed solution. NGN is already leading on this, and we will review the lessons learnt and proactively resolve any issues they encountered as part of their work for a leaner migration. The new logger app will also be delivered with full training for all Operations. Go live planned July 2023. Once Live we will explore additional opportunities to improve and explore the support for H2.

Risks/Mitigations:

- We have identified there are some data quality issues regarding some outlier locations of our Data loggers which requires to be resolved prior to Go Live of the cathodic protection planned in July. We have reviewed the lessons learnt from when NGN migrated and have plans in place and actively working across the networks to remediate the issue.

Digital Twin – Network Pressure and Control Management

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



Who will benefit



Domestic Customers



Business Customers



Field Engineers



Energy Industry and Other Utilities

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

Service we provide today

What we have done so far

The current Pressure Monitoring and Control systems are 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 our 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 colleagues 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

We 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 : October 2023
 - Success measure: Detailed use case prepared for design – Postponed due to Commercial decision on the current contract for LP Pressure and monitoring contract.
 - Status: Planned In progress Completed
- **Milestone: Use case design selected. This will be aligned to the approved Strategy.**
 - Milestone delivery: April 2024
 - 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 and as resources are settling into the new roles there has been limited capacity to initiate the Strategic Roadmap. 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 and we will conduct workshops and formalise a strategy on the preferable POC in the coming months.
- The use case work has been postponed as we are undertaking a Strategic decision to review the current contract on whether we extend to progress with a full tender.

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 colleagues 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 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
---------	-------------	-----------
- **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
---------	-------------	-----------
- **Milestone: SuccessFactors Phase 2 deployed**
 - Milestone delivery date: November 2023
 - Success measure: Deployment Go-live achieved
 - Status

Planned	In progress	Completed
---------	-------------	-----------

Risks/Mitigations:

The project scope has been reviewed and revised in line with the current business and technology landscape and a detailed implementation plan has been created. The timeline for deployment has slipped by a further two months to November due to resourcing constraints and the impact of this on finalising the design.

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 colleagues 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 we incur 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. We will deliver a right sized tools 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 IT 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
- **Milestone:** Process design for building of RPA BOTs
 - Milestone delivery: June 2023
 - Success measure: User acceptance testing of the platform
 - Status: Planned In progress Cancelled

Strategic Intention:

With the conclusion of the feasibility study, it became apparent that while RPA presents good opportunities in our back-office space, the current set of the technologies available to us does not fully meet the ambition of some of our operational teams. We have decided to launch a programme called “Operations 4.0” that seeks to explore deeper the digital offering in the market and as part of our “Connected workplace” workstream we are exploring different solutions to support our operational processes, including system automation and robotics, as well as wearable technology, to help more remote interaction and onsite support.

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 opportunities for us to improve asset reliability for our stakeholders



Who will benefit



Government Authorities and Policy Makers



Network Planning



Energy Industry and Other Utilities

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

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, we need to obtain greater insight in the demands from our 11 million customers. Currently we 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.

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 our 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 (smart devices exchanging the information via internet) 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 Robotic Process Automation (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 decrease the cost and risk associated with collecting sensor data.
 - Status

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

Planned	In progress	Completed
---------	-------------	-----------
- **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. With the introduction of the Enhanced Cyber Assessment Framework (CAF) profile, we need to explore the additional requirements which are compliant to the conditions agreed by Ofgem. The work had been postponed until these are fully understood, and an impact analysis and risk assessment has been completed.

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 our 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 colleagues, 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 us 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 our environmental commitments throughout R10-2 and beyond, and support delivery Regulatory Reporting Process and the 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
---------	-------------	-----------
- 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
---------	-------------	-----------
 - ERS Status:

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

Planned	In progress	Completed
---------	-------------	-----------
 - ERS Status:

Planned	In progress	Completed
---------	-------------	-----------
- Milestone:** Outcome analysis
 - Milestone delivery date: December 2023
 - Success measure: Post implementation review complete
 - IMS Status:

Planned	In progress	Completed
---------	-------------	-----------
 - ERS Status:

Planned	In progress	Completed
---------	-------------	-----------

Better Supporting Our Customers in Vulnerable Situations

Fully embedding the Priority Services Register (PSR) to support on-site decisions on additional welfare to support customer in vulnerable situations when temporarily off gas.



Who will benefit



Field Engineers



Customers in Vulnerable Situations



Supply Chain

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

Service we provide today

What we have in place

Engineers require access to multiple applications to gain a complete view of customer vulnerability, with the PSR not embedded across all. The Welfare Decision Tool currently sits alongside the PSR, making it more difficult for front line engineers to combine the data to ensure that the optimal welfare decision package is chosen each time.

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 (Application Programming Interface) 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: October 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: June 2024
 - Success Measure: Network information available as part of the platform
 - Status: Planned In progress Completed

Risks/Mitigations:

Milestone 2 progress continues although due a shortage of resource to deliver training, we changed our initial target audience to our East of England network; this resulted in an adjustment to our milestone.

We will take additional effort to reassess the integration with our core platform due to new technology options that became available in our landscape –this results in change in target date to June 2024 for this initiative. We recognise the re-assessment is required to ensure we deliver the best possible solution to support our commitments in the personal welfare space.

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

Together with VYN, we developed 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 network. 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
---------	-------------	-----------
- **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
---------	-------------	-----------
- **Milestone: Phase 2 of the video capture application**
 - Milestone delivery date: March 2024
 - Success measure: Implementation of a permanent solution
 - Status

Planned	In progress	Completed
---------	-------------	-----------

Risks/Mitigations:

There are currently no risks identified that would impact on our target delivery milestone.

Presumed Open Data – Data Request 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 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.opendata@cadentgas.com

Note: since the last publication we have setup a new mailbox per the above that is more dedicated to processing data requests through our triage process, although the previously published mailbox is still in use and monitored, and subsequently renamed the title of this project.

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 our 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 our webpage.

Delivery Plan – Upcoming milestones

- **Milestone:** Open Data Request Management Tool live
 - Milestone delivery: April 2022
 - Success Measure: Tool in place for our colleagues 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 our website.
 - Milestone: April 2023
 - Success Measure: Gap analysis completed
 - Status:

Planned	In progress	Completed
---------	-------------	-----------
- **Milestone: Increase visibility of Data Request Process on our website**
 - Milestone: August 2023
 - Success Measure: Information regarding the request process for our Data Assets available on our website
 - Status:

Planned	In progress	Completed
---------	-------------	-----------

Risks/Mitigations:

We have decided to invest in an open data portal. Therefore, communicating the process about data sharing via our website will still be completed to ensure visibility of the progress and in due course it will be replaced by the information in the open data portal.

Open Data Portal

Digital service to make our 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 accessible

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 our information available, does not fully support visibility and accessibility principles articulated in Data Best Practice. 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 better visibility of our 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 are investing in a digital service that presents the Data Assets that are available to our stakeholders and allows to access the Data Assets that have a status of open data. The service will allow stakeholders to search, understand and access our Data Assets, request Data Assets of interest that are not yet available through the digital tool and understand the data release dates.

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: Product requirement and selection**
 - Milestone delivery: December 2023
 - Success Measure: Solution Design completed & Product selected
 - Status:

Planned	In progress	Completed
---------	-------------	-----------

Risks/Mitigations:

To successfully deliver a new digital service we will require appropriate technical skills. While we progress with recruitment for new technical roles needed, we do recognise the competitiveness within the market. We are going to work with selected delivery partners to augment our teams while continuing to build our technical expertise.

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



Business Customers



Low Carbon Connecting Parties



Regulatory Reporting

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

Service we provide today

What we have done so far

Together with other Gas Distribution Networks, we are currently working with Department for Energy Security and Net Zero (DESNZ) 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 four main areas we lead on are blending, domestic heating, 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 our existing natural gas network into a 100% hydrogen network, using digital modelling tools. We have just progressed two upgrades within current 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 us in producing our own hydrogen and net zero scenarios.
- **Local Area Energy Planning (LAEP)** – We support Local Authorities (LA) and Regional Bodies in developing their Local Area Energy Plans. This is done by providing data around our modelling analysis to support LA's net zero pathways.

Service in the future

What we will have in place

Through the System Transformation project, we 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 achieved by upgraded to our hydraulic modelling system.

In addition, developing our Hydrogen Demand Modelling into a system-based digital interface allowing us to model future energy scenarios, removing the need for Grey IT solutions (like Excel), in support of requirements from Local Authorities and Regional Bodies for open datasets for their net zero transition plans. 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 DESNZ as part of System Transformation.

Delivery Plan – Upcoming milestones

- **Milestone:** Hydraulic Modelling Calculations Upgrade UAT
 - **Milestone delivery date:** January 2023
 - **Success measure:** Solution can produce volume information at sector without impacting system functionality
 - **Status:** Planned In progress Completed
- **Milestone:** Hydraulic Modelling 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
- **Milestone:** Development phase of a digital scenario modelling tool and associated open data platform
 - **Milestone delivery date:** Mar 2024
 - **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 collaborated with a 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/FRoG/Biomethane-2023.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: Compressor commissioning and field trial**
 - **Milestone delivery date:** August 2023
 - **Success measure:** successful completion of commissioning compressor on the network.
 - **Status**

Planned	In progress	Completed
---------	-------------	-----------
- **Milestone: Learnings from OptiNet project**
 - **Milestone delivery date:** December 2023
 - **Success measure:** validation of the concept of enabling increased biomethane flows by compressing gas on the network following commissioning and field trial of the compressor.
 - **Status**

Planned	In progress	Completed
---------	-------------	-----------
- **Future Milestones:** Following the OptiNet project, we will assess ways to deploy Reverse 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, we are exploring further deployment opportunities for Reverse Compression with a number of our customers together with the optimal operating model.

Risks/Mitigations:

COVID-19 caused significant delays to start of the project, most notably the manufacturing and commissioning of the compressor. As this is first-of-a-kind solution the construction has taken longer than originally planned.

Expanded milestones to include commissioning and learnings, so appropriate lessons learned can be undertaken.

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



Who will benefit



Government Authorities and Policy Makers



Energy Industry and Other Utilities



National and Local Government and Policy Makers



Supply Chain



Business Customers

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

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 us.

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

We are also investigating the evidence for renewable energy claims with respect to carbon credits, carbon offsetting, green energy purchase agreements and Renewable Energy Guarantees of Origin (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 our threshold are realistic

We aim to set Science-Based Targets for our 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.

We 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:** Adoption of Tool by 60% of Vendors by Spend
 - Milestone delivery date: February 2023
 - Success measure: Widen study group to encompass 60% of IT vendors by spend
 - Status: Planned In progress Completed
- **Milestone:** Adoption of Tool by 80% of Vendors by Spend
 - Milestone delivery date: September 2023 – delayed due to prioritisation of RIIO3 preparation activity
 - Success measure: Widen study group to encompass 80% of IT vendors by spend
 - Status: Planned In progress Completed
- **Milestone:** Expansion of Metrics Beyond MtCO2e
 - Milestone delivery date: March 2024
 - 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. We will decide how frequent reporting is required, to factor this in.

Leakage Detection – Emissions Reduction

Emissions Reduction Optimisation



Who will benefit



Government Authorities and Policy Makers



Energy Industry and Other Utilities



National and Local Government and Policy Makers



Supply Chain



Business Customers



Network Planning

Service we provide today

What we have done so far

We are trialling a solution that offers an innovative set of technologies presenting a major opportunity to locate and quantify actual emissions, their sources and inform the optimisation of our emissions reduction plan. The solution collects methane and ethane concentrations, Global Positioning System (GPS) and windspeed data from vehicle mounted sensors and uses an algorithm developed through machine learning to form an output.

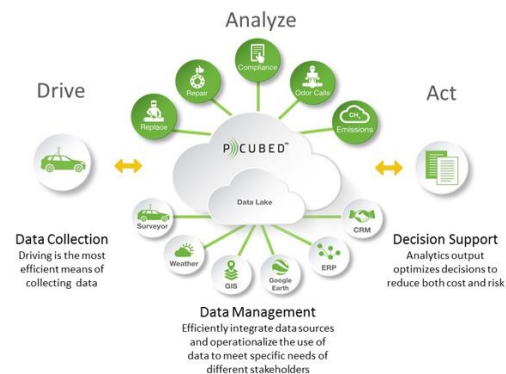
We have used this technology within its North London network and 1,600km (total) has been surveyed to build a statistical model of the network's leakage with view to assessing the following strategic objectives:

1. Assess field-measured results against the incumbent shrinkage model
2. Risk based approach to prioritising repairs for highest emitting gas leaks.
3. Informs and optimises our strategic mains replacement investment programme planning.

A pilot is currently taking place within the North London network with a target of surveying 10,000km of network this financial year.

Service in the future

What we will have in place



Prioritize leaks

- Calculate the risk associated to each leak
- Prioritise leak repair based on risk assessment
- Optimise operational resources



Reduce fugitive methane emissions

- Measure emissions from the vehicle
- Identify and repair highest emitters
- Reduce corporate Carbon Footprint



Optimize pipeline replacement

- Identify areas with high below ground leak density on your network
- Optimise infrastructure investments and reduce maintenance cost through data-driven decision making

Delivery Plan – Upcoming milestones

Milestone: Repair Integration

- **Milestone delivery date:** April 2023
- **Success measure:** Creation of a specific work order so that the field users can carry out activities relating to the technology

▪ **Status** Planned In progress Completed

Milestone: Benefits Case Definition

- **Milestone delivery date:** Nov 2023
- **Success measure:** Confirmation of the technology approach in relation to optimising mains replacement and proactive repairs

▪ **Status** Planned In progress Completed

Risks/Mitigations:

The implementation and benefits associated with this technology are still being fully assessed.

SIF Project – Digital Platform for Leakage Analytics

Reduce gas network leaks and emissions in a cost-effective way



Who will benefit



Energy Industry and Other Utilities



Government Authorities and Policy Makers



Network Planning



Domestic Customers



Business Customers



Regulatory Reporting

Service we provide today

What we have done so far

In order to demonstrate of the viability of combining data modelling capabilities with innovative leak sensor technologies to detect, localise and characterise gas leaks we have:

- **Through Ofgem's Strategic Innovation Fund (SIF) process, completed a Discovery (in May 2022) and Alpha phase (in Feb 2023), explored and carried out the following activities for the concept of a Digital Platform for Leakage Analytics (DPLA):**
 - **System Architecture & Design:** The platform requirements, system architecture & model design were defined in preparation for the Beta phase Minimum Viable Product (MVP) buildout.
 - **Technology Recommendations:** A range of innovative, in-field leak detection technologies were analysed
 - **Change Impact Assessment:** The expected level of impact and potential adaptation strategies was assessed across four dimensions of the gas networks: job roles, people & skills; processes; systems & tools; and behaviours & attitudes.
 - **Regulatory Options:** Our regulatory team identified four impacted areas to the Regulatory Framework, Asset Management, Regulatory reporting and outputs and the Shrinkage and Leakage model.
 - **Business Case:** A cost benefit analysis was performed to determine the value of the DPLA and to compare the cost/benefit of different scenarios, including technologies deployed, timelines and leak reduction rates.
 - **Stakeholder Engagement:** Identified and engaged with 4 key groups of stakeholders. 1) Customers: collected customer responses to the DPLA concept through a survey. 2) Industry: engaged with Ofgem on the regulatory aspect and with gas shippers to ensure the DPLA will meet their needs. 3) Customer stakeholders: such as Citizens Advice and Fuel Bank UK, to ensure DPLA will also benefit vulnerable customers. 4) Sustainability stakeholders:
 - **Commercial Recommendations:** Commercial design options were identified and evaluated from three key perspectives: the party responsible for 1) building the platform 2) marketing the platform and 3) owning the platform.
- **In March 2023, we submitted an application for the Beta SIF funding round in order to develop the DPLA.**

The DPLA will provide a step change to move from the static theoretical approach to a data driven one to dynamically detect and report methane leaks to a much greater level of accuracy and granularity to enable networks to act far more proactively. The current Shrinkage and Leakage Model (SLM) has been in place for 20 years and is based on legacy data and studies from 1994-2022 and has remained as a static theoretical approach since.

Service in the future

What we will have in place

A DPLA to demonstrate a Prototype for how data, analytics and models can be used to identify and locate gas leaks in the gas distribution network. The core functionality of the DPLA is data-driven leakage modelling, unlocking proactive leak detection capabilities, combined with testing the application of novel gas sensor technologies, to inform better targeting of the deployment and arrangement of our in-field specialised sensors thereby streamlining 'sensorising' costs.

Shaping the future network, the DPLA's mission is to reduce carbon emissions, realise customer benefits and improve safety in a cost-effective manner.

Delivery Plan – Upcoming milestones

- **Milestone: BETA SIF funding decision**
 - **Milestone delivery date:** June 2023
 - **Success Measure:** SIF funding awarded.
 - **Status:** Planned In progress Completed
- **Milestone : Stage 1 Delivery - Data preparation**
 - **Milestone delivery date:** January 2024
 - **Success Measure:** Data suitable for model development.
 - **Status:** Planned In progress Completed
- **Milestone : Stage 2 Delivery - Data model development**
 - **Milestone delivery date:** December 2024
 - **Success Measure:** Data models built, tested and produce adequate outputs and performance
 - **Status:** Planned In progress Completed
- Further milestones will be expressed at later stage, with the expected project competition date for January 2026

Risks/Mitigations:

There is a dependency on SIF funding being awarded for this innovation project,

Summary of projects closed in previous publication

MyHeat – domestic heating model

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

Outcome from User Acceptance Testing (UAT):

The UAT 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.

Milestone	Success Measure	Delivery Date	Status
UI development	Internal Sign-off of the model and UI	Dec-2021	Completed
User Acceptance Testing	Acceptance criteria met	Mar-2022	Completed
Model Deployment Plan	Agreement on model usage and high-level deployment plan prepared	Dec-2022	Cancelled

Our digital themes and who will benefit



National and Local Government and Policy Makers



Network Planning



Enhanced Customer Engagement Channels

Intent and Approach to the Project:

Cadent's main interaction with customers is via telephone or email. This project aimed to develop a trial mobile application utilising the Google Cloud Platform to enhance engagement and communication with our customers as we realised there was a need to explore alternate channels of communication through app-based solutions. The project was trialled on a limited basis internally and with a selected customer group.

Outcome from Proof of Concept (PoC):

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. 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. When considering this, it was decided that the PoC was not a viable option at this time as it did not deliver the value expected. Therefore, the PoC was cancelled after Milestone 2, and we will continue to review our future options in this space.

Milestone	Success Measure	Delivery Date	Status
Deliver a limited trial of an App to West Midlands network	App in use by engineers in West Midlands	Jan-2021	Completed
Deliver App to all networks	App in use by engineers in all networks	Jul-2021	Completed
Update App to integrate delivery of services	Network information available as part of the platform	Dec-2022	Cancelled

Our digital themes and who will benefit



Domestic Customers



Customer Service



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



Comment on Facebook



Comment on Twitter



Comment on LinkedIn



Email us your feedback



Send us your feedback by post