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

Oct 2016

Project Reference Number

NIA_WPD_024

Project Registration

Project Title

Time Series Data Tool Feasibility Study

Project Reference Number

NIA_WPD_024

Project Licensee(s)

National Grid Electricity Distribution

Project Start

October 2016

Project Duration

0 years and 8 months

Nominated Project Contact(s)

James Bennett

Project Budget

£95,576.00

Summary

The project will look at developing a solution for improved collection, analysis and rectification of existing SCADA data used for network planning and control purposes – This data includes half hourly recorded Volts, Amps, MW, MVAR, MVA. The incorporation of metering data and connectivity shall be considered for analysis purposes.

Problem Being Solved

It is a fundamental requirement for the DNO transition towards DSO that there is a greater understanding and visibility of the historic and real-time energy flows, as well as a much more complete data capability as technology moves towards a cloud based 'Internet of Things'.

Holistic, big picture views are necessary to knit together the right data repositories in optimal fashion and establish a flexible foundation for the future, with the highest value data readily accessible to the right user.

This research project will seek to answer three questions;

1. What time series data requirements does the DNO have for a DSO future? *This question includes rawdata, visualisation and processing requirements together with functionality questions such as the requirement for smartphone apps or centralised vs. decentralised data repositories.*
2. What time series data analysis tools and visualisation technologies are currently available and how do they compare to our current and future requirements?
3. What would be the cost to develop a tool satisfying these identified requirements?

Method(s)

The project will form three distinct work packages in order meet the objectives as set out in this document;

- Work Package 1 - Production of a requirements specification for a new time series database based on research including learnings from Time Series Data Quality project together with internal business input and wider DNO input.

- Work Package 2 – Review of the current solutions and technologies available and how they compare against our identified anticipated requirements.
- Work Package 3 – Tender process for a time series database and integrated analysis tool. Costs from this will then inform a subsequent time series database development project.

Scope

The project will look at developing a solution for improved collection, analysis and rectification of existing SCADA data used for network planning and control purposes – This data includes half hourly recorded Volts, Amps, MW, MVAR, MVA. The incorporation of metering data and connectivity shall be considered for analysis purposes.

Objective(s)

The objective of the project is to establish the DNOs present and future requirements for the storage, analysis and interrogation of SCADA time series data together with its associated developed cost.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The Project includes the following main identifiable steps which can be assessed for completeness and an indication of successful conclusion:

- Requirements gathering, user interaction allowing processing to next step;
- Requirements specification – production of a complete specification against which the existing market can be compared and potential suppliers may quote;
- Tender process resulting in identifiable solutions and costs;
- Selection of a preferred solution;
- Follow on instructions / details for following implementation project.

The progression to the next stage is predicated on the success of the previous steps in each case, so the ability to follow on in this way is a key measure of ongoing success. A final identified solution outcome is the ultimate measure of Project completeness and success.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

As this project is a research project it is sized such that is produces the required outputs. Following on from the learnings from this proposal any follow on projects can be sized accordingly.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

Due to the nature of the project there is no need to define a geographical area associated.

Revenue Allowed for the RIIO Settlement

Nil

Indicative Total NIA Project Expenditure

£86,018.40

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)

Through the introduction of an improved time series data store the estimated savings can be attributed to a number of areas;

1. It is anticipated that across the company an increased planner efficiency through the introduction of an updated system could provide savings of £1million across WPDs licence areas
2. More accurate time-series data will allow targeted smarter interventions which in turn will enable a reduction in load related reinforcement by 1% over RIIO-ED1
3. In line with the point above, more accurate time series data will allow for more accurate balancing of the system under a DSO type role and thus result in a cost saving. At this stage it is difficult to quantify such a saving.

Please provide a calculation of the expected benefits the Solution

N/A – Research Project

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

The method within this project will be easily replicable across all other network licence areas.

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

N/A – It is envisaged that the DNO will install one such database which can accommodate all required data inputs as defined in this project. The costs to roll out across the GB will be dependent on other network licensee sizes and subsequent cost of solution which will be identified at the end of this research project.

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

The project is principally concerned with value add in respect of analogue data management and rationalisation of business processes associated with offline data analysis. The project will investigate how to derive information from such analogue data and how to correct for errors, visualise and manage analogue data and export bespoke reports for export to other downstream utilities using *best-of-breed* data management and analysis systems. The conclusions of the project will make clear to DNOs how to deal with such data in the future, the limits of what can be done using current technologies and the likely cost of these systems.

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

n/a

☑ 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