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

Mar 2017

Project Reference Number

NIA_WWU_036

Project Registration

Project Title

GPS Enabled Video in Route-Walk Surveys

Project Reference Number

NIA_WWU_036

Project Licensee(s)

Wales & West Utilities

Project Start

March 2017

Project Duration

0 years and 9 months

Nominated Project Contact(s)

Nick Falconer

Project Budget

£84,772.00

Summary

The proposed project runs for 8 months and is a two phase project. The technical innovation will develop and demonstrate RouteShoot technology, a product that combines the video and GPS capabilities of a consumer mobile “smart” phone with the capabilities of modern Geographic Information Systems (GIS) to plot a route from the video asset taken by the phone and project onto a map. The scope of the project is to determine the legal position and trade union acceptance, which is the first phase of the project and then to configure the route-walk system and determine the choice of camera for the system, conduct field trials and produce system and procedure documentation.

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Historically a Gas Distribution Network (GDN) will program walking surveys along their pipelines for a variety of reasons including identification and condition verification of connected service assets and determination of environmental encroachment or other risks on its route. In addition, programmed survey walks can form part of the obligations under a price control period and can consist of an individual physically walking the route of several thousand miles of pipeline.

This undertaking represents a considerable investment by the GDN in resource time and cost, but typically yields information at specific points on the route corresponding to the location of an asset or risk. This information is gathered and stored in several ways including existing work management systems, photographs, spreadsheets and mapping systems.

Planning and scheduling for a route walk is problematic as the task itself does not easily fit a standard cost or time model due to the additional variables that determine duration and effort - weather conditions, terrain, asset population density and distance – all of which are rarely used in determining resources for any other type of activity. Such scheduling requires a geography / map based approach which is not commonly in use today.

Finally, verification that the route has actually been walked is a problematic, particularly where the pipeline is in remote locations.

Method(s)

Recent developments in the consumer “action” video camera market have brought a number of products to market that combine high quality video capture, image stabilisation, remote control through a smart phone and GPS linked to the timecode of the video stream itself. Such a device could accurately record the whole route-walk and provide a fully geo-referenced video asset. Put simply, the exact route walked can be determined by the GPS encoded within the video and can be overlaid on a map containing the pipeline route itself.

In addition to proving the route-walked, the captured video asset provides high quality imagery of the entire route which can be later reviewed or accessed based on a specific point on a map.

This technical innovation project will deliver an understanding of the benefits of using GPS enabled video capture for our network.

The success of the work will depend upon the ease of use of the camera as well as a developed understanding of any legal implications of capturing footage and the potential methods of re-using the captured footage within day to day activities.

Scope

The proposed project runs for 8 months and is a two phase project. The technical innovation will develop and demonstrate RouteShoot technology, a product that combines the video and GPS capabilities of a consumer mobile “smart” phone with the capabilities of modern Geographic Information Systems (GIS) to plot a route from the video asset taken by the phone and project onto a map. The scope of the project is to determine the legal position and trade union acceptance, which is the first phase of the project and then to configure the route-walk system and determine the choice of camera for the system, conduct field trials and produce system and procedure documentation.

Objective(s)

To field test this new technology with WWU operatives to test its functionality and operational benefits and to provide a summarised report.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

To collect a body of evidence to support this new technology, produce a GPS enabled video that has been tested in the field and that is at a stage to be transferred to business as usual for all networks advantage.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

To maximize the potential of this project, we will demonstrate 8 models across the network area.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

Demonstration trials will be completed within Wales & West Utilities geographical area and the assessment of the technology will be undertaken as a desktop exercise.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

External Cost - £63,579

Internal cost - £21,193

Total NIA Expenditure - £84,772

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)

By substantially reducing or removing future physical survey time at a location, much better visual information and detail is available to any planning team or asset manager evaluating the environmental conditions or challenges of future works. This will provide a direct reduction in cost by removing the need to travel and re-survey a location, it will also allow for better decisions to be made at the scoping phase of any works project.

Please provide a calculation of the expected benefits the Solution

Base cost

WWU have a requirement to carry out at least 10,000 surveys each year for different functions. This manual process generates a large volume of paper and associated costs. Based on an average of 1 page per survey at £0.03 each, the current cost is £300

An assumed cost of delivery would be 10,000 x 1 hour x £32.89 hourly rate for a technician = £328,900. A total cost of £329,200

Method cost

As there would be no need to complete the survey on paper there could be a potential saving of £300

10,000 x 1 pages x £0.03 per page = £300

It is estimated that each survey record (approx. 10,000) captured through Route shoot will save an estimated 30 mins per job to capture, therefore a total of 5,000 hours. 10,000 x 30 mins x £32.89 hourly rate for a technician = £164,450. So a total saving of £164,750

There will be an implementation cost of the Routeshoot technology (separate to this project). This cost is estimated to be £91,476 to cover equipment purchase, training, system updates, for an additional 30 units. The project will be evaluated over a 5yr period, and for the purposes of this comparison, this cost will be split equally over the period i.e. £18,295 per annum.

The base cost is £329,200

The method cost is £329,200 – £164,750 + £91,476 = £255,926

Overall cost saving of £329,200 - £255,926 = £73,274 over a 5 year assessment period

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

The use of the GPS enabled video, on completion of development, can be re-created across any network whilst undertaking a walking survey of IP/MP mains.

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

We anticipate the costs will be predominantly through purchase of the equipment, maintenance of the equipment, upgrading mapping systems and minimal training in its use.

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 are required to undertake surveys. The learning generated from the use of this new camera technology and any learning on how it could be implemented could be used by all networks within their surveys. If successful this project could develop systems that would enable instant access to asset information without needing to visit site and provide better quality information to allow accurate digital capture of location and condition.

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