Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Jul 2020

Project Reference Number

NIA_NGN_271

Project Registration

Project Title

myDart Phase 2 – Digital Asset Records Tool

Project Reference Number

NIA_NGN_271

Project Licensee(s)

Northern Gas Networks

Project Start

July 2020

Project Duration

0 years and 9 months

Nominated Project Contact(s)

Glen Batterham – Project Manager

Project Budget

£259,396.00

Summary

NGN already have the capability to electronically capture, draw and map assets in the field, albeit in a standalone system with limited capability (Collector). The current process for capturing and integrating data from the field is inefficient, error prone and there are issues with Collector that have impacted take-up of the app with the field crews. So much so, that some crews have reverted to recording information on paper.
As a result, NGN and 1Spatial have embarked on a project to develop a solution to improve user experience, increase data quality and streamline the data collection process to increase overall end-to-end data management productivity. The purpose of the Phase 2 project is to build upon the successful Proof of Concept (POC) which was delivered as Phase 1.
Testing in Phase 1 identified a number of new user requirements, as well as the need to refine some existing requirements.

These will be delivered as part of Phase 2 whilst the solution is developed from a simple proof of concept (TRL4) to a qualified production ready system (TRL8). Although Phase 2 will not mark the end of development for the full myDart project, it aims to provide NGN with a production ready application so that NGN can realise the benefit of this innovation as quickly as possible.

Third Party Collaborators

1Spatial

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

When NGN engineering crews replace distribution pipes, that are part of the Gas Mains Replacement Programme, site managers are required to:

- Check the replacement job
- Record the pipes that have been abandoned & replaced

- Record service pipes that connect to distribution mains
- Provide measurements of the as-laid pipes
- Capture of any DR4 records

Any updates to the asset register are required to complete within 30 days.

Field data collected during this process is provided to back office staff. The back-office staff verify what has been recorded and update other corporate systems such as the asset register in SAP and the asset location in GIS.

If the back-office staff find identify any queries they contact the site manager to confirm what has been recorded. This can result in a further site visit to collect more evidence to allow for validation to be completed and the query closed.

During field data collection limited validation is carried out on the data recorded. This leads to an increased backlog of work in checking and querying what is being recorded and also an increase in repeat site visits. In the worst cases this can create the risk of inaccurate data being entered into the asset register.

The current process of dealing with DR4's, abandonment and replacement information is manual and time consuming and slows the process of updates down.

Implementing the additional 'production ready' features will allow the business to realise the benefits of improved and upfront data validation.

Method(s)

The focus of this proposal is to take the Proof of Concept (PoC) Demonstrator application (NIA_NGN_229) and progress it towards a version of the application that fulfils TRL8 criteria.

myDart Phase 1(NIA_NGN_229) was to produce a proof of concept (TRL4) mobile application which was capable of consuming geospatial information with inbuilt data validation (spatial and none spatial). Following playback of the PoC it was confirmed that these objectives were met and that with the improved and simplified data capture process along with the in-built upfront data validation, the current back office QA/QC tasks would be greatly improved.

myDart phase 2 will now look to build on the success of phase one and take the application from proof of concept (TRL4) through to a commercial ready solution (TRL8) enabling the solution to be rolled out across the network to deliver all Repex reporting, whilst allowing the decommissioning of the current Collector application.

Successful delivery of phase 2 and a production ready application (TRL8) will also enable NGN to assess further benefits of extending the solution to all areas of the business whilst enabling future S4 & GIS integration.

Scope

This project will produce an application that is complete at TRL8, as follows:
The functional capabilities addressed by this project will

- Be "commercially ready";
- have been tested in an operational environment;
- have been demonstrated in an operational environment;
- be fully integrated with operational hardware and software in an environment that is a
- Functional Test Environment provisioned by
- 1Spatial and accessible for purposes of Functional Acceptance Testing and stakeholder
- demonstration by NGN;
- User documentation, training documentation, and maintenance documentation will be
- limited, but complete in so far as these are
- relevant to the scope described in this proposal and to the Functional Test Environment;
- NGN will be able to, and indeed is responsible for, Functional Acceptance Testing (FAT) in
- the 1Spatial-provisioned Functional Test Environment;
- Functional Acceptance Testing by NGN will verify and validate the functional scope described in this proposal.

For requirements identified for release at up to TRL8, this project will produce an application that is complete with respect to the scope described in this proposal at up to TRL8, which may include
the following:

- Engineering feasibility fully demonstrated in actual system application.

Objective(s)

This project will progress the POC Demonstrator developed in NIA_NGN_229 and release it into 1Spatials Function Test Environment at TRL8. Phase2 will focus on:

- An app designed for and by the end users themselves
- Enhanced, automated data validation, correction and creation
- Connected and disconnected data capture
- Integration with existing GIS platforms (e.g. Esri)
- Simple, easy to use application
- Integration with GNSS devices for accurate location
- 3D enabled (for future 3D requirements)
- Full DR4 recording (Pipe Geography & Plant) & reporting
- DR4 rules validation to ensure compliance
- Full MRD reporting and D30 tracking
- Recording and documenting dual services & multiple span information
- In built service digitisation rules ensuring compliance
- GD2 reporting ready
- 1 click approval / rejection
- Street & Project completion recording
- Capture of all on site documentation – RO/NRO, Test Certificates, Permits, Forms of
- Authority & Site Audits
- Revised data model to support integration with S4
- Enhanced spatial validation rules
- Full reporting suite
- Enable de-commissioning of Collector
- Remove the reliance of ArcGIS online for data returns
- Reduced back office QA/QC effort
-

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be seemed as a success if it offers the following outcomes:

- Reduction in data entry errors in field data collection
- Reduction in site revisits to check data has been collected correctly.
- Reduced manual checking of data.A measurable increase in data quality
- Creation of an app & web viewer which is intuitive and usable by site managers

Project Partners and External Funding

1Spatial
Northern Gas Networks

Potential for New Learning

The solution will provide a user-friendly field-based application, allowing rules-based data capture / validation to ensure the accurate recording of NGN assets

Phase two will deliver: A production ready (TRL8) functioning field-based application that allows fast and effective quality-driven spatial data editing of real-world data online and offline that greatly reduces the need for back-office QA/QC processes

Scale of Project

The purpose of this stream is to enable the production-ready delivery of items demonstrated during the Proof of Concept phase. To achieve the intended project outcome and unlock ‘new’ learning it is necessary to ‘scale’ the project as detailed below:
A. Moving the solution from TRL4 to TRL8
B. Further enhancing the actual data capture process by providing a simple, easy to use app with built-in data validation and auto-correction.

C. Reducing the time and cost currently involved in back office QA/QC tasks, so that the QA/QC tasks are a very light touch check.
D. 1 click approval and rejection If the scope was reduced, it would not be possible to learn the effectiveness and the value of the outlined solution.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

NGN Network area

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

The costs below relate to phase 2 only:
Software development £240,995.
Internal Cost £18,401
Total Cost £259,396

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

n/a

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

This is a development and demonstration project that will focus on improving the efficiency, timeliness and quality of the field editing process and minimising slow and costly back office QA/QC tasks. In this phase back office QA/QC processes will be greatly reduced (but not removed completely).

The forecasted future project benefits are primarily qualitative. Whilst there will be some immediate quantitative financial benefits, the quantifiable benefits will need to be proven over time to allow assessment relating to improvement over the existing manual process.

This project will assist Site Manager and the validation team to complete work with greater efficiency by utilising the benefits of robust data validations with a financial benefit of c.£160,000 per annum.

Please provide a calculation of the expected benefits the Solution

Forecasted workload is 5000 tasks per annum at a saving of £61.17 per task (and increase from £32 per pack based on phase 1)

5000 x £61.17 = £305,850 per annum

Please provide an estimate of how replicable the Method is across GB

This application and method is replicable across all GDN's as is specifically linked to the digitisation and recording of assets.

Please provide an outline of the costs of rolling out the Method across GB.

Implementation costs not yet know and are subject to development options. These will be available in the coming weeks as we work with our internal colleagues and delivery partners to understand the effort.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☑ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

All networks must record accurate data for their assets. The finding from this project can be used across all Network Licenses that capture asset data.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

The challenge identified for improvement in this instance relates to Data being captured
accurately so that the assets are aligned to the NGN Asset Map correctly. Due to in inaccuracy ofcurrent data capture this is then labour intensive for back office staff to amend data received such as through the DR4 Process.

☑ Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

We have conducted research and are confident an equivalent solution is not available on the market or in currently owned software solutions.
No similar projects are being carried out by other Network Licensees.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

The project is innovative and has become possible as a result in emerging technology and the advancement of computer coding programs and subsequent rules engines to deliver evidenced based, automated validation.

Relevant Foreground IPR

n/a

Data Access Details

n/a

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

The benefits from this project are primarily qualitative. Whilst there are some immediate quantitative financial benefits, the quantifiable benefits will need to be proven over time to allow assessment relating to improvement over the existing manual process.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The benefits from this project are primarily qualitative and are the key drivers that make this project suitable for NIA funding. The improvement in this instance relates to efficiencies in both Customer Service and also Asset and Network management.

This project has been approved by a senior member of staff

☑ Yes