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

Sep 2013

Project Reference Number

NIA_NGGD0007

Project Registration

Project Title

Development of DANINT FWAVC software for New Gas Chromatograph

Project Reference Number

NIA_NGGD0007

Project Licensee(s)

Cadent

Project Start

December 2010

Project Duration

5 years and 10 months

Nominated Project Contact(s)

NGGD Andy Finch – Project Manager (lead GDN) NGGD Andy Newton – Portfolio Manager NGGT Roger Wood – Senior Gas Quality Engineer NGN B Hanley – Integrity Engineer-Metering & Gas Quality SGN S Stephenso

Project Budget

£374,252.00

Summary

The DANINT software developed by GL is installed in every Ofgem directed site primary to collect CV data that is submitted into the billing process on a daily basis, it is also required to meet the gas transporters obligation under the gas calculation of thermal energy regulations to collect and archive calorific value, gas composition and metering data.

The DANINT software will be developed by incremental innovation and tested to demonstrate compliance, for example configuration of the FWACV system and upgrade of the DANINT software will be undertaken to facilitate the adoption of Ethernet technology and communication with other gas chromatographs and gas property measurement technologies, whilst preserving backward capability.

The first stage of this project was completed in December 2010 with the development of DANINT 12c that was developed to enable the recently approved Daniel 2350a controller with new processor card and the model 700 gas chromatograph to be installed at site, also within the first stage to ensure that any flows which may occur in between scans are captured, ensuring that associated CV and appropriate averaging takes place, the EOD module was updated to use the difference in the 'Offtake Cumulative Volume Total' this was tested and approved for use by Ofgem.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

This project seeks to improve the data management of gas composition, calorific value and volume data in relation to metering errors by reviewing and trialing new software This project will look at a robust method of monitoring CV for the billing process and monitoring metering and gas quality data for detection and reconciliation of errors ensuring that there is a reliable gas supply [by being commercially viable] which is in line with one of Ofgem's sustainable development themes. Importantly full resilience testing including

simulations will test various scenarios This will mitigate against errors for custody transfer measurements, avoiding issues of non-compliance leading to loss of reputation and possible challenge by third parties

Method(s)

A design study will be undertaken to investigate the options for different analyzers to link/integrate into the DANINT based system. This project is a collaborative project, managed by the Energy Innovation Centre which National Grid Gas are the lead on.

Scope

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Objective(s)

The objective of this project is to review and trial engineering software for data management of gas composition, Calorific Value and Volume Data and overall the proposed developments will lead to improved accuracy custody transfer metering and consequently reduction in the number of metering errors, as a result operational costs will be avoided by reducing the number of required site visits. By undertaking this development work means that the gas industry as a whole can share the overall costs, knowledge, risk and subsequent benefit from development and testing of equipment and software.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

By providing a robust method of monitoring CV for the billing process and monitoring metering and gas quality data for detection and reconciliation of errors it ensures that there is a reliable gas supply, importantly full resilience testing including simulations will test various scenarios, this will mitigate against errors for custody transfer measurements, avoiding issues of non-compliance leading to a loss of reputation and possible challenge by third parties.

The new software and equipment will be more efficient by at least 65%, it is expected that the cost will reduce from £64,400 to £22, 540. This solution is expected to last 5 years and therefore the full life cycle savings for each site (based on 20 sites), however it is assumed that each operator will deploy the solution over 10 sites only during 5 years following project completion, therefore the saving per operator is £104,650.

If the solution is approved by Ofgem there will be two solutions available for operator use, the model 700 solution will be more cost effective than the model 500 and will also enhance the viability of injecting other gas sources.

The software can be pre-loaded when a new model 700 analyser is installed. The software is also compatible with existing systems when fitted with the new processor card.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

Stage one of this project was completed in December 2010 and comprised of two elements, the outcome of which was the

development of DANINT 12c which enables the Ofgem approved Daniel 2350A controller with a new processor card and the model 700 gas chromatograph to be installed at the site.

Two further stages are scoped which will consist of site acceptance testing, purchase and commissioning of equipment, installation reports, compliance configuration, testing of 12c, building and testing of 12d, specialist investigations and developments, concept of design study, codification of knowledge, documentation development, training material and user guides.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

To be confirmed

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement

Indicative Total NIA Project Expenditure

WWU

- £20,190 IFI Project expenditure £36,023 NIA Project expenditure £56,213 total Project expenditure

NGGD

- £44,679 IFI Project expenditure £98,895 NIA Project expenditure £143,574 total Project expenditure

NGGT

- £58,000 IFI Project expenditure £32,000 NIA Project expenditure £90,000 total Project expenditure

SGN

- £0 IFI Project expenditure £49,245 NIA Project expenditure £49,245 total Project expenditure

NGN

- £21,300 IFI Project expenditure £13,920 NIA Project expenditure £35,220 total Project expenditure

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)

£104, 650 per operator, over a 5 year period.

Please provide a calculation of the expected benefits the Solution

(Base Cost of £32,200 per annum per operator including labour and materials) minus (Method Cost of £11,270 per annum per operator including cost of new software and equipment) = £20,930 per annum per operator.

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

This Method could be applied across the whole of GB and applies to all DANINT software across all Ofgem directed sites.

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

£20,000 National Grid Gas Distribution roll out costs.

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

By undertaking this development work the gas industry as a whole can share the overall cost, knowledge, risk and subsequent benefit from development and testing of Ofgem approved equipment and software.

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

Not applicable

☑ 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.

n/a

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

n/a

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

n/a

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

n/a

This project has been approved by a senior member of staff

☑ Yes