

# SGN Digital Strategy Action Plan



December 2022



# Our digital vision

At SGN our digital and technology goals are to ensure that our customers and our network are safer, greener and more efficient because of what we do.

We are both excited and passionate about driving the digital agenda and playing a part in tackling the climate emergency that we all face, whilst enabling operational efficiency and better customer value.

Our digital transformation framework provides the fundamental building blocks required to deliver large scale digital change as summarised to the right.



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# Our stakeholders

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

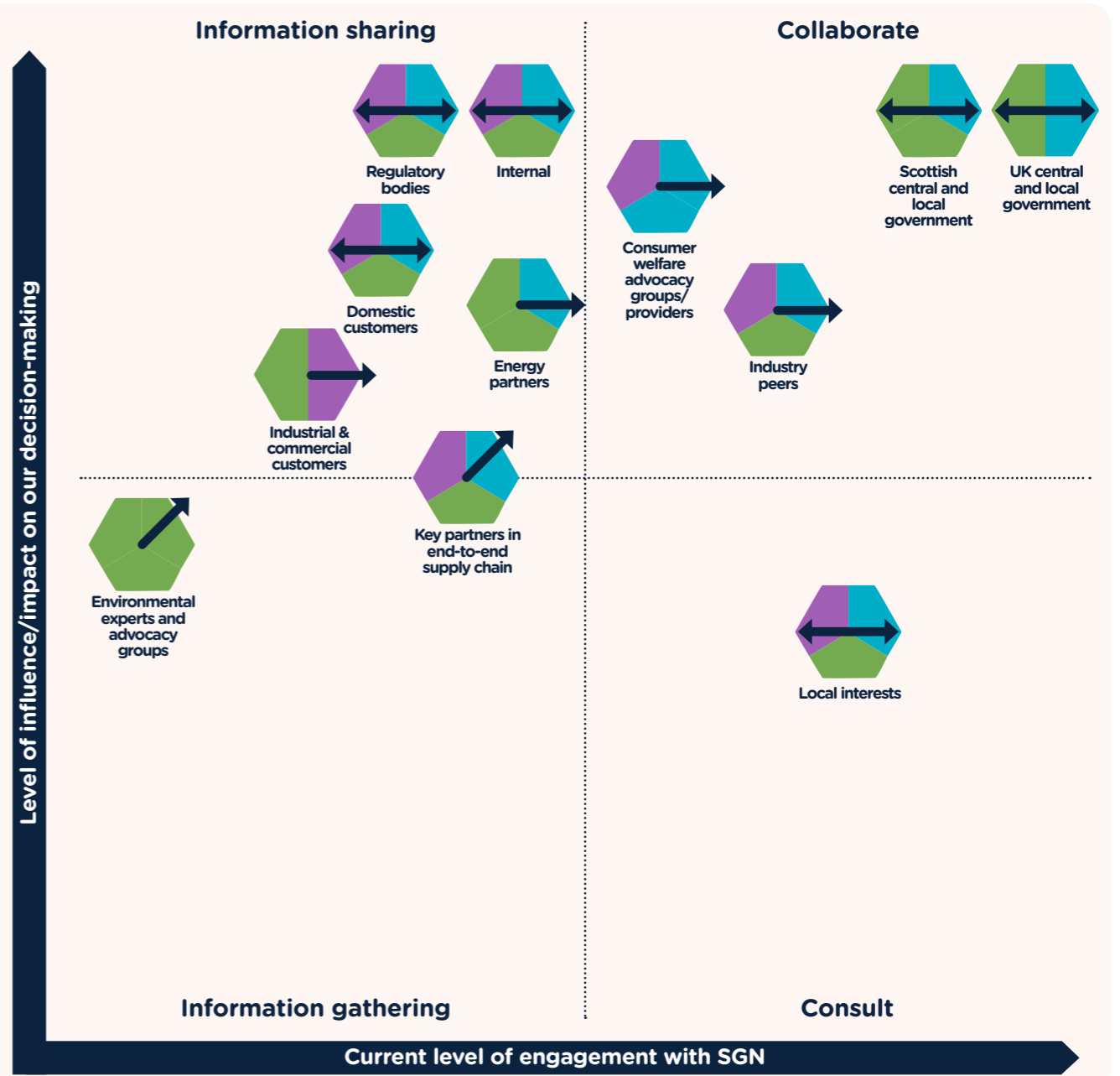
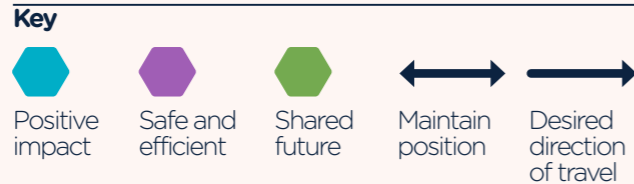


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# Our stakeholders

The chart shows how we systematically map our stakeholders according to their influence and impact on our decision-making in relation to our business plan commitments.

We use our stakeholder mapping to assess the status of our engagement, to understand where we need to increase appropriate engagement and to identify and close any gaps.



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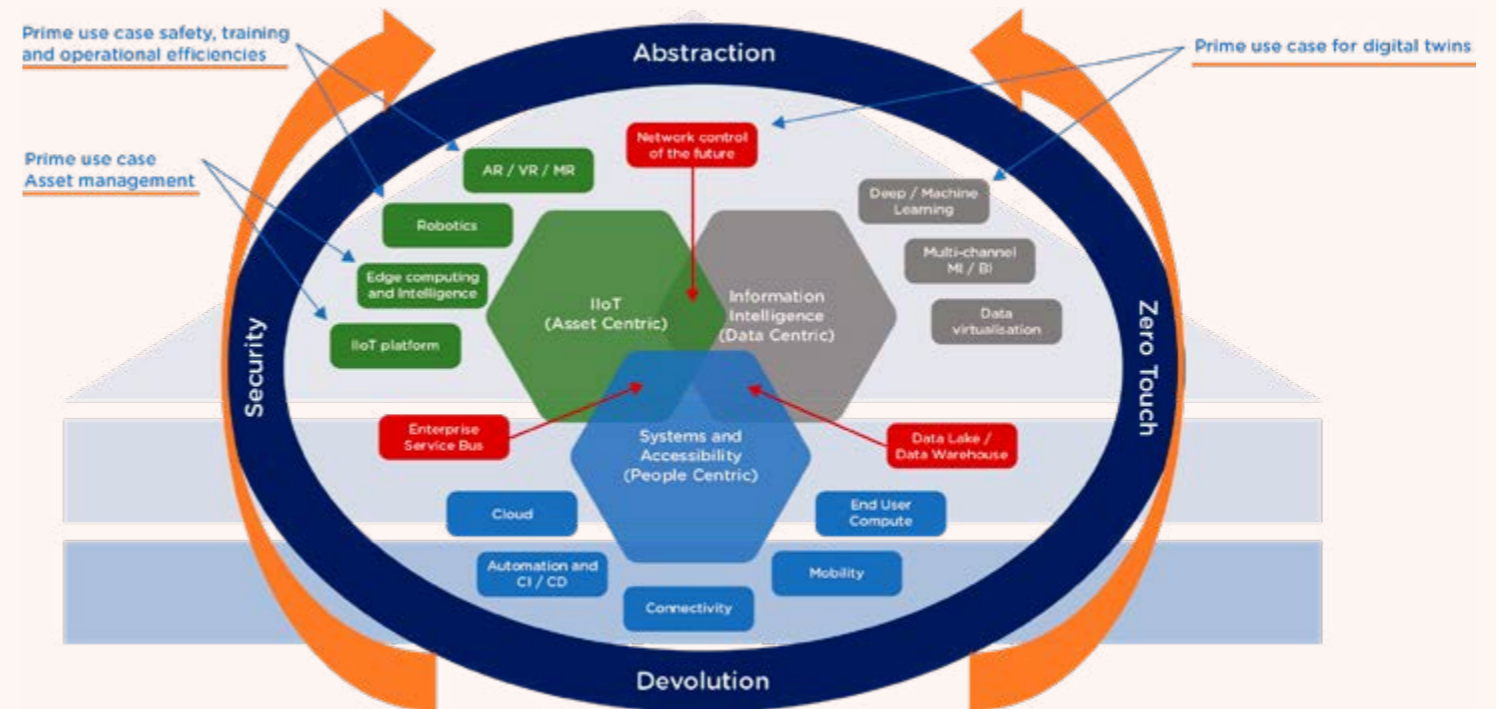
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# Our roadmap

Our technology roadmap underpins our vision and strategy and includes capability development in connectivity, exploring and exploiting further industrial Internet of Things (IoT), robotics and artificial/augmented/virtual reality.

Our innovative and collaborative projects highlight the numerous opportunities and benefits associated with digitalisation within the energy networks sector.



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# Our digital commitments

As part of our digitalisation strategy, we have made seven commitments as part of our delivery path:

**02**

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

**03**

We will continue to explore and develop new operating models with other organisations, such as the GLA, and the data working group. In 2020/21, we will lead the workstream for the GDN data triage services.

**01**

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

**04**

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

**05**

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

**06**

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

**07**

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



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Status descriptions

Pipeline

Initiative has not started and is awaiting appropriate resources and approvals to be scheduled to start.

In progress

Initiative is underway.

Delivery

Initiative has completed in line with its objectives and benefits will be enabled.



# Our digital and data roadmap

## At a glance

A full project update can be found by clicking on each project title

Key



Customer vulnerability and experience



Data digitalisation capability development



Environment and net zero



Operational efficiency



Open data



Safety

	Project title	June 2022	December 2022		Project title	June 2022	December 2022
	ADaPT	Delivery	Delivery		ISO270001 CNI Gas Control and Smart Metering	Delivery	Delivery
	Automated Utility Service Mark-out System (AUSMOS)	In progress	In progress		Leakage Management in the Energy System Transition	-	In progress
	Biomethane Improved Access Rollout	-	In progress		Local authority data sharing	Delivery	Delivery
	Careline App	Delivery	Delivery		Local authority whole systems projects	Pipeline	Pipeline
	Centralised entry for green gas	Pipeline	Pipeline		National energy system map - PoC	In progress	In progress
	Connections application process	Pipeline	In progress		Online planner	Pipeline	Pipeline
	Control systems - whole system optimisation	In progress	In progress		Open Data API	-	In progress
	Customer experience management (CEM) platform	Delivery	Delivery		PayPal	Delivery	Delivery
	Cyber security programme RIIO-GD2	In progress	In progress		Phoenix IOT demonstrator	In progress	In progress
	Dark data maintenance - Stage 2	In progress	Delivery		Real-time networks Ph2	In progress	In progress
	Data management programme	In progress	In progress		Remote pressure control and management	Delivery	Delivery
	DEFGRID	In progress	In progress		Robotic Roadworks and Excavation System	In progress	Delivery
	Demand side management	Pipeline	Pipeline		Satellite infrastructure modelling (SIM)	In progress	In progress
	Digital Twin Stakeholder Engagement Demonstration	-	In progress		SIF - Gas System of the Future Digital Twin	Pipeline	In progress
	Distribution network information modelling (DNIM)	In progress	In progress		SIF - Digital Platform for Leakage Analysis	Pipeline	In progress
	FYLD	Delivery	Delivery		SIF - Intelligent Gas Grid	Pipeline	In progress
	FYLD - Fatigue Manager	Delivery	Delivery		SIF - Predictive Safety Interventions	Pipeline	In progress
	FYLD Innovation Partnership	In progress	In progress		SIF - Velocity Design with Hydrogen	Pipeline	In progress
	Gas data interoperability X-GDN proposal	In progress	In progress		Track my engineer	In progress	In progress
	Geofield Ph2	Delivery	Delivery		Virtual surveyor (Vyn)	In progress	In progress
	Gore Basin	Pipeline	Pipeline		Wayleaves and easements	In progress	In progress
	H100 Fife	In progress	In progress				

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# ADaPT

## Status



Project start date

April 2021

Anticipated project end date

March 2026

### Key

- Data digitalisation capability development

## Overview

SGN has invested in establishing its analytics capability through recruitment and development of skilled and talented individuals. Last year we launched our new enterprise analytics data platform (ADaPT). This capability is being continuously developed throughout GD2.

## Benefits

Building this capability is a fundamental enabler to wider digitalisation and unlocking the benefits to stakeholder and organisations external to SGN.

## December 2022 update

SGN has been developing dashboards to enable business colleagues to gain operational insights utilising the ADaPT platform.



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# Automated Utility Service Mark-out System (AUSMOS)

## Status



### Project start date

July 2021

### Anticipated project end date

July 2023

### Key

-  Customer vulnerability and experience
-  Environment and net zero
-  Operational efficiency
-  Safety

## Overview

Following the development of RRES (Robotic Roadworks and Excavation System) and its below ground sensor package which uses AI and ML to interpret the data, the AUSMOS project represents an opportunity to transfer the learning from those technologies and package them into a semi-autonomous robotic unit. This unit would scan the area of interest, interpret the information and mark-out utility types and locations.

### December 2022 update

With the AUSMOS prototype now developed and tested, the system aims to move from laboratory testing to more rigorous field trials. During the trials, the performance of the prototype will be reviewed with design improvements added.

During the trials, real time data will be captured that maps the underground network. Using this data, a 3D map of the underground highway will be constructed to better inform utility workers. With this improved decision making, utility excavations will be able to carry out excavations more efficiently, reducing our carbon footprint and disruption to the public and our consumers.

## Benefits

Benefits include reduction in impact to the public and highway users as well as a reduction in injuries and fatalities due to asset strikes. System looks to prevent damage to utility networks whilst reducing size of excavation and carbon footprint. With the near real-time data processing and visualization of the results we aim to reduce the repair and associated costs from asset strikes and ensure immediate and accurate recording of assets.



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# Biomethane Improved Access Rollout

## Status



### Project start date

April 2022

### Anticipated project end date

March 2026

### Key

 Environment and net zero

## Overview

As part of the SGN Biomethane PCD SGN is undertaking a site-specific project to reduce the volumes of propane required to be blended with biomethane to meet Gas (Calculation of Thermal Energy) Regulations requirements for calorific value (CV). As part of this project SGN have liaised with Xoserve to develop a site-specific billing solution for three large consumers.

### December 2022 update

To date a significant amount of work has been undertaken by SGN in conjunction with Xoserve to develop a billing solution. SGN have also been in detailed discussions with the biomethane production facility to develop the engineering solution to control and manage propane management at the site. SGN have also been in consultation with Ofgem and the three customers regarding the site-specific changes required to facilitate this project.

## Benefits

Once implemented, the project will provide benefits by reducing volumes of propane required to enter biomethane into SGN's network at this site location. These benefits materialise decreased fossil fuel CO2 emissions associated with the gas burnt at customer's premises. The overall societal benefit will include increased volumes of gas in the total system derived from GB gas production and lower CO2 emissions from fossil fuel gas. The project will also enhance the financial viability of biomethane production by reducing costs associated with blending propane into the biomethane produced. The billing solution developed with Xoserve may also provide a basis for other GDNs with similar biomethane sites and network configurations to utilise this innovative billing solution.



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# Careline App

## Status



Project start date

January 2022

Anticipated project end date

July 2022

Key

Customer vulnerability and experience

## Overview

With our customers' permission we capture and share, with other appropriate organisations and support groups, their information where additional assistance is required during operational activities.

## December 2022 update

This is an ongoing business as usual process, although we are looking for more ways to expand on identifying PSR customers and capturing key referral information.

## Benefits

The ability to identify and assist vulnerable customers in our community is particularly important during major incidents or work.

Customer and stakeholder feedback has indicated this is a priority consideration.



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# Centralised entry for green gas

## Status





### Project start date

**Q1  
2023**

### Anticipated project end date

**Q4  
2023**

### Key

-  Customer vulnerability and experience
-  Environment and net zero

## Overview

Feasibility studies for all four mainland Scottish Independent Undertakings (SIUs) as test beds for blends of hydrogen up to 100%. Opportunity to monitor real network operation with real customers with collection of data aiding further hydrogen projects.

## Benefits

Looking at the most economical way to decarbonise the gas network currently serving the SIU towns.

## December 2022 update

Preparing and drafting of ITP for feasibility studies to take place at different locations with stakeholders within these locations being engaged. Feasibility to assess the potential conversion from natural gas to 100% hydrogen to decarbonise the networks.



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# Connections application process

## Status



Project start date

January 2021

Anticipated project end date

Ongoing

## Key

- Customer vulnerability and experience

## Overview

Taking on board feedback from our customers we are updating the online application process for Connections Customers.

## Benefits

We are user testing the improvements with real customers to gather meaningful feedback to improve the customer journey.

Customer and stakeholder feedback has indicated this is a priority consideration.

## December 2022 update

Since implementing online application forms for new connections and alterations, we have seen a 13% increase in the number of customers completing their application 'first time', along with receiving fewer non-standard quotations. This shows that we have helped simplify the process and reduced effort which is what our customers ask for. We have also measured the Ofgem returns for customers who applied using the website following the changes and have seen scores increase an average of 0.67 combined. We will continue to monitor feedback and improve content on our website, making it easier for customers to find and understand the information they need.



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# Control systems – whole system optimisation

## Status



Project start date

**November 2022**

Anticipated project end date

**April 2023**

Key

 Environment and net zero

## Overview

This is a proposal to look at instrumentation and communications systems for whole system optimisation through real-time visibility of local system management through sharing or operational data between Gas Distribution Network (GDN) and Distribution Network Operator (DNO) control rooms.

## Benefits

Optimisation of flow and system pressures and provides better off-take profile notices to the electricity system operator. Strategic data sharing between GDNs and DNOs.

## December 2022 update

Completion of the first phase with an initial piece of work to determine if a full-scale project was required. Strathclyde University and PNDC have since submitted a Strategic Innovation Fund (SIF) proposal that aligns with and builds upon the work carried out to date and recommends support of the project.



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# Customer experience management (CEM) platform

## Status



Project start date

January 2021

Anticipated project end date

July 2022

### Key

Customer vulnerability and experience

## Overview

We have implemented a platform to provide a single view of our customer across all our social and digital platforms.

## Benefits

This has enabled live chat, SMS, WhatsApp and social media channels with our customers and offers them a seamless and overall improved customer experience.

Customer and stakeholder feedback has indicated this is a priority consideration.

## December 2022 update

We continue to deliver our customers choice around our contact channels. Since implementing we have increased our digital split with voice contacts to 32%. Moving forward we also look to implement a voice IVR on our telephone line which will see us convert more voice contacts to digital channels.



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# Cyber security programme

## RIIO-GD2

### Status



### Project start date

April  
2021

### Anticipated project end date

March  
2026

### Key

 Environment and net zero

 Safety

### Overview

As part of SGN's, and our industry's, ongoing commitment to appropriately manage risk to the energy network from cyber-attacks, our cyber programme will continue throughout RIIO-GD2 with the delivery of a number of projects.

### Benefits

Underpins SGN's vision statement of 'Keeping our customers safe and warm' by leading the way in energy delivery and managing the cyber security risks associated with operating critical national infrastructure.

### December 2022 update

The Cyber Security programme continues to deliver projects in line with agreed priorities with Ofgem.



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# Dark data maintenance - Stage 2

## Status



Project start date

December 2021

Anticipated project end date

December 2022

### Key

- Data digitalisation capability development
- Operational efficiency

## Overview

Many of our above 7bar assets use real time feedback telemetry data on information such as performance and faults. These failures can lead to significant costs and disruption, whereby if failures were known about before they happen then the asset could be monitored, and repair work could be planned to minimise disruption. The aim of this project is to expand on the "Dark Data" initial NIA project with a view to developing a model that can be adopted within the business-as-usual environment for the wider business benefit.

### December 2022 update

The proof of concept has been created and tested with real historic data. Over 7 million rows of data consisting of Pressure, Temperature and Flow for above 7 bar was inputted into the model. A production model with appropriate cloud infrastructure has been built.

In conclusion the project found that an alarm occurrence can be predicted with 70% accuracy within a 14-day window. The next steps will be to implement the solution.

## Benefits

This project looks to provide benefits including:  
Deliver an operational proof of concept that can reliably predict the time to the next alarm on above 7bar assets.  
Improve visibility of our assets and manage maintenance activities.  
Focus on work order and telemetry data for a predefined set of sites, and on assets above 7bar.



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# Data management programme

## Status



### Project start date

April 2022

### Anticipated project end date

March 2026

### Key

-  Data digitalisation capability development
-  Environment and net zero

## Overview

SGN has invested in Talend data management platform to ensure we continue to be compliant with Data Best Practice Guidelines and can also support evolving requirements for our energy data through appropriate application of data governance and management process frameworks.

This programme will be ongoing throughout GD2 as we continue to mature our capabilities in this area (people, process, data & technology).

### December 2022 update

SGN technically implemented the Talend data platform in June 2022 and is progressing with a number of initial use-cases to develop our data governance and management capabilities.

## Benefits

With the increased requirements around energy data to enable net zero solutions and insights, it is imperative that SGN has robust data governance and management framework in place to ensure its data is utilised safely and appropriately, in appropriate state and its value understood in context of the outcomes it needs to deliver.



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# DEFGRID

## Status



### Project start date

April 2022

### Anticipated project end date

April 2025

### Key

-  Customer vulnerability and experience
-  Data digitalisation capability development
-  Operational efficiency

## Overview

This project seeks to deliver an Industrial Internet of Things (IIoT) demonstrator in the utility industry, which sees the use of DSbD technologies to deliver ground-breaking security solutions within SGN. To address challenges from increasingly sophisticated cyber threats on distributed and connected CNI assets, this project will extend the compile target of the existing secure-by-design Phoenix software platform to the DSbD solution.

### December 2022 update

Work has progressed to develop the demonstrator which will be applied to the UK CNI utility domain with one test installation followed by two field trials to showcase the DSbD 'capability enabled hardware' within the utility sector.

## Benefits

Our solution will be considerably more cost effective than upgrade paths and would increase site resilience through fast, effective and secure (re) deployment and management of control at the edge. This would benefit utility customers through fewer interruptions and fewer customer minutes lost.



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# Demand side management

## Status



### Project start date

Q1  
2023

### Anticipated project end date

Q2  
2024

### Key

-  Data digitalisation capability development
-  Environment and net zero

## Overview

This feasibility study proposes to research dual gas/electric fuel switching using data collection needed for times of generation and use of demand side response to shave peak demand periods. Real-time data collection allowing accurate billing of gas use in cheaper time periods with demand side response.

## Benefits

Feasibility study to evidence potential net zero pathway to support the heat policy decision in 2026. This provides the blueprint evidence case to provide a potential energy pathway for gas in the form of hydrogen.

## December 2022 update

ITT to be drafted and issued in line with feasibility studies utilising data collection.



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# Digital Twin Stakeholder Engagement Demonstration

## Status



Project start date

**December 2022**

Anticipated project end date

**March 2023**

### Key

-  Data digitalisation capability development
-  Environment and net zero

## Overview

SGN is finalising the SIF Alpha Phase for the Digital Twin Gas System of the Future and will be holding a stakeholder event to demonstrate the initiative.

## Benefits

This will provide our stakeholders with the opportunity to see for themselves the Digital Twin Gas System of the Future initiative. This event will invite feedback and engagement with our stakeholders as well as examining use-cases and benefits for this innovative digital solution.



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## December 2022 update

New Initiative



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# Distribution network information modelling (DNIM)

## Status



## Project start date

April 2022

## Anticipated project end date

April 2024

## Key

- Customer vulnerability and experience
- Data digitalisation capability development
- Environment and net zero
- Operational efficiency

## Overview

The DNIM project seeks to address this legacy asset records issue by creating technologies that enables automated, periodic and cost-effective internal mapping and feature analysis of the gas distribution network from all inlets to all outlets. The system will utilise an in-line tetherless robot which uses AI to accurately determine the location, makeup and features of gas distribution pipelines and associated buried assets. This creates a building information modelling (BIM) based digital twin that can be appended with live network associated data.

## December 2022 update

With the completion of the feasibility study, the DNIM project has developed early-stage prototypes. These prototypes which have been designed to autonomously navigate themselves through the network, have been through laboratory testing to ensure the system is fit for purpose.

Software and hardware are beginning to be developed.

DNIM will not only benefit current operations, but will also prepare the network for green gas transportation in a cost effective manner for our gas customer.

## Benefits

Benefits to our stakeholders include accurately identifying the location of existing buried assets to reduce numerous practical problems including overruns in cost and time, as well as introducing safety risks for employees and contractors and subsequently additional disruption to road users and members of the public, particularly in busy urban areas like London.



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# FYLD

## Status





Project start date

**February 2022**

Anticipated project end date

**February 2025**

### Key

-  Operational efficiency
-  Safety

## Overview

FYLD is a digital platform that empowers utilities field teams and managers to make data-driven decisions in real-time. This digital and mobile platform uses speech and image recognition as well as AI and ML technologies.

## Benefits

This leads to enhanced safety management, productivity and quality assurance. FYLD was designed and developed by SGN in partnership with a digital venture company and is available on the open market for other customers.

## December 2022 update

The core functionality of FYLD has been implemented across SGN operations allowing Video Risk Assessments to be completed by field engineers supported by AI technology. Further development of the platform will be undertaken via the Innovation Partnership.



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# FYLD - Fatigue Manager

## Status



Project start date

**February 2021**

Anticipated project end date

**June 2022**

Key

 Safety

## Overview

Fatigue Manager has been developed on our FYLD app to provide Operational Managers and colleagues with a real-time view of working hours, particularly extended working hours, to help maintain a safe working environment.

## Benefits

This provides an innovative digital solution to problems faced by field work colleagues and managers every day and provides easy to use solution and robust visibility of working hours to manage risk from fatigue.

## December 2022 update

Solution fully implemented across SGN operations allowing real-time management of working hours and impact of fatigue on field-based employees.



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# FYLD Innovation Partnership

## Status



Project start date

February 2022

Anticipated project end date

February 2025

### Key

-  Data digitalisation capability development
-  Operational efficiency
-  Safety

## Overview

SGN have agreed a three year innovation partnership with technology platform FYLD. This allows SGN to develop further features enabling data-driven decisions in real-time. This digital and mobile platform uses speech and image recognition as well as AI and ML technologies.

## Benefits

This leads to enhanced safety management, productivity and quality assurance. FYLD was designed and developed by SGN in partnership with a digital venture company and is available on the open market for other customers.

## December 2022 update

A roadmap of opportunities has been developed. First use cases already in progress are Hand Arm Vibration Syndrome (HAVS) monitoring and daily vehicle inspections to allow real-time intervention by managers and safety professionals.



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# Gas data interoperability X-GDN proposal

## Status



### Project start date

April 2022

### Anticipated project end date

April 2023

### Key

-  Data digitalisation capability development
-  Environment and net zero
-  Open data

## Overview

A part of RIIO-2 licence condition, under data best practice guidelines, licensees must “enable interoperability, between the data assets for which they are data custodian and data assets of other licensees as a minimum standard”. The gas distribution companies are collaborating to assess and identify the most appropriate approach to further develop gas data interoperability. The outline scope will cover interoperability between GDNs, other energy licensees but with future scalability to other participants in the energy sector.

### December 2022 update

Details of the feasibility study are being finalised.

## Benefits

Under RIIO-2 licence condition it is stipulated that licensees must ensure data is treated as an asset and used effectively for the benefit of consumers, stakeholders and the public interest. The aim of data interoperability is to make data assets (privacy, security & confidentiality assessment informed) easier to exchange and share between systems, organisations and individuals in the pursuit of net zero innovations and solutions, greater consumer choice and value and new energy markets.



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# Geofield Ph2

## Status



Project start date

April 2021

Anticipated project end date

November 2022

Key

 Operational efficiency

## Overview

Geofield is an industry-leading digital mapping and data capture application specifically designed to give mobile users near real-time access to maps and data in the field.

## Benefits

Benefits include improved safety through better accuracy of asset records; ability to digitally capture leakage investigations and the ability for field operatives to correct asset location information proactively, ability for the capture of third-party damage to assets and work on independently managed assets thus driving down operational costs.

## December 2022 update

Field-based engineers now have access to near real-time network map updates and are able to record leakage investigation directly to a live map layer. This improves data quality, efficiency of data sharing and customer safety.



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# Gore Basin

## Status



Project start date

January 2022

Anticipated project end date

December 2022

Key

 Environment and net zero

## Overview

Smart sensors for the compression of biomethane into higher pressure networks when demand is insufficient to meet biomethane generation. Data collection is crucial in optimising the dynamic operation of compression into high pressure networks.

## Benefits

Feasibility study to evidence potential net zero pathway to support the heat policy decision in 2026. This provides the blueprint evidence case to provide a potential energy pathway for gas in the form of hydrogen.

## December 2022 update

This initiative is under review for potential inclusion within the Biomethane Improvement Access Rollout programme. If approved will be included in the reporting for that programme in future updates. [Here](#) is a link to the Biomethane Improvement Access Rollout project.



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# H100 Fife

## Status



### Project start date

April 2020

### Anticipated project end date

March 2027

### Key

 Environment and net zero

## Overview

H100 Fife is a Network Innovation Competition (NIC) winner and will incorporate methods and technologies to manage, run and operate a hydrogen network in Fife – a world first. The project will explore, develop and demonstrate opportunities to utilise network data in ways that are not undertaken today.

[Here is a link to the H100 Fife project website.](#)

## Benefits

Switching carbon-emitting natural gas for hydrogen, which doesn't produce carbon when it burns, is one of the ways that we can keep homes and businesses warm and safe while making ground in the fight against the climate emergency.

## December 2022 update

Detailed design of H100 Fife site completed in June 2022. Procurement of main works contractor (MWC) is underway who will contract and commission H100 site.

Workshops for resilience and emergency services/third party utilities workshops underway.

Scope for delivery partner and appliance manufacturers being finalised.

H100 launch event for customer commitment completed.



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# ISO270001 CNI Gas Control and Smart Metering

## Status



Project start date

January 2022

Anticipated project end date

November 2022

Key

 Environment and net zero

## Overview

ISO270001 is the internationally recognised standard which provides a framework for information security management systems. This has been attained for our critical national infrastructure systems and processes.

## Benefits

The framework provides a process-based approach for continued confidentiality, integrity and availability of information as well as legal compliance.

## December 2022 update

This certification has been attained.



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# Leakage Management in the Energy System Transition

## Status



### Project start date

July 2022

### Anticipated project end date

March 2023

### Key

 Environment and net zero

## Overview

Project proposes to undertake a sensitivity analysis of the LRMM, review natural gas leakage rates of above ground installations (AGIs), review SGN's cathodic protection (CP) records, review the CISBOT programme and its impact and assess assumptions around asset records of cast iron and spun iron. Elements to be factored into a CBA to determine cost-effective next steps, maximising the reduction of leakage and emissions. Project proposes to assess application of LRMM to the energy transition system and future of hydrogen gas network.

### December 2022 update

All work packages are progressing as expected, with outputs to be reported and disseminated at project closure in March 2023.

## Benefits

This project has the potential to identify areas of improvement in the way leakage is estimated, reflecting improvements in the network. This project has the potential to reduce methane leakage, providing financial and environmental benefits. This project will also consider how the leakage of hydrogen from future converted gas networks can be accurately monitored, allowing it to be reduced and minimised.



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# Local authority data sharing

## Status



### Project start date

Ongoing

### Anticipated project end date

Ongoing

### Key

-  Customer vulnerability and experience
-  Environment and net zero
-  Operational efficiency
-  Open data
-  Safety

## Overview

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

## Benefits

By sharing this information, SGN is aiding a number of areas: the improved coordination between utility companies to reduce customer impact from their work. Local authority development plans in understanding infrastructure availability and needs.

Helping to streamline the green energy planning process by engaging with local authorities and green developers, giving them sight of the existing gas infrastructure.

Customer and stakeholder feedback has indicated this is a priority consideration.

## December 2022 update

We are continuing to share our data with Local Authorities in our footprint on a quarterly basis.

In Scotland, this is achieved through a central GIS sharing platform that is maintained by the Improvement Service for Scotland [www.improvementservice.org.uk/](http://www.improvementservice.org.uk/)

In Southern, SGN work with our Local Authorities on an individual basis.

We have also been extending our engagement to other third parties to assist in a variety of energy planning workstreams, such as Hydrogen projects and biomethane projects.



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# Local authority whole systems projects

## Status



### Project start date

Regional studies have various start dates

### Anticipated project end date

Regional studies will have various end dates

### Key

 Environment and net zero

## Overview

This feasibility study recognises the need for regional studies to provide opportunity in local government/ authority areas. Data collection on a local scale will be used to evaluate the options of transitioning from natural gas to hydrogen. Local demand data, building efficiency and other data sets will be needed.

### December 2022 update

Regional studies including Isle of Wight, Capital Hydrogen & Edinburgh Study are ongoing to support this work. Regional studies include large range of stakeholder engagement.

## Benefits

Feasibility study to evidence potential net zero pathway to support the heat policy decision in 2026. This provides the blueprint evidence case to provide a potential energy pathway for gas in the form of hydrogen.



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# National energy system map - PoC

## Status



## Project start date

June 2021

## Anticipated project end date

June 2023

## Key

 Open data

## Overview

This is a proof-of-concept initiative to develop a nation, geographical representation of both electricity and gas networks. SGN is working proactively with our energy peers to identify a common set of structures for sharing information between local networks will be instrumental to creating an enduring whole systems approach during GD2. This work will be focussed on the operational planning level across GDN, DNO and others, to develop a clear understanding of how both gas and electricity networks develop and respond to operational plans (covering a 24-72-hour period) and will identify the data which would be usefully shared to improve system operation.

## December 2022 update

Phase 1 completed which identified the potential and the need for data sharing. Phase 2 due to start 21st November with conclusion in June 2023. To review and define data sets required and take forward a potential test case.

[Here is a link to the NESM project information.](#)

## Benefits

There are regional-based representations of this data. This is the first representation of a UK-wide map of the energy networks. This work will be focussed on the operational planning level across GDN, DNO and others, to develop a clear understanding of how both gas and electricity networks develop and respond to operational plans (covering a 24-72-hour period) and will identify the data which would be usefully shared to improve system operation.



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# Online planner

## Status




Project start date

**August 2022**

Anticipated project end date

**Dependent on project approval**

### Key

 Customer vulnerability and experience

## Overview

This would investigate options to provide an online calendar for customers to schedule the date of their connections job.

## Benefits

Would provide customers the opportunity to interact with our core planning system at a time suitable to them in line with growing customer expectations.

## December 2022 update

There has been a business case produced detailing the option to provide an end-to-end online service for our connections' customers. If approved, this would see customers access an online calendar and schedule a date for their works.



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# Open Data API

## Status



Project start date

**October 2022**

Anticipated project end date

**Q1 2023/24**

### Key

-  Data digitalisation capability development
-  Environment and net zero

## Overview

SGN is establishing foundational capabilities in publishing Open Data via API solution. This is the first iteration – a minimal viable proposition (MVP) and will start to develop the processes needed to technically develop the mechanisms needed to publish a data set via our website utilising API technology.

## Benefits

This will establish the foundational capabilities to deliver against Data Best Practice Guidelines which point towards Open Data publication as a key enable for developing Net-Zero solutions.

## December 2022 update

This is a new initiative.



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# PayPal

## Status



Project start date

July 2021

Anticipated project end date

January 2022

### Key

Customer vulnerability and experience

## Overview

Added PayPal payment method for connections customers.

## Benefits

Allows customers to take advantage of PayPal feature to spread the cost of their new connection through the Payin3 payment plan.

## December 2022 update

This is now an embedded business as usual process and no further work has been needed since implementation.



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# Phoenix IOT demonstrator

## Status



### Project start date

**November 2021**

### Anticipated project end date

**July 2023**

### Key

-  Data digitalisation capability development
-  Operational efficiency
-  Safety

## Overview

This project looks to address these risks by demonstrating an IOT (Internet of Things) solution that allows SGN access to their real-time asset data in a cost-effective manner, whilst building the correct level of security and resilience into CNI (Critical National Infrastructure). This data would comprise of SGN process, infrastructure, and security data and will be provided with the correct level of security and resilience, befitting UK CNI networks. This would create a pathway to delivering the grand ambition of “a self-monitored intelligent network connecting in from anywhere in the world” and enabling the use cases through the use of data analytics, interactive data visualisation, machine learning and other smart technologies.

### December 2022 update

Work is continuing to develop a proof of concept which will be trialled on two SGN Above Ground Installation (AGI) sites. Results will determine if the system is appropriate to be fully operationalised and developed for up-scaling and rolled out across the SGN network estate.

If this PoC is successful and is operationalised, it will offer benefits not just to SGN, but the industry as a whole.

## Benefits

This platform will deliver a safe, robust and cyber-resilient solution and will demonstrate the following operational capabilities;

- Inherently secure real-time sensor to cloud connectivity for remote operation and bidirectional data exchange.
- Inherently secure connected process automation and control with remote update and management.
- Through the enablement of secure-by-design operational capabilities, reduction in manual intervention and improvement in process optimisation delivering energy efficiency.



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# Real-time networks Ph2

## Status



Project start date

April 2021

Anticipated project end date

Q1 2023/24

### Key

-  Data digitalisation capability development
-  Environment and net zero

## Overview

This project is looking at making our distribution network 'smart' by applying weather, gas flow, gas quality and demand sensors across the Medway region of our distribution network.

## Benefits

Evidence potential net zero pathway to support heat policy decision in 2026. Our stakeholders have prioritised the energy system transition to net zero and whole energy systems.

## December 2022 update

The project is in its design phase as we are looking at this as a cross-GDN-venture and the design needs to reflect this.

We are aiming to take the final design and proposal for financial approval early 2023.



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# Remote pressure control and management

## Status



Project start date

April 2023

Anticipated project end date

March 2024

Key

 Environment and net zero

## Overview

Delivering the ability to remotely adjust gas pressures via connected pressure management devices.

## Benefits

Optimising gas network pressures to be as required by demand at any given time of the day and across the calendar year.

Through our business plan assurance process, this project was challenged, scrutinised and ultimately approved by the Customer Engagement Group (CEG).

Financial benefit to customers by reducing SGN's Shrinkage costs. Shrinkage is a pass-through cost to customers. Reducing pressures at periods of low demand will reduce overall Shrinkage.

Security of Supply benefit to customers as the system reacts to periods of high demand by increasing system pressures.

Societal benefit to society by reducing system pressures at periods of low demand and thereby reducing overall system Shrinkage.

## December 2022 update

Tender for equipment provision has been completed. SGN staff have begun equipment installation training for this innovative equipment. Planning to install all pressure management equipment at the 265 sites in FY 2023/24.



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# Robotic Roadworks and Excavation System

## Status



### Project start date

April 2018

### Anticipated project end date

April 2022

### Key

- Customer vulnerability and experience
- Data digitalisation capability development
- Environment and net zero
- Operational efficiency
- Safety

## Overview

RRES aims to reduce the required excavation size, labour costs, and equipment while making the work safer. The project will automate the excavation process in both rural (transmission) and urban (distribution) areas using artificial intelligence (AI) and advanced robots. The system fuses advanced robotic arm technology with a mobile platform and will be controlled by AI using a suite of sensors and feedback controls to enable autonomous, safe and efficient mains excavation.

### December 2022 update

RRES has completed its trialling phase where data has been collected on the performance of all operational aspects of the system.

The next phase to kick off in 2023 which will be to pilot the system on specific use cases which offer operations the most value in respect to efficiency, safety, and environmental factors.

Subsystems of the technology are being developed that will be brought to market at a faster rate to provide value to our customer and our operations.

## Benefits

RRES aims to address three main problems associated with utility excavations on both the Distribution and the transmission infrastructure:

- Operating Costs
- Disruption and CO2e
- Excavation Damage.

RRES utilises the soft touch tool, coupled with the ability to sense buried utilities and objects. This will enable a redundant safety feature in the excavation operation which will improve safety to our operatives and stakeholders.



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# Satellite infrastructure modelling (SIM)

## Status





### Project start date

April 2022

### Anticipated project end date

June 2023

### Key

-  Environment and net zero
-  Operational efficiency

## Overview

For safety reasons, SGN undertakes multiple and frequent surveys of its pipeline assets by employing helicopters to cover the length and breadth of our network. This initiative is utilising existing satellite networks to take high-resolution images of our pipeline assets which can then be analysed.

## Benefits

This approach will enable operational efficiencies through the more efficient and effective utilisation of satellite surveys. The digitalisation of the outputs from these types of surveys will enable more innovative use of the data collected.

## December 2022 update

The feasibility study has been completed which assessed the viability of the SIM's scope, including the financial aspect. It was proven that the scope is feasible therefore the project has progressed to the testing phase. Over the next 6 months, specific sites will be selected for satellite imagery testing to determine how successful the system would be in practical terms.



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# SIF - Gas System of the Future Digital Twin

## Status



Project start date

March 2022

Anticipated project end date

March 2023

### Key

- Data digitalisation capability development
- Environment and net zero

## Overview

This is a collaborative SIF project that SGN is leading on. The alpha phase will strive to ensure a working green hydrogen digital twin, combined with analytical tools and machine learning, will provide a platform that changes the traditional way of how we look at the analysis of asset condition and performance.

[Here is a link about the Strategic Innovation Fund \(SIF\).](#)

## December 2022 update

The project has successfully completed the Alpha phase with development of a proof-of-concept digital twin to connect models and outputs to enable whole system modelling without disrupting the real world.

Preparations are in progress to put forward proposals for SIF Beta phase approval.

## Benefits

It will enable a new generation of advanced predictive analytics and provide a virtual environment where process control and operational solutions are designed and tested before being applied to the live plant, reducing risk when upscaling electrolysis plant design for example.



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# SIF - Digital Platform for Leakage Analysis

## Status



Project start date

March 2022

Anticipated project end date

March 2023

Key

 Environment and net zero

## Overview

This project aims to develop a new digital platform to provide more accurate, dynamic gas leakage information.

[Here is a link about the Strategic Innovation Fund \(SIF\).](#)

## Benefits

This will enable more efficient investment decisions to reduce leakage and customer bills.

## December 2022 update

After the successful completion of the discovery phase, this project has progressed to alpha where a proof of concept is being developed.



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# SIF - Intelligent Gas Grid

## Status



Project start date

March 2022

Anticipated project end date

March 2023

Key

 Environment and net zero

## Overview

This is a collaborative SIF project that SGN is leading on. Using Utonomy's remote control pressure system as the enabling technology, the project idea is to collect and use network data alongside external data such as weather to develop machine-learning and AI applications that optimise network pressures and provide insights on network performance. The applications developed under this project will reduce methane leakage and increase the feed-in capacity of renewable gases including biomethane and hydrogen.

[Here is a link about the Strategic Innovation Fund \(SIF\).](#)

## December 2022 update

With the completion of the discovery stage which designed the conceptual AI solution for each opportunity area, the project has progressed to the alpha phase.

Work has commenced to develop the AI solutions. Testing will be carried out throughout this stage where iterative design improvements will be made.

Once the proof of concept has been completed the plan will be to progress to larger-scale demonstrations during the Beta Phase.

## Benefits

The project is aiming to use energy data and AI to reduce methane leakage and increase the feed-in capacity for renewable gases. Once developed the project will lower costs to customers, enhancing network management activities and help to decarbonise the energy supply.



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# SIF - Predictive Safety Interventions

## Status



Project start date

March 2022

Anticipated project end date

March 2023

### Key

-  Environment and net zero
-  Safety

## Overview

FYLD will build a machine-learning model to assess how effectively site controls have been deployed and determine which strategies lead to the safest outcomes.

[Here is a link about the Strategic Innovation Fund \(SIF\).](#)

## Benefits

This model will be used to power an augmented reality proof-of-concept that will demonstrate how interventions can be made in real time - with significant benefits to workers and members of the public.

## December 2022 update

With completion of the discovery phase, the project has kicked off the alpha phase. The project will build a machine-learning model to assess how effectively site controls have been deployed and determine which strategies lead to the safest outcomes. This model will be used to power an augmented reality proof-of-concept that will demonstrate how interventions can be made in real time - with significant benefits to workers and members of the public.



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# SIF - Velocity Design with Hydrogen

## Status



Project start date

March 2022

Anticipated project end date

March 2023

Key

 Environment and net zero

## Overview

This is a collaborative SIF project that SGN is leading on. The gas velocity constraint(s) for hydrogen, applied at the design stage, need to be identified. The constraint(s) determined will impact directly onto the levels of capital investment required in the transition of the system to accommodate blended and 100% hydrogen.

[Here is a link about the Strategic Innovation Fund \(SIF\).](#)

## December 2022 update

After completion of the discovery stage which confirmed the feasibility of the concept, the alpha stage commenced. The alpha stage has kicked off which aims to extend the data gathering with the other networks and input from IGEM. Assessment will then be made to quantify the impact on potential reinforcement, as well as planning for the larger bench-testing under Beta.

## Benefits

To demonstrate how the current gas networks can intelligently and efficiently transition to provide low carbon heating.



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# Track my engineer

## Status



Project start date

April 2022

Anticipated project end date

April 2023

### Key

-  Customer vulnerability and experience
-  Data digitalisation capability development

## Overview

Allows customers to track the progress of an engineer visit to complete certain planned work types.

## Benefits

This avoids the customer having to contact SGN to gain a status update on when the engineer is likely to arrive to complete work. It is a convenient solution for customers and allows them to better plan their day around a SGN appointment.

Customer and stakeholder feedback has indicated this is a priority consideration.

## December 2022 update

Through the initial trial period we have had a 60% reduction in customer enquiries for the regions involved along with increased customer satisfaction scores overall, and specifically for the communication question. We also asked customers for their feedback on the text content and they rated this on average 4.46 out of 5. Based on all this feedback we have now extended the pilot and included all regions across both networks and will measure this throughout the winter period.



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# Virtual surveyor (Vyn)

## Status



### Project start date

April 2022

### Anticipated project end date

April 2023

### Key

- Customer vulnerability and experience

## Overview

A pilot of a new platform to allow customer to self-survey for connections work.

## Benefits

Benefits include reduced timescale to provide a customer quotation and improved accuracy of quotation. Face-to-face survey will still be available as required by some customers.

Customer and stakeholder feedback has indicated this is a priority consideration.

## December 2022 update

This pilot is going well. We now have five regions involved across both networks. We have sent 109 survey links to customers and have received 53 back (49%). Of the 53 returned we have been able to save 18 site visits, turning around customer quotes within 24hrs. We are working with the surveyors on how to improve the customers' video capture and what we can obtain via a phone call to reduce further site visits and speed up the front-end process for our customers. We continue to monitor all aspects of this pilot and once all minor issues improve, we will then look to expand and include more regions.



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# Wayleaves and easements

## Status





Project start date

February 2022

Anticipated project end date

March 2023

### Key

-  Environment and net zero
-  Operational efficiency

## Overview

Elements of our pipeline network lay across private landowners' land and there are legal agreements in place - wayleaves and easements - which detail the conditions to access land for installation or maintenance of the asset. A number of these agreements are paper-based documents, and SGN is undertaking an exercise to digitalise these to make access to the information contained easier to catalogue, access and analyse.

## Benefits

By digitalising this information, SGN will be able to analyse the data in connection with its plans to decarbonise its network.

## December 2022 update

1025 Servitude and Easement documents have been assessed (Scotland & Southern) to ascertain what restrictions may be encountered when transitioning the network to transport other gasses - particularly H2. Overwhelmingly, the results of the study have been positive. A further, more detailed, study is underway for the HP & IP networks in the Fife region, this will further our understanding ahead of the 'Town Pilot' bids and will explore the practicalities and cost of adding the S&E detail as a visual layer in our asset maps.



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