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 2020

Project Reference Number

NIA_SSEN_0047

Project Registration

Project Title

TraDER

Project Reference Number

NIA_SSEN_0047

Project Licensee(s)

Scottish and Southern Electricity Networks Distribution

Project Start

March 2020

Project Duration

3 years and 0 months

Nominated Project Contact(s)

Peter Taddei

Project Budget

£275,000.00

Summary

Project TraDER will deliver a neutral market platform, the operation can either be centralised (operated by a neutral market facilitator), or decentralised (overseen by multiple governing authorities). Both the governance structure and the commercial model will be studied and determined throughout the project.
TraDER is not a dispatch platform, rather a marketplace based around the principles of self-dispatch. Moreover, TraDER is not looking to replace the residual market, rather to gradually aggregate liquidity in near real time, traded markets.

Third Party Collaborators

Electron

Aerospace Technical Services

Nominated Contact Email Address(es)

fnp.pmo@sse.com

Problem Being Solved

Present energy market design does not allow for more than one value component to be traded at once. Flexibility is not simply a service, rather a bundled set of attributes such as power, balancing implications, location, response profile and inertia. Therefore, the value of a single flexibility action should accrue to multiple parties at the same time. Existing limitations in the market design result in the procurers of flexibility being unable to share pools of liquidity or the partial costs of the flexible actions that they seek to schedule. Currently, there is not a single access point which allows for distributed energy resources to provide valuable services such as balancing, stability, and network capacity.

Method(s)

Project TraDER will both develop and trade a near real time distribution constraint product and integrate this market both horizontally (i.e. with other, longer term Distribution System Operator (DSO) products) and vertically (i.e. other trades within the same time period, such as the Balancing Mechanism). TraDER will provide a platform creating single access point, making it easier for distributed energy resources to provide valuable services such as balancing, stability, and network capacity.

In this way, "whole system value" is maximised by enabling price driven coordination between Electricity System operator (ESO), DSO and other market participants. Moreover, since the definition of "whole system value" is simply a function of the defined products in the market, it is capable of evolving over time as the market products themselves evolve. In this way, TraDER's approach is highly flexible and can be extended in later iterations..

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Scope

Electron, a UK based Entech company, have been appointed by BEIS to lead a consortium to develop a neutral, multi-product flexibility exchange as part of its FleX competition.

The consortium, named TraDER, brings together CGI, EdF Energy, Elexon, Energy Systems Catapult, Kaluza [an OVO company] and SSEN, alongside other key players in the emerging flexibility arena. It is looking to deliver a single access point to multiple energy services such as balancing, stability and network capacity.

SSEN's input to TraDER is funded via NIA rather than BEIS. SSEN will act as a facilitator to TraDER by enabling access to the Active Network Management (ANM) scheme currently operating in Orkney.

Objective(s)

SSEN will act as a facilitator to TraDER by:

Delivering data from the ANM system currently operating in Orkney.
Enabling changes to the ANM system in order to execute trades created by the TraDER platform.

In return, TraDER will deliver outputs which will allow SSEN to assess the impact of –

How trades can be implemented on the ANM scheme eg. changes to Last In First Out (LIFO) connection order, and associated costs to SSEN.
Scale of the market to ensure implementation costs can be recovered by SSEN.
Allows SSEN to assess the preferred Neutral Market Facilitator (NFM) model of 3rd parties. This assessment can feed into wider DSO related projects being undertaken by SSEN

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The NIA project will be deemed as successful if all items in the objectives are met and provides effective support to the delivery of the larger TraDER BEIS project.

Project Partners and External Funding

SSEN will formally engage with Electron who are leading the BEIS project. SSEN's contribution is fully funded by NIA.

Potential for New Learning

The project will provide valuable new learning relating to the trading of both long-term and near-real-time flexibility products, bridging the gap between traditional procurement and the evolving needs of the energy system. In addition to harmonising with existing products and services, new products addressing specific market needs will be developed as part of the project. The ultimate goal of

the project is to integrate these markets in a collaborative framework which enables flexibility providers to provide simultaneous non-rival services to multiple buyers.

Scale of Project

This project is designed to get maximum learning for minimal cost and is expected to take this technology through to TRL 6 at which point solutions to the problem statement have been tested. Any smaller scale project would limit the potential for new learning.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL6 Large Scale

Geographical Area

This project will be undertaken within the Scottish Hydro Electric Power Distribution licence area in Scotland.

Revenue Allowed for the RIIO Settlement

No allowance has been made for implementing a solution such as TraDER.

Indicative Total NIA Project Expenditure

The total expenditure expected from the project is £275,000. 90% of which £247,500 is allowable NIA 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)

The project can deliver a net benefit to generators by potentially allowing generation in circumstances where they would otherwise be curtailed. The wider BEIS project, led by Electron, will provide estimates on potential savings during the course of the project and is a significant learning objective of the project.

Please provide a calculation of the expected benefits the Solution

N/A. This is a research-based project, but if successful the project will be able to provide insight into how customer savings can be achieved.

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

The findings from this project will be replicable across all DNOs. Learnings will be shared in order to assist with implementation.

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

The cost of rolling out will be determined by the success of the method and as a result the answer to this question will be an output from the project itself; as detailed in the project objectives. The costs will be similar to other DNOs who operate ANM systems.

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

☐ 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 learning from project TraDER will allow Network Licencees to asses the potential technical and commercial impacts that peer to peer trading will create. This learning will include the expected market scale in Orkney and wider GB network along with documented cost recovery mechanisms for Network Licensees.

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.

Flexibility trading markets have not yet been established within the UK. This is a first of its kind project.

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

TraDER is innovative as it will level the playing field by breaking out “flexibility” actions into more granular value components. This unique approach allows those components to be priced separately across multiple bidders or markets (e.g. location + power + balancing, or balancing + inertia). In this way, despite significant uncertainty over how much flexibility will be required and where it will come from as the energy system evolves, this market approach will allow economies of scale to compete with economies of location as assets are remunerated for the services they deliver to both networks (peak reduction, network reinforcement deferral and avoidance) and load and thus level the playing field for distribution connected assets. This approach has not been trialled previously and the outputs will provide valuable learning to larger scale DSO innovation projects.

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

No allowances have been made in the RIIO settlement for trialing technologies such as TraDER. The results from the project may change procedures and processes on how SSEN implement ANM activity. SSEN needs to fully understand the results from an extended monitoring period, to full assess the impact of widescale TraDER implementation in a business as usual application.

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

There are two potential risks through which a market-based approach could fail. Firstly, the market design itself could be flawed, the consequences of which, at one extreme, would result simply in a lack of engagement and sub optimal allocation.Secondly, the platform design and implementation may have technical weaknesses that result in non-availability, unanticipated costs, cyber security failures, or market disruption. The costs to SSEN to facilitate the TraDER project and trials are significant; NIA is deemed the most suitable framework to undertake these trials, capture knowledge and disseminate the learning to other interested parties.

This project has been approved by a senior member of staff

☑ Yes