Northern Gas Networks

A12 - NGN RIIO-2
Digitalisation Strategy

together

we are the network

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1.1   Our approach to modernising Data

A Bit of Background

The support and management of NGNs IT capability was historically outsourced to third party suppliers. The result of this outsourced approach was high cost, limited in-house knowledge of systems and slow and expensive delivery. One damaging impact of this was that NGN operated with aged and complex systems close to end of support life. Our reliance on System Integrators often resulted in overly complex systems and landscapes, and this, coupled with a general disconnect between IT and the business, meant that inefficient and inconsistent processes developed in the back office.

A study of these inefficient processes, where data was often seen as the source of problems rather than the solution, showed that NGN was effectively running on spreadsheets (with over 7 million being stored on our shared drives), and the spend on information management within the back office was reaching £20m per annum, with very little value to show for it.

All this labour intensive wrangling of data was producing reports that were in some cases weeks out of date.

The WoW Factor

It was time for Future Ways of Working (FWoW), a digital transformation programme that introduces consistent, standardised processes based on industry best-practice, fully integrated information management and data captured and validated at source. WoW uses the latest technology to provide real-time reporting, accurate data capture and reduces overhead through the facilitation of increased self-service. WoW provides a common platform for all processes, meaning cross flexing between teams is much easier, and it builds on NGN's cultural and organisational development and terms and condition changes to deliver IT enabled transformation.

Digitising IT and the birth of 3iG

At the start of RiiO GD1 NGN operated our IT through a series of outsourced contracts, with a small in house team to manage these contracts. Through this, NGN operated from 7 different IT datacentres, had aged and complex systems and the delivery of changes and enhancements were very slow. Our IT team kept the systems working but were not delivering services or projects that would change the business or deliver innovation for our colleagues or customers.

These outsourced IT services were also expensive to operate

During GD1, NGN has established its 3iG (Information, Improvement and Innovation Group) to transform how we operate IT and how we deliver innovation and improvement projects with information at their heart.

Through the establishment of 3iG, NGN's IT services are now operated from public cloud infrastructure, are supported in the main by NGN's own teams and we operate modern digital systems that far better support our colleagues and customers. We have also adopted Agile Delivery as our preferred methodology for the delivery for change and in doing this, we have delivered significant change and transformation initiatives quickly and that are better aligned to what we really need and at a lower costs. Through this work, significant achievements have been made, which include:

- Establishing an in-house IT support team
- Transforming and migrating systems to public cloud
- Using Agile and Dev Ops methodologies
- Implementing a digital platform through the WoW programme
- Building apps in house to support the work of our colleagues
- Building an analytics platform that is managed by our colleagues to give greater insight and decision making in real time
- Reducing our IT operating costs by c£2m per year
- 3iG becoming a certified SAP Centre of Excellence

This work means that at the start of GD2 NGN has a modern flexible digital IT team and suite of systems with data and how we are of it at its core. This is operated and enhanced by a team of highly capable IT professionals that work using Agile and DevOps to support our continued journey towards digitisation

This change in how we operate from IT to 3iG has also been shared widely with interested stakeholders, who have visited to see the changes that we have delivered. This includes companies from the banking, retail and construction sectors as well as both local and national government.

Realising the Benefits of Digitisation

Through our work in GD1, NGN have already realised a wide range of benefits from embracing digital technology and ways of working. This have been delivered in a number of stages and we have realised a range of benefits to our colleagues and customers:

'Cool' - Delivered (2015-18)

- Digital Operations Room (real time window on NGN)
- MY NGN established as our colleague's portal into all of NGN's systems
- Success Factors (employee self service for HR and learning management)
- Damages App (built in house)

- Customer strategy and adopting the voice of our colleagues and our customers through our use of personas

- System Control moved to Amazon Cloud (World First)

- Decision Support Tool

- Delivered our CEM (customer engagement management) system in 8 weeks using agile delivery

'Amazing' - Delivered (2019)

- S4 HANA and new standard processes

- New work management App built by NGN

  - This was designed by our colleagues

  - With this application we can deploy enhancements in days to all our colleagues, in the past these changes would take months to deliver

- Incident management app PoC

- GRC tool to improve our governance and controls

'Incredible' - Ready for Delivery (2020)

- Further development of work management app

- A new GIS system

- Process compliance and optimisation monitoring

- Process automation (RPA) of large percentage of back office support processes

- Complimenting Realtime information with AI to make better decisions

'Mind-Blowing' – Ready for Delivery (2021)

- New scheduling system to allow customers to book appointments online and to automatically schedule planned work

- Automated Real-Time RRP reporting

- Predictive and Prescriptive Analytics

- Further back office process automation

- Internet of Things backbone

1.2   Cost savings through Digitisation

Through NGN's digitisation work in GD1, significant cost savings have been made through a reduction in IT OPEX costs and through business efficiencies driven by Digitalisation

Utilisation of the Cloud

Using Public Cloud and a series of simplified supporting contracts has saved c.£2m a year in IT operating costs in NGN. NGN have used Amazon Webservices (AWS) to operate both System Control services and its new S4 HANA systems.

Smart Information Management/ Future WoW

The delivery of Future WoW, where data and information were put at the heart of NGN's new operating processes has saved £4.5m in back office support costs, with a further £4.5m planned into GD2

Agile Project Management

NGN use Accelerated Delivery as our standard model for delivering technology and data projects. This means that change is delivered by largely in house led NGN teams that are supported by technical external experts as required. NGN no longer use traditional systems integrators to deliver change. This delivers significant savings in delivery costs and ensures NGN retains knowledge form projects and gets an outcome that is better aligned to our objectives.

This was demonstrated in the benchmarking done by PwC on the Future WoW project, where costs were benchmarked very favourably for the complexity of the programme

NGN Agile Delivery way of working, showing one of our Kanban boards and a Sprint Planning meeting

1.3　Ongoing Efficiency Improvements through Revolutionary Work

NGN have delivered ongoing efficiency benefits through digitisation by:

Standard and simple processes

NGN have implemented S4 HANA as standard (1,000s of customisations reduced to 10's)

- Very limited amount of customisation means simple standard processes can be used
- NGN are the only SAP customer (including SAP themselves) to do this so far with HANA
- This is the key to the efficiencies in NGN's processes that will be delivered through the programme

Design and build our own

- NGN colleagues have designed and built our new work apps
- Colleagues have led the design of our new processes
- NGN's SAP Team lead the technical side of the project and will support systems when the go-live

Brand new technology

- First use of SCADA in public cloud
- Early adoption of cloud technologies- first in our sector in the UK
- First European company and first global utility to use the Digital Operations Room
- First use of SAP Cloud to build mobile work apps

No System Integrator

- NGN are a certified SAP Centre of Excellence and support our own Public Cloud infrastructure
- Work with specialist suppliers and not a single outsourced system integrator
- Developed in house capability in through the programme

NGN's New Mobile Application built on SAP's Cloud Platform, designed by NGN Colleagues and supported in NGN's DevOps teams

NGN's new Digital Operations Room, using real-time data analysis to drive decision-making in the business.

NGN's new MY DART System- designed by our in-house teams and delivered through Agile delivery

NGN's MY NGN Portal, designed and managed by NGN Colleagues

NGN and Me, NGN's employee and manager self service system

1.4   Supporting consumers and the wider economy

Our strategy for digitisation supports our customers by reducing our IT cost base, by helping to make NGN more efficient and by making us better at managing and protecting our customers data. It also has allowed us to deliver systems (like our CEM, our website and our online payments gateway) quickly and that improve the service that we deliver to our customers.

In GD2 this will be further demonstrated as our digital technology allows customers to book some appointments directly themselves online

Through our digitisation work, we have supported the wider economy by sharing our knowledge and experience with other organisations, wither through visits to our teams or through our active participation and presentations at events such as Agile Sheffield, the SAP UKSUG, SAP SAPPHIRE, and Geospatial conferences. We have also recently joined the Open Data Institute. Through this work we have shared knowledge and experiences with organisations from a wide range of sectors, including gaming, banking, retail and government as well as within our sector.

1.5   The NGN Digital Enterprise

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Fig 1.1 The main applications that make up the NGN Digital Enterprise

2 The Digitisation of NGN

NGN first developed a Digital Strategy in 2014, and like every good strategy, it has grown and evolved, drawing in new technologies, new ways of thinking, and new learning from hard-won experience. However, throughout that evolution, one guiding principle has always been front and centre: Integrated Information Management; the understanding that data flows through everything that we do.

2.1 Designed for Digital

We have wrapped a digital platform around our core ERP, and utilised fully integrated SaaS solutions to provide a stable, scalable landscape that will continue to deliver digital innovation.

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Fig.xx.xx The digital platform (in Green) and integrated SaaS solutions (in Yellow) in the NGN Digital Enterprise

By implementing standard processes, and sticking to our design principles, NGN has achieved the first phase of Integrated Information Management across a platform that can and will benefit from continuous improvement in technical functionality and process capability without the need for complex and costly upgrades or retrofitting. We have a digital platform that is ready for anything.

"Northern Gas Networks is delivering a truly ground-breaking business and digital transformation programme...

Its goal is to deliver a way of working that streamlines business processes, improves how they manage and capture data...

to enable colleagues to work smarter and faster..."

SAP International Innovation Awards 2018

NGN will continue to develop this digital platform, maintaining a disciplined approach to adopting vanilla systems, adhering to standard processes and fully integrating data across our whole landscape.

2.2 No Digitisation without Representation

Digital transformation is not about technology, it's all about people. You can implement the most advanced, most mind-blowing technology in the world, but if people don't use it then it is totally pointless. That is why at NGN all our digitisation initiatives are business led, and our applications are designed by the colleagues that will be using them.

We have built our own work management application for our Emergency & Repair function. This amazing app was designed by our own engineers. They are the ones who are going to use it, they are the ones who know what it needs to do, and what it doesn't need to do. There are so many benefits to this way of doing things. Our colleagues feel empowered, digitisation is something they are doing, rather than something being done to them. The application is theirs, they know how it works, and crucially, why it works. So they want to use it, and they understand the importance of using it correctly.

We will continue to work in this way, to ensure that our workforce are an integral part of our Digital Enterprise.

2.3 Do the Right Thing, Not the Shiny Thing

There is a tendency, especially in a corporate environment, to chase after 'quick wins' and short-term fixes. The move towards digitisation is no different, where the temptation to think 'we'll build an app

for that' is strong. Long is the road, and hard, that out of app development leads up to light. Digitisation is so much more than simply exchanging traditional processes with various attractive, user-friendly applications. Applications collect data, drive processes and flow information. All these things have to be considered and incorporated in a true Digital Enterprise.

At NGN our approach has always been, and will continue to be, to pursue a proper digital transformation, focused on making sure there is a strong foundation, both technologically and culturally, to all the amazing things that we do. This involves work that is sometimes boring, usually difficult, often misunderstood, and completely vital to our success. Work like continuous improvement of data quality, rigorous process controls with robust roles and authorisations, and fully integrated systems sharing a consistent data schema. That's not to say that we won't be producing attractive apps, quite the contrary, the apps we are building are in the Robert Redford (during the 1960s, and arguably early 70s) or Grace Kelly league of good-looking, but they will also be built to enhance the digital experience, as part of an end-to-end process that is fully optimised to be as efficient, as secure, and as integrated as possible.

"Digitisation is about doing better things, not doing things better..."

This is a quote from a member of our stakeholder panel during a roundtable discussion on NGNs digital strategy, and frankly, we couldn't have put it better ourselves. Digitisation is an opportunity to approach things differently, to redesign processes, to disrupt traditional ways of working and conventional ways of thinking. Digitisation is an opportunity to do better things.

We found that our biggest advocates for disruptive thinking were our stakeholders. We have kept them involved every step of the way in the evolution of our digital strategy, and they have continuously challenged us to think about doing better things.

2.4   Setting the PACE

To make sure that NGN continues to get maximum efficiency benefits from our digital platform, we are creating a Process Automation Centre of Excellence (PACE). The PACE will continuously review, revise and reshape the processes that underpin everything that we do, ensuring that tasks are performed efficiently, data flows smoothly, and outputs are delivered effectively.

The PACE will consist of Business and Data Analysts, Subject Matter Experts and Solution Architects, each armed with the knowledge of what NGN does, and the creativity to reimagine how we do it.

3 Maximising the value of NGN Data

Let's not beat around the bush here, data is the most valuable asset that NGN has, full stop. NGN is not a Gas Distribution Network, NGN is a technology and data management company that delivers a world-class gas distribution service.

3.1 To find Wisdom, you must master Data - Confuscius

We will master our data in properly designed, consistent data schema. All our asset data will be mastered in S4/HANA, all our colleague data will be mastered in SuccessFactors. This data will be available for consumption across the entire NGN Digital Enterprise, but should only ever permanently persist in either S4 or SuccessFactors. In this way we have complete control over the data, and do not have issues around duplication of data in multiple databases, with the associated support and maintenance overhead.

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Fig xx.xx Master Data repositories in the NGN Digital Enterprise

The objective is to maintain a fully scalable and adaptive approach, allowing us to respond quickly and effectively to changing data needs, be that creating new data objects or retiring obsolete ones.

3.2 Data is Open for Business

All the technology that makes up the NGN Digital Enterprise is based on Open Data Standards. Our adherence to a design principle of utilising industry best practice in all of the technology we implement means that we have the capability to share data in a safe, secure way. This approach also ensures that we are not boxed in with a particular product, and can easily incorporate new technology into our existing portfolio without major overhaul or the overhead of technical debt.

3.3   Keeping it Clean

The bedrock of digitisation is data, and the quality of that data is crucial to the effectiveness of any digital transformation. Good data means good digitisation: efficient processes, optimised resources and forward-thinking innovation. Bad data means bad digitisation: inefficient processes, resources spending all their time wrangling data rather than using it, and innovation focused on filling the gaps.

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Fig xx.xx Data Validation and Assurance tools in the NGN Digital Enterprise

We have spent a lot of time and effort cleansing our data as part of our S4 implementation, and we are really proud of what we've achieved. However, we know that the data won't stay clean for long.

Traditionally, the method used to ensure that data was always accurate was to apply multiple layers of manual checking and validation. At NGN we will be automating this. Data will be auto-validated at the point of collection, and once accepted and stored, we will use automated assurance tools to continuously scan the data, apply pre-defined business rules and parameters, and either correct or highlight discrepancies. We will also apply machine-learning algorithms to analyse behavioural trends so that we can stop bad practices before they happen.

In this way NGN will be able to stay at the frontier of digitisation.

3.4   Rolling the DICE

NGN work with DAMA to support our work to be a datacentric organisation and to support our digitisation work. Through this, we ensure that we:

- Adopt International best practice in data management (DAMA) and the information lifecycle

- Puts data at the heart of everything we do – Data by design, Privacy by Design
- Implements effective governance of data policies, standards and processes through the implementation of a data controllers programme and representation to governance bodies
- Raise awareness of data as a valuable business asset though a programme of communication and advocacy
- Bring a data centric approach to solution design and development through the use of appropriate requirements gathering, analysis, design and modelling. In addition, using robust and statistically sound methodologies including international standards on data management practices, data engineering, automation and predictive modelling techniques to provide business insights
- Improve data quality through the provision of expertise and services for assessing data quality, understanding the business implications of poor data quality, root cause analysis and remedial action management including data cleansing, specifying systems changes and identifying operational improvements
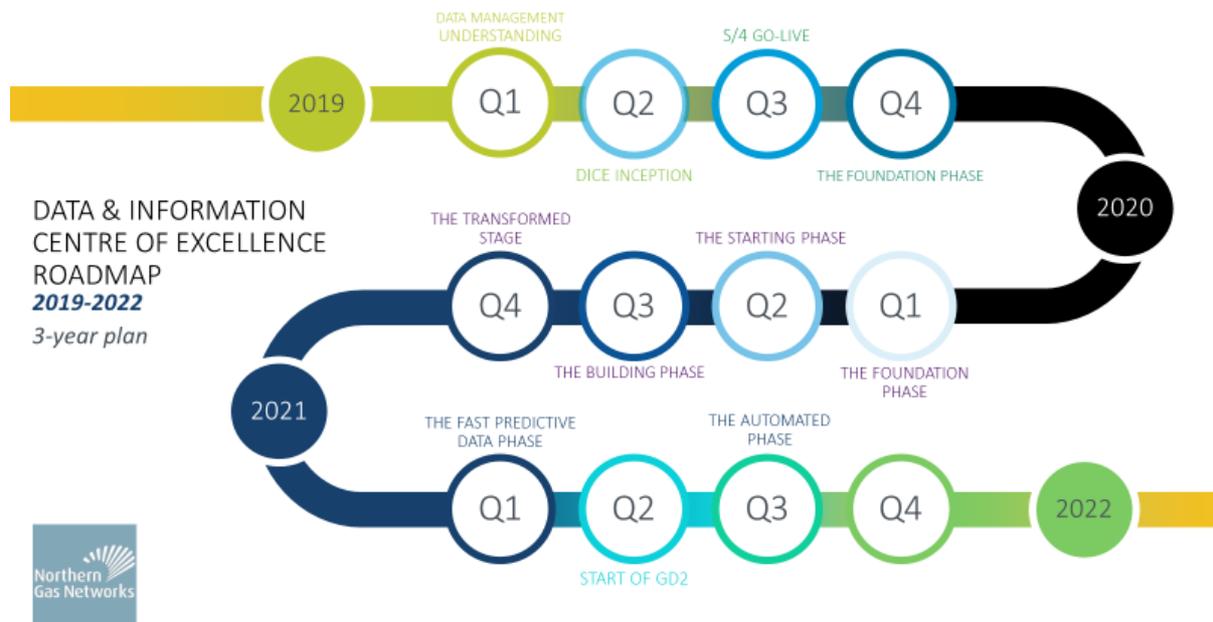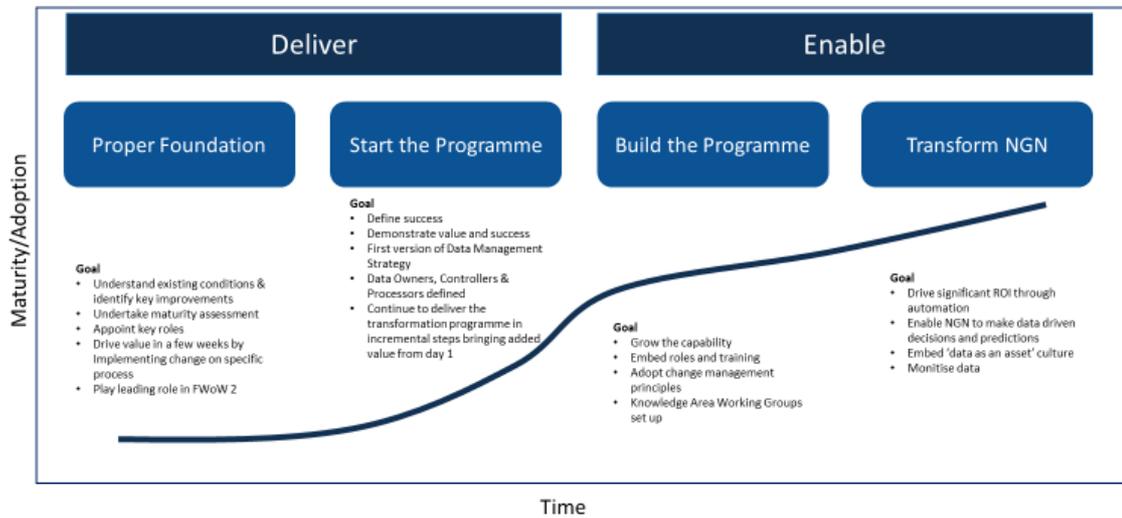
To deliver this, we have established a Data and Information Centre of Excellence (DICE) with the aims of:

This Centre of Excellence works by:

The Transition

DATA & INFORMATION CENTRE OF EXCELLENCE ROADMAP
2019-2022
3-year plan

4 Visibility of NGN Data

4.1 The Liberation of Information

Data is for everyone, information is for all. The most important decisions are not made in the Board Room, they are made every day, by all of our colleagues. Decisions made when designing a new connection, when repairing a leaking main, when speaking to a customer, these are the decisions that can have a profound impact on how NGN operates as a safe, efficient and socially responsible business.

The guiding principle of our digital strategy, Integrated Information Management, is all about making information available to all who need it, in the right time, on the right device, and fully contextualised to allow data-driven decision making.

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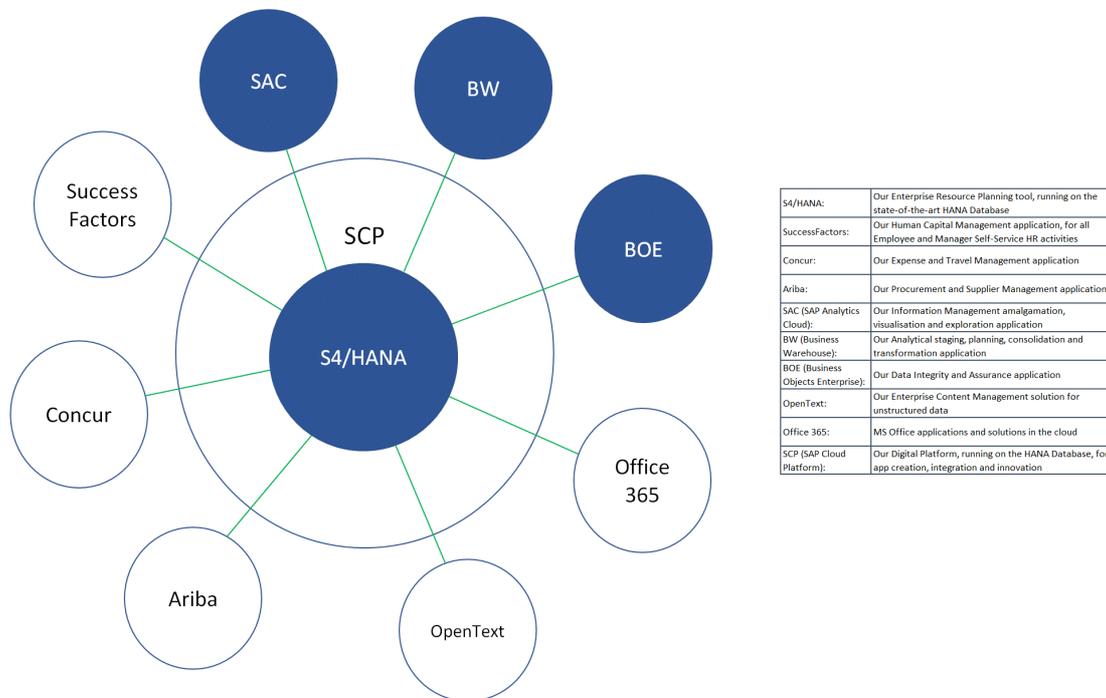*Fig xx.xx Analytical and data visualisation tools in the NGN Digital Enterprise*

Data analytics and visualisation is fully embedded into the NGN Digital Enterprise, with a hybrid reporting landscape that provides a flexible approach to data modelling and exploration for all. Users with different skills, from experienced gas operatives to data scientists, will be able to benefit from the fully integrated capabilities.

4.2   What's the meta, baby?

Metadata is an incredibly useful resource in its own right, not simply as a way of managing content, but as an analytical asset containing real insight. This is why NGN regards metadata as a vital part of not only our own digital strategy, but also across the entire energy sector.

NGNs Digital Enterprise has been designed to make the most of metadata, in terms of usability, availability and consistency. Many of the systems and applications that make up our digital landscape will manage content through the use of metadata, and NGNs Data Model will govern the metadata conventions to ensure a consistent, cross-application approach.
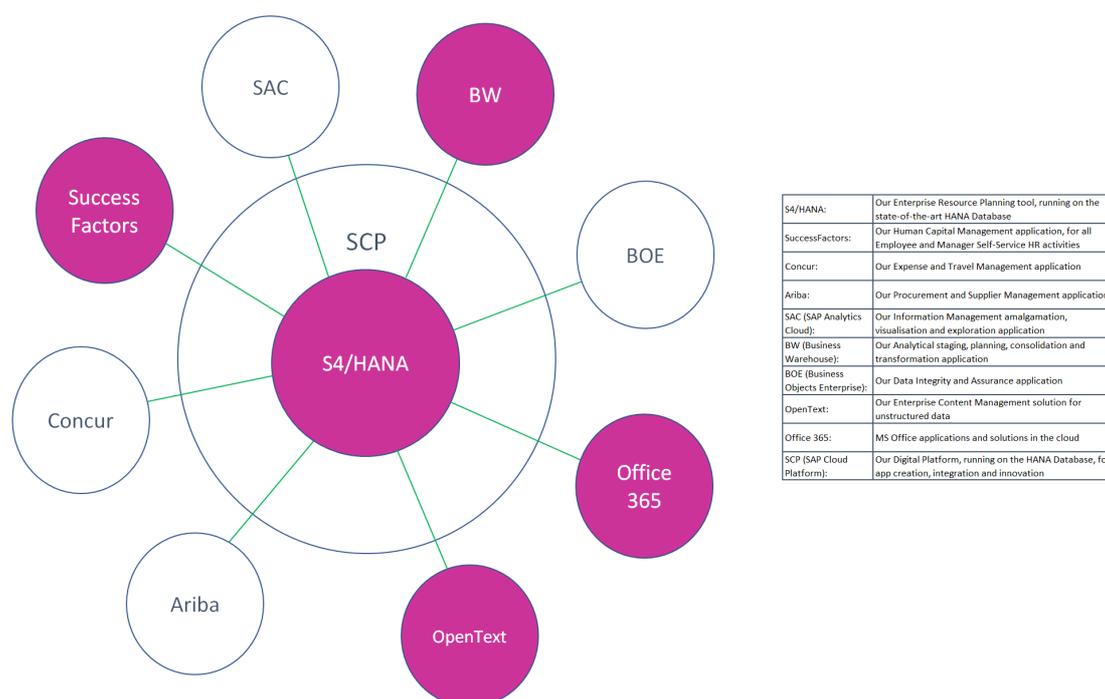

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Fig xx.xx Metadata repositories in the NGN Digital Enterprise

NGN's Open Data Standards extend to metadata, and data catalogues will continue to be designed to be interoperable between systems, and available for reporting and analysis through SAC. Catalogues will contain the 15 metadata elements defined in the DCMES (Dublin Core Metadata Element Set), whilst asset characteristics will utilise standard SAP formats and conventions used by a significant percentage of companies within the energy sector and beyond, contributing to our ability to share a common metadata catalogue across multiple agencies.

Our integration and orchestration capabilities through the SAP Cloud Platform will allow NGN to manage metadata across the entire landscape, and make this data available to external parties through Application Program Interfaces, based on Open API standards.

4.3   Making Sense of Unstructured Data

The importance of context in any data-driven decision-making means that unstructured data must be considered in digitisation. Unstructured data like photographs, documents, audio files, text etc can and do provide vital insight, especially when combined with structured data like asset information. One key consideration in the continuing development of the NGN Digital Enterprise must be the integration of unstructured with structured data.
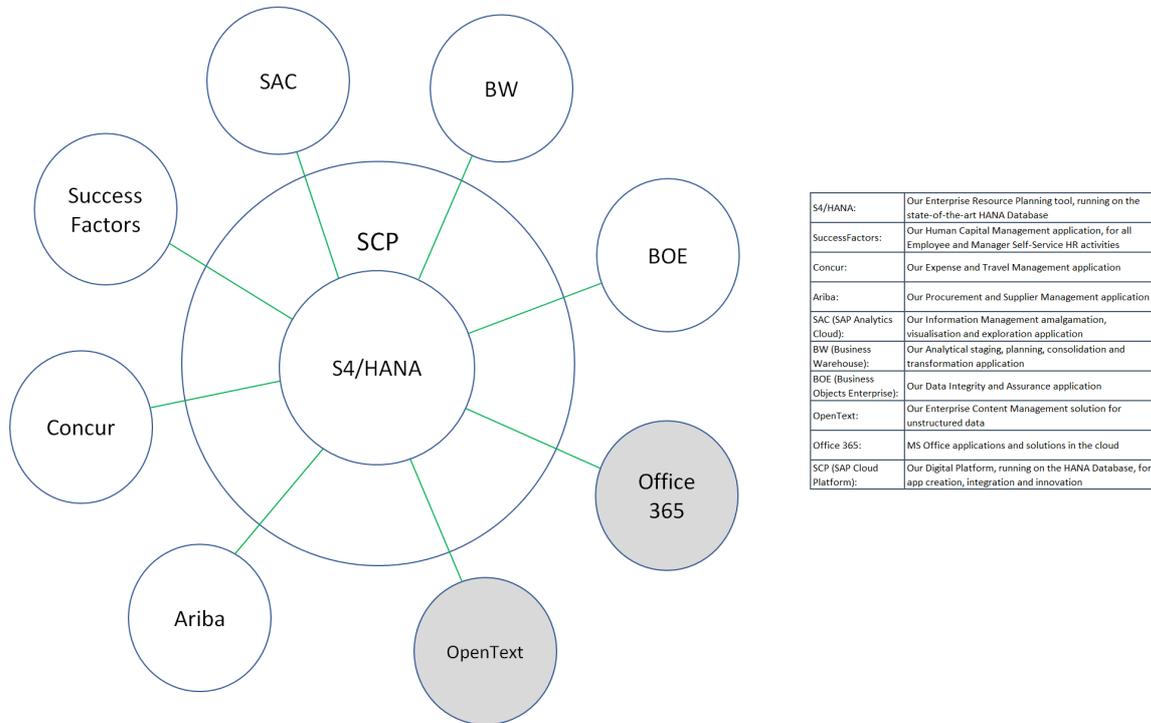

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Fig xx.xx Unstructured Data Management Systems in the NGN Digital Enterprise

Having Opentext and Office 365 applications like Sharepoint fully integrated with the whole of Digital Enterprise means that unstructured data such as technical specifications are keyed to the relevant structured assets, and available to our colleagues working on those assets via the apps we build on our digital platform.

5 Co-ordinating Asset Registration

5.1 Showing off our Assets

We are a vital part of the energy eco-system, and that eco-system is becoming more and more interconnected and interdependent, especially as the UK moves towards a Net Zero carbon economy. The introduction of bio-methane and the potential of pure and blended hydrogen solutions means that we are already looking outside of the boundaries of a traditional Transmission/Distribution model. As part of NGNs digital strategy, we will be working to make our asset information available to everyone in a way that is safe, secure and easy to understand. We have introduced standard naming conventions for all our assets, we have linked our assets together to enable full reporting and analysis, and we will be following the guidelines suggested by the Energy Data Task Force, making our asset data open by default and properly catalogued, itemised and annotated.

For this to be truly effective, we cannot do this in isolation, and will work with any and all areas of the energy and transport sectors, and beyond, to forge ahead into this brave new world of cross-vector information sharing and collaboration. One fantastic example of the potential of this kind of collaboration can be seen in the [Australian Renewable Energy Mapping Infrastructure](#) initiative.

But why stop there. We are an engineering company so obviously physical assets are important to us, but we also have digital assets that could be part of a cross-vector eco-system. The same could be said for information assets, the skills and expertise of our colleagues, and even our future plans and initiatives, such as this strategy. All of these assets need to be included in a co-ordinated approach between all parties.

6   Visibility of NGN Infrastructure and Assets

The Digital Enterprise that we have already built provides a strong foundation for all the amazing things that we want to do. The amount of data available to us will continue to proliferate, as will the value of using that data correctly. Our assets will start to tell us things, and we will be able to listen. We will not have an Internet of Things, with our Digital Enterprise we will have the Internet of Everything. All our assets, all our colleagues, all our customers and stakeholders, everything and everyone unified through our collective Digital Enterprise.

Visit THE place for the Internet of Things
NORTHERN GAS NETWORKS
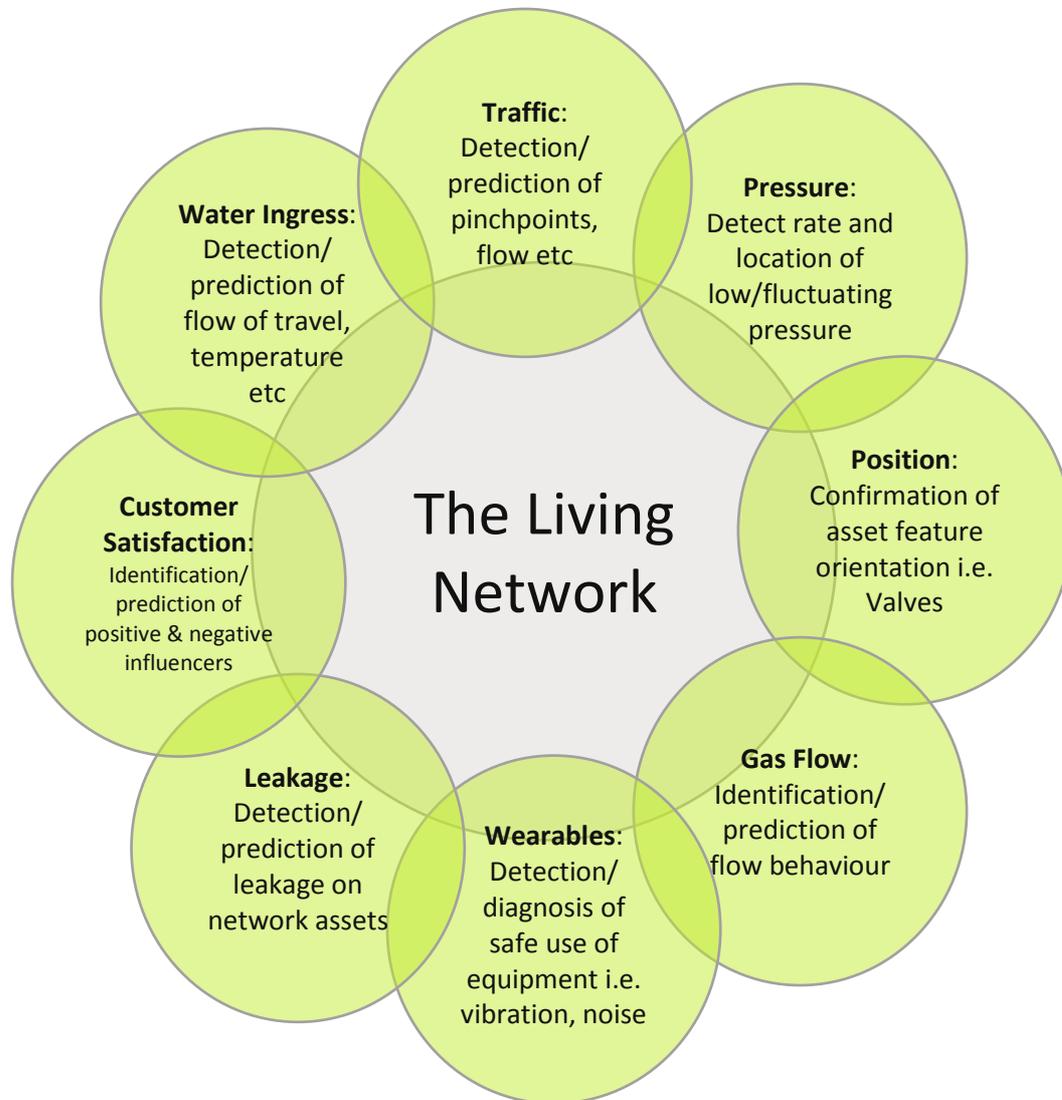
6.1   Integrated Infrastructure & Smart Grids

Our assets are singing, and now we have the capability to listen to, and interpret, that song. More than that, we can integrate assets so that they listen to each other, operating in harmony until there is a problem, and at that point letting us know. We will use sensors to provide data on pressure, temperature, humidity, proximity, and anything else that would help. We will make assets intelligent, we will feed them information and teach them to think.

| Utilisation of sensor-based information transfer to optimise decisions and network operations. | Securely connect devices, analyse real-time and historical data, and integrate to back-end applications. | Enable the network to become a connected entity primed to explore information whilst managing risk. | Track field force locations to more efficiently dispatch engineers in the field. | Find risks of device failures faster, with increased visibility into the age and reliability of each device. | Proactively adjust, update, and repair smart grid and IoT devices as needed. |

All this becomes even more exciting if we think beyond our own assets. What about pylons, wind turbines, pumping stations? They may belong to different companies, but they all service the same consumer. Having these different infrastructures all sharing data would provide massive benefits to customers and the energy sector as a whole, without impinging on competition.

6.2   The Living Network

With our integrated approach to digitisation: People, Process, Technology and Data; our network can come alive. The possibilities of this Living Network are endless, and go far beyond asset management, and beyond the type of gas that flows through our pipes.

The Living Network (central)

- **Traffic**: Detection/ prediction of pinchpoints, flow etc
- **Pressure**: Detect rate and location of low/fluctuating pressure
- **Position**: Confirmation of asset feature orientation i.e. Valves
- **Gas Flow**: Identification/ prediction of flow behaviour
- **Wearables**: Detection/ diagnosis of safe use of equipment i.e. vibration, noise
- **Leakage**: Detection/ prediction of leakage on network assets
- **Customer Satisfaction**: Identification/ prediction of positive & negative influencers
- **Water Ingress**: Detection/ prediction of flow of travel, temperature etc

6.3   Stakeholder engagement and collaborative partnerships

Digital Catapult North East

The transition to a digital future Is a broad challenge. We have formed and partnership and collaborated with the government funded Digital Catapult North East, the UK's leading advanced digital technology innovation centre, to explore the potential opportunities for NGN when considering the Internet of Things.

This collaboration saw us engage with over 30 SMEs at a 'digital innovation challenge event, held at the Sunderland software centre in May 2018. This event was launched as part of the national digital catapult 'Things Connected project and has led to a number of NIA funded innovation projects.

An example NIA project is the printable pressure sensor that aims to create an intelligent low cost IoT (Internet of Things) connector for use in the gas network. The connector will create a platform, that in time could be utilised to also collect other data sources from the network, creating an internet of pipes.

RIIO-1 Impact - We established this connection with Industry experts to test and support and enable our digital strategy and subsequent tactical solutions.

Collaboration and the National Underground Asset Register

We partnered with a number of other utility and Local Authority organisations as part of the 2018 Northumbria Water Group Innovation Festival. A 'Mapathon', 5-day sprint session explored the costs of utility strikes and the benefits of having accurate utility plans when planning excavation work.

Some small pilot areas within our northern operating area were selected and Gas, water, electricity and Telecom utilities shared asset data to create a small combined underground infrastructure map. Local authorities, British Geological Survey (BGS) and Ordnance Survey (OS) also contributed background datasets. During the Mapathon, Ordnance Survey provided a sharing platform and the delegates drew up some acceptable sharing principles as well as collating material for a business case.

The design sprint was successful and demonstrated true collaboration in an agile manner. An output was the creation of a working platform which allows both office-based planning teams and reactive field workers to be better informed of what is under the ground. The key benefits identified during the compilation of business case requirements during the sprint were safer field work through reduced likelihood of utility strikes and more efficient planning staff utilisation through more efficient utility plan job-pack creation.

The success of this collaboration is led to wider engagement and the project consortium has received the support; and subsequent funding to the value of £3.9m to transfer the learning generated into the Geospatial Commission National Underground asset Register (NUAR) project.

This project, and demonstration of collaboration is aligned with the ambition of our innovation strategy contained within section 5 of this business plan. We will collaborate and utilise industry expertise and 3rd party funding to unlock the potential of data to transform network operations and drive efficiency and subsequent qualitative benefits.

Remote quality assurance of PE assets

In 2016 we commenced out remote monitoring of PE asset health programme. This was initiated to undertake active monitoring of jointing and the capture of smart data. The project would address the following key areas:

- Increased asset integrity through the removal of risk
- Quality assurance inspections for polyethylene jointing
- Pro-active intervention alerts for risk management in the event of non-conformance
- GPS data capture and traceability of polyethylene joints

The increase in quality assurance levels as a result of data capture and transfer for near real time review was noticeable. The overall Joint Confidence Index (JCI) figure is a very positive representation of overall quality and demonstrates that focus must remain on the immediate need for real time quality assurance inspection in the industry. The nature of the real time inspection process allows for any issues that are identified requiring potential intervention are proactively managed and rectified prior to commissioning.

Any alerts represent obvious risks from a quality assurance and safety perspective, however also carry financial risk as evidence shows that these joints will not last the prescribed minimum period of 50 years life and will fail requiring additional costs to repair and replace. The industry figure stated for a remediated PE repair is £4,000 per joint.

We will continue to embed our approach to management of PE assets via digital intervention which enables a broad range of opportunities:

Asset Life - The smart data is transferred direct from the field, via the BlueBox application on mobile phones to an external service provider, ControlPoint, for a real time quality assurance inspection measured against set criteria. A Joint Confident Index (JCI) score is issued to each electrofusion joint based on expectations of a 50 year life span. The collection of smart data and electronic transfer for quality inspection reduces the asset health risk. The proactive quality assurance regime enables an asset life increase through robust, GIS standard led technical audit via the use of technology.

Traceability and Data Recording - The data that is captured via the BlueBox application provides materials traceability and usage analysis to lead to improved inventory control, also captured at the time of the electrofusion weld are the GPS location coordinates. This data can then be exported into NGN back office for integration into GOS systems, analysis and accurate data recording.

Behavioural Management - Performance management and targeted coaching are enhanced as a result of the data capture, quality inspection and MI that is available post operation. This MI enables a direct behavioural management approach for managers through trend analysis and the opportunities presented by detailed reports. The MI enables coaching that delivers accurate reward and recognition for good performance and strategic coaching and support of those in need of development.

ControlPoint Guarantee - The robust quality assurance inspection and JCI reporting is the key component of the ControlPoint guarantee. The EUSR approved ControlPoint training targets the optimum polyethylene jointing techniques in line with GIS specification, industry best practice and pipe manufacturer's guidelines. Any joint that attains a 100% JCI is awarded the 'ControlPoint Guarantee', which is a 10 year guarantee to the value of £5000 per joint. Thus removing financial risk

in addition to the likelihood of failure and subsequent remedial works. The target JCI score for NGN therefore must be 100%.

Improved competence/Technical training – The BlueBox application is user specific and linked directly to the operators EUSR number and competencies. This has capability to allow for increased control over technical competencies and with moderate development can be linked directly to the NGN STC database, therefore enabling technological security and manage risk to eliminate potentially invalidated competencies from undertaking pipe construction.