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

Dec 2016

Project Reference Number

NIA_NGN_190

Project Registration

Project Title

Health and Safety Monitor

Project Reference Number

NIA_NGN_190

Project Licensee(s)

Northern Gas Networks

Project Start

December 2016

Project Duration

1 year and 5 months

Nominated Project Contact(s)

Derek Field (Project Manager) dfield@northerngas.co.uk

Project Budget

£193,333.00

Summary

The monitor is a personal issue device, associated with the worker it is issued to. J3llyh34d maintains a lifecycle record of the device itself, including software releases.

There are two options;

The networks could own the systems and integrate the data into existing HR and training record systems.

This could be delivered as a managed service. This would have several advantages, including that data from all workers could be combined to increase the quality of data supporting improvements in PPE, tools and working practices and allowing the worker to ‘passport’ their records from job to job for continuity of care.

Thermalarm was developed to provide a wearable alarm and dosimetric PPE monitor for firefighters to detect head injury, extreme thermal events and long-term heat exposure. PPE is now so good, in particular fabric technology, that the user is insulated from the external environment so well that an alarm is required to alert the user of the impending failure of their PPE

Third Party Collaborators

J3LLYH34D 1NDU5TR135 Limited

Athena PPE (UK)

Energy Innovation Centre

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

There are no current systems for monitoring and recording an individual's exposure to long-term health risks throughout the working day. Exposure to vibration, noise, manual handling and extreme temperature can all result in long-term ill-health and incapacitation as well as compensation claims for the employer.

The Health and Safety at Work etc. Act 1974 (Act 1974) is the primary piece of legislation covering occupational health and safety in Great Britain. The Health and Safety Executive, with local authorities (and other enforcing authorities) is responsible for enforcing the Act and a number of other Acts and Statutory Instruments relevant to the working environment.

Act 1974 states 'It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.'

Method(s)

- This project will build on learning from an already developed Thermal alarm (Thermalarm), used by the fire service. Multiple sensors will be identified/developed to gather information from an operator, worn around their body. Each sensor will report to a central worn unit, connected via communications to a gathering and analysis system allowing logging and reporting of operative exposure.

- An initial requirement capture and design evaluation stage will be followed by a 20 unit prototype build/test stage.

Scope

The monitor is a personal issue device, associated with the worker it is issued to. J3llyh34d maintains a lifecycle record of the device itself, including software releases.

There are two options;

The networks could own the systems and integrate the data into existing HR and training record systems.

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TO EXTEND TO DEC 17 - Extension required following the identification of all sensors required to be incorporated into the prototype design being more complex than anticipated. This will deliver extended benefits being delivered from an increased range of sensing technology to meet all original project aims.

Project cost has now increased to: £198,000

Objective(s)

- The physical design of ActivePPE must allow the device to be flexibly mounted elsewhere on the PPE.
- Positional referenceability is critical in making the sensor work effectively for consistent measurement.
- Data logging of the new requirements, communication, gathering, analysis and display of data will also be developed as part of the project.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Success criteria for the project are to;

- A documented record, evaluating current Health and Safety requirements/reporting for operatives in a site environment
- Identification of sensors, systems and processes to allow the integration into Gas Network activities/ Health and Safety reporting requirements

- Consideration of criteria, in the form of a specification, for the development of the product and operational practices.
- Delivery of instructions on operation for the use of developed equipment.
- Manufacture, deliver, trial and report on 20 Alpha prototype units.
- Required HSE compliant data generated, captured, stored and reported from the developed system.
- A comparison of current methods or data captured and that gathered using the developed product.
- Product passes alpha trials
  - Test schedule will be agreed at kick off meeting and stage gate
- Return on investment is confirmed for future implementation
  - Comparison of current methods of gathering operative data to developed system and future savings that could be realised from reduction in operator injury
- Reporting to Network Licensee at Stage Gate 1, and 2 in the form of technical reports, including research, development, testing and trials.
- Dissemination of learning from project to facilitate further development/capabilities if required

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The output of this project will be a prototype system, capable of gathering, communicating, logging and reporting of individuals Health and Safety exposure to meet current HSE requirements.

The network will have 20 prototype ActivePPE monitor, incorporated into existing PPE that can alert workers to immediately hazardous conditions as well as provide a continuous dosimetric record of a workers' exposure to potentially harmful working conditions.

The networks will also have all of the systems, logistics, support, maintenance and future development path defined. This data can be used to support training needs, medical intervention, career planning and improvements to PPE. There may be further development to be done to fully realise the potential of ActivePPE for improving the safety of workers.

Dependent on requirements £300 to £550 per unit. External sensors and wireless requirements add significant complexity and have maintenance consequences.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

NGN's Network

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

NGN External expenditure - £145,000

NGN Internal expenditure - £48,333

Total NGN expenditure - £193,333

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)

The project will have all of the systems, logistics, support, maintenance and future development path defined. This data can be used to support training needs, medical intervention, career planning and improvements to PPE.

There may be further development to be done to fully realise the potential of ActivePPE for improving the safety of workers. This implementation will assist in employee engagement and welfare monitoring to reduce the risk of injury and absence, increasing overall efficiency.

Please provide a calculation of the expected benefits the Solution

The benefits for this project are mainly qualative, however the increased monitoring and control of at risk areas has potential to reduce insured risk, employee absence and complaints received relating to noise disturbance.

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

The operations carried out which expose operatives to risk, specifically relating to vibration and noise exposure and relevant to all network licensees. The learning and implementation could be therefore adopted by all GDN's

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

The cost for roll out would be subject to the innovation strategy of each individual licensee. The price point per unit is £300, NGN has c.500 operatives that may require this technology. £300 x 500 = £150,000. The cost for all GDN's (assuming comparative operative levels) is £150,000 x 8 = £1,200,000

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 has a significant number of qualative benefits that are mainly focused around operative health, safety and welfare. Specific points are:

Improved staff awareness

Improved staff health and safety

Honed training programs

Improved PPE

- Reduced cost of claims

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 innovation is aligned primarily to the E,H&S area of the innovation strategy. The development of technology that can transfer real time data will safeguard employees, meet legislative requirements and provide additional information to the business that can inform customer and procurement strategy.

☑ 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