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	Project Reference Number
Apr 2013	
Project Registration	
Project Title	
TP 22 LV Fault Locator	
Project Reference Number	Project Licensee(s)
	Electricity North West
Project Start	Project Duration
April 2006	2 years and 0 months
Nominated Project Contact(s)	Project Budget
Electricity North West Innovation Team	£54,500.00

Summary

TP-22 units, and their predecessors the T-P20 and T-P21, have been used to locate many intermittent faults on the LV network, some of which had existed for many months and been impossible to locate with previously available fault location instruments. All of these fault locations were carried out by a small number of specialists using the remote interrogation features of the T-P2X Master Station software. As the number of instruments in service increases it is becoming more difficult to ensure that the status of units and the integrity of the communication channels are checked regularly. If this is not done systematically it is possible for valuable fault events to be over-written or for problems with a unit, or its communication channel, to go undetected until an interrogation is attempted after a fault has occurred.

When first introduced the TP-20 operated purely as a triggered TDR device with a limited range of functions. The TP-22 now includes the Travelling Wave (TRS) mode of operation whilst still providing triggered TDR, but with a wider range of functions. Alone, or in combination with TV-22, the TP-22 forms a 3 phase Voltage Gradient System (VGS) with remote control and interrogation. Depending on the situation, the 3 modes of operation can often be used simultaneously, or sequentially, to improve the chances of achieving a successful fault location or to resolve an ambiguous result on a multi-branched cable.

As awareness of the usefulness of the TP-22 has grown there has been an increase in the number of non-specialist users requiring a simplified means of control and interrogation, preferably with a degree of automatic analysis and validation of the acquired data. Against the above background it is now appropriate to re-evaluate how the full potential of the T-P22 and TV-22 units can be realised through the development of a new Master Station software package which will reduce the need for manually initiated interrogation by specialist operators. A number of T-P22 would be purchased to trial the developed firmware and software.

Nominated Contact Email Address(es)

innovation@enwl.co.uk

Method(s)

Scope

Objective(s)

The Kehui TP-22 is used to locate the most elusive intermittent faults on the ENWL LV network, this project collaborated with Kehui to introduce a number of further functional developments and also Nortech to enable the TP-22 data to be viewed over the iHost Platform.

The main features of the proposed development package are:

• Regular automatic Logging and polling of specified units

• Configuration tool to provide investigation into possible methods of automatic fault location using estimation of impedance to fault from voltage measurements

- · Conversion of impedance to fault into distance to fault based on cable parameters and source transformer rating
- Estimation of distance to fault using TRS data
- Estimation of distance to fault using TDR data
- Create automatic fault location log giving results of successful locations.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project 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)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

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

n/a

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

n/a

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIO-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)

 $\hfill\square$ A specific novel operational practice directly related to the operation of the Network Licensees system

 $\hfill\square$ 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

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

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

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