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

Nov 2018

Project Reference Number

NIA_NGN_234

Project Registration

Project Title

Novel Seal PPE

Project Reference Number

NIA_NGN_234

Project Licensee(s)

Northern Gas Networks

Project Start

December 2018

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Mark Simpson

Project Budget

£61,600.00

Summary

Current breathing apparatus typically uses a hard material interface, which requires the 'wearer' to be clean shaven for an effective protective facial seal. As a result users must be clean shaven for fitting of the apparatus, and remain so even if it is used infrequently. In reality operatives are not always suitably shaven to meet the manufacturers' safety requirement, which negatively affects the fit and sealing capability, causing a health and safety risk of inhalation of airborne particles or gases. This restricts the 'wearer' from having facial hair, limits the role of those who have legitimate medical or religious exemptions and is and requires significant resource and time to enforce this unpopular but necessary control. Additionally this has a negative impact on presenting NGN as a potential employer for those interested in Operational roles.

Third Party Collaborators

Frazer-Nash Consultancy

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Current breathing apparatus typically uses a hard material interface, which requires the 'wearer' to be clean shaven for an effective protective facial seal. As a result users must be clean shaven for fitting of the apparatus, and remain so even if it is used infrequently. In reality operatives are not always suitably shaven to meet the manufacturers' safety requirement, which negatively affects the fit and sealing capability, causing a health and safety risk of inhalation of airborne particles or gases. This restricts the 'wearer' from having facial hair, limits the role of those who have legitimate medical or religious exemptions and is and requires significant resource and time to enforce this unpopular but necessary control. Additionally this has a negative impact on presenting NGN as a potential employer for those interested in Operational roles.

Method(s)

The project will be delivered in two phases:

Phase 1A - will involve a requirements study to fully capture the boundaries of the design space and potential for commercialisation. From a complete understanding of the problem, a number of concepts will be developed – this will be a result of the optioneering study. These concepts will then be evaluated before utilising a weighted multi-criteria decision analysis tool to select a final solution.

Phase 1B - will undertake an initial commercialisation exploitation assessment of the agreed final solution.

Scope

In Scope

A requirements study to fully capture the boundaries of the design space and potential for commercialisation. From a complete understanding of the problem, a number of concepts will be developed – this will be a result of the optioneering study. These concepts will then be evaluated before utilising a weighted multi-criteria decision analysis tool with users to select a final solution. The final solution will then undergo an initial exploitation assessment and a verification to proceed with Phase 1B.

Out of Scope
Commercialisation or manufacturer agreement to commercialise the 'arrived' at prototype.

Objective(s)

There are three objectives of Phase 1A:
1. A complete capture of information required to solve the problem. This will be achieved through a detailed requirement capture and workshops with the operators, ensuring that all subsequent decisions are as informed as possible.
2. Selection of a final concept through a down-selection workshop. This will be done through an optioneering study – up to five concept solutions will be generated that fulfil the requirements. The down-selection pack will contain all of the proposed concepts and communicate the rationale behind them. A weighted multi-criteria decision analysis tool will be used alongside collaboration with the design team and the customer in order to reach an agreed decision on the final preferred concept. The key points from the workshop will be recorded and developed as part of an optioneering report.
3. Costed proposal for further development of the preferred design to testable prototypes.
There is one objective of Phase 1B:

1. An initial assessment of the commercialisation route for the down-selected concept from Phase 1A. The output from this assessment will be a roadmap of the activities that are required to develop a commercially exploitable version of the concept. Part of this assessment will include two meetings with the Networks' preferred exploitation partner.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Minimum Acceptance Criteria
Delivery of a prototype design that has the potential to go on and achieve the current face fit testing pass criteria, whilst removing the requirement for the wearer to shave.

User Acceptance Criteria
Delivery of a prototype design that has the potential to perform as effectively as, or better than that currently available and is less reliant on user competence and test conditions to be reproduced. It must also:

- Remove the need to shave, whilst not compromising safety.
- Be comfortable for the 'wearer', both in fitting and use.
- Withstand site and environmental conditions without affecting its integrity and or performance.
- Easily worn alongside existing PPE.
- Have a service life equal to or exceed current Breathing Apparatus.

Project Partners and External Funding

Frazer-Nash Consultancy

Potential for New Learning

The project is research centric, its aim is to identify the necessary requirements for enabling the use of Breathing Apparatus (BA) (by GDN engineers, for work in confined spaces) without a ‘clean shaven’ face, before selecting suitable materials from the medical sector to ‘build’ a working prototype.
Therefore the project will prove the feasibility of commercialising a (BA) that can be worn without the need of shaving.

Scale of Project

The focus of the project is research and feasibility. The output of which has the potential to shape GB’s gas industries view and appetite for developing a new breathing apparatus, capable of been worn with facial hair.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

The project is applicable to GB’s Gas Distribution Networks.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

61,600

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)

Introducing Breathing Apparatus (To be worn with facial hair) has a number of Quantitative benefits that can be realised by all GDN's and their customers, specifically:
• Financial savings through avoided specialist Breathing Apparatus fittings, where the standard Breathing Apparatus is unsuitable.
• Resource saving through removing the ongoing requirement of 'clean shaven' auditing.
• Improved morale amongst the work force, the impact of which is likely to contribute to employee retention/recruitment and increase productivity. All of which potentially delivers value for money to the customer.

Please provide a calculation of the expected benefits the Solution

N/A

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

The project output is anticipated to inform GB's Gas Distribution Industry around the future use of Breathing Apparatus.

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

The project outcome is centered on research and feasibility, of which the outcome will be shared with Network Licensees. There is no cost associated with this.

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 learnings have the potential to inform the GDN's view of future Breathing Apparatus, worn by its engineering workforce.

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

Safety and Environment – The project has the potential to improve colleague safety, through ensuring environmental conditions do not impact on the level of protection afforded to the 'wearer'.

☑ 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.

A thorough technology search and review of the Smarter Networks Portal has been undertaken, alongside the searches conducted by the Energy Innovation Centre. Furthermore, the project proposal has been shared with all GDN's.

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

There is currently know known products commercially available aimed at resolving the issue of providing 'fit for purpose' breathing apparatus, with facial hair being present.

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

Due to the low TRL of the project, there is a degree of uncertainty surrounding the outcome of the project. Therefore, the project would present a risk beyond the businesses appetite.

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

Due to the uncertainty surrounding the project outcome, the project is considered a commercial risk that is beyond the appetite of the business.

This project has been approved by a senior member of staff

☑ Yes