Date of Submission

July 2019

Project Closedown Report Document

Notes on Completion: Please refer to the **NIA Governance Document** to assist in the completion of this form. Please use the default font (Calibri font size 10) in your submission. Please ensure all content is contained within the boundaries of the text areas.

Project Title		**Project Reference**
Network Damage Reporter		**NIA_SSEPD_0003**
Funding Licensee(s)	**Project Start Date**	**Project Duration**
Scottish Hydro Electric Power Distribution (SHEPD), Southern Electric Power Distribution (SEPD)	April 2015	38 Months
Nominated Project Contact(s)		**Year**
SSEN NIA Programme Delivery Manager –Joe McNeil		2019

Scope

To produce a smartphone application that can work on Android and Apple devices that will allow members of the public and the emergency services to report damage to the overhead line network. The project will be in 4 phases.

Phase 1 will involve the development of the Apple iOS application, conversion of network data to allow the application to reference the network, and the provision of a facility to collect reports. Phase 2 will expand the ability of the server to handle multiple reports and provide feedback to the reporting device.

Phases 1 and 2 have been carried out under the Innovation Funding Incentive scheme. This project will move the project to completion through phases 3 and 4.

Phase 3 will use the lessons learned in phase 1 and 2 to develop the application for the Android operating system. Phase 4 will see the release of both versions of the applications to the related application store, and the collection of live data. This will then allow for the evaluation of the responses from the public, and the levels of take up of the app.

Objective(s)

1. To determine the viability of using a smartphone application to allow network damage to be reported quickly to a Distribution Network Operator (DNO) service centre.
2. To evaluate the level of interest in the general public in using such a smartphone application, and in receiving updates on the progress of the resolution.
3. To determine the utility of collating the received photos and location data into a single user interface for viewing by the DNOs fault recording and dispatch staff.
4. To assess the efficacy of automatically matching known equipment locations with sent data to allow the fastest response by repair staff.

Success Criteria

Develop new procedures and processes to make use of the data submitted by users, such that the fault report submitted is integrated into the company fault management system.
Develop a publicity strategy to publicise the availability of the app.
Evaluate the benefit from the utility in fault reporting using smartphones.

Performance Compared to the Original Project Aims, Objectives and Success Criteria

The initial Power Track mobile application was developed in a previous innovation project to help customers to understand if they are being affected by an outage. Building on the Power Track project, the Network Damage Reporter has continued with the existing elements and includes additional functionality for reporting outages and damage to the network, information of the Priority Service Register and guidance for dealing with an outage. The application has been successfully modified to enable two-way traffic from the device to a server. Key to this is the concept that actionable advice available on the app will aid customers in both safety and in reduction of customer interruptions/customer minutes lost (CI/CML).

The enhanced application went live to the public on 5 July 2018, and successfully transitioned to business as usual (BAU). Power Track has been a finalist in industry awards such as The Electrical Industry Awards, Electrical App of the Year and Institute of Customer Service finalist in effective use of innovation category (March 2019).

The sections below detail how the project has performed against original objectives and the success criteria:

Objective 1: To determine the viability of using a smart phone application to allow network damage to be reported quickly to a DNO service centre

From the field trials as part of the previous innovation project, it was determined that a mobile application designed with adequate support and architecture at the back-end could enable smartphone reporting of network damage with enough accuracy. The smartphone application which has been developed provides clear and accurate information to report an instance of damage or loss of supply, which is easy to use and manage on the back-end by Scottish and Southern Electricity Networks (SSEN) customer contact centre staff. Since go live we have had several successful reports of damage and there have been many examples where these have been valid damage reports and SSEN has been able to quickly determine the extent and location.

Critical to the user experience is that the application is not dependent on signal level at the user's location, as the application permits creating a damage report without a phone signal. This report will be stored until signal is available and will retain the location position of the report and the photo taken. This may cause a delay to the user's report being delivered, however it does not impact the user experience. Objective 1 has been achieved.

Objective 2: To evaluate the level of interest in the general public in using such a smart phone application, and in receiving updates on the progress of the resolution

At various events and public interface forums, informal communications revealed significant interest in the development of a two-way communication system to report network damage and for SSEN to provide feedback on that report and outages.

The Power Track application has been presented and demonstrated at various stakeholder events including Nationwide Emergency Services Conference and Low Carbon Networks Innovation Conference. The application has continued to be promoted, through our Winter Campaign and social media channels.

The application has been downloaded 11,450 times, with 31,500 users. Sixty percent of which are new users and the remaining 40% returning users which indicates a successful level of interest.

Since go live, the app has received 97 confirmed damage reports. Outage information has been viewed more than 321,552 times and the power cuts map has been viewed more than 664,387. Through the messaging functionality that allows the back-end system to respond to the reporter with updates such as acknowledgement of report, estimated time of arrival for the field and suggested time when power supply will return. In total, 3034 messages

have been sent to users. Objective 2 has been achieved.

Objective 3: To determine the utility of collating the received photos and location data into a single user interface for viewing by the Distribution Network Operators (DNOs) fault recording and dispatch staff.

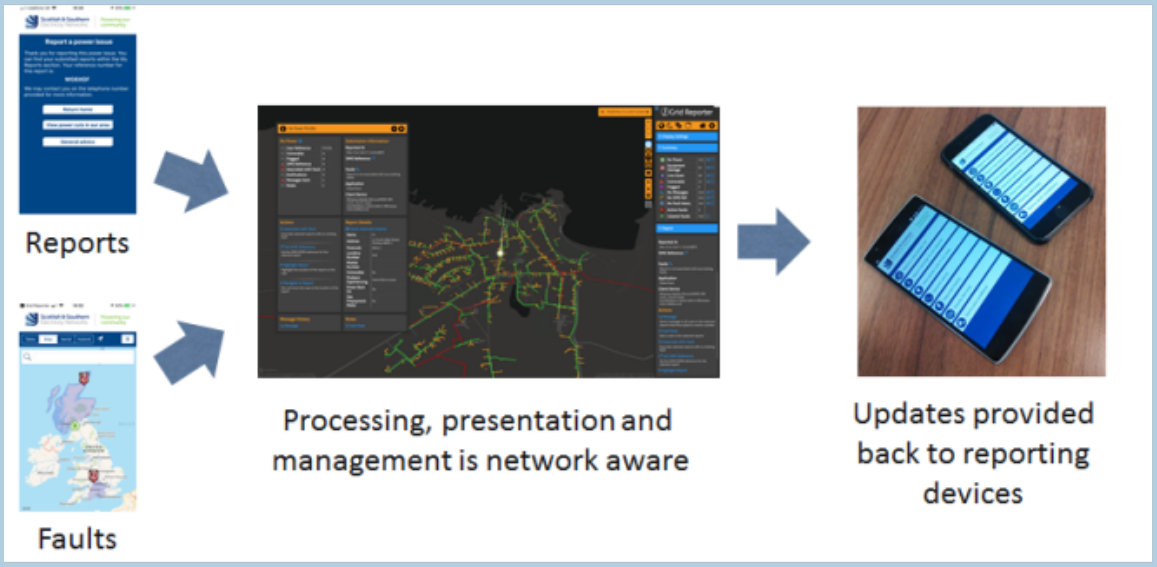

Fig 1: Interaction between mobile devices and the DNO service centre desktop

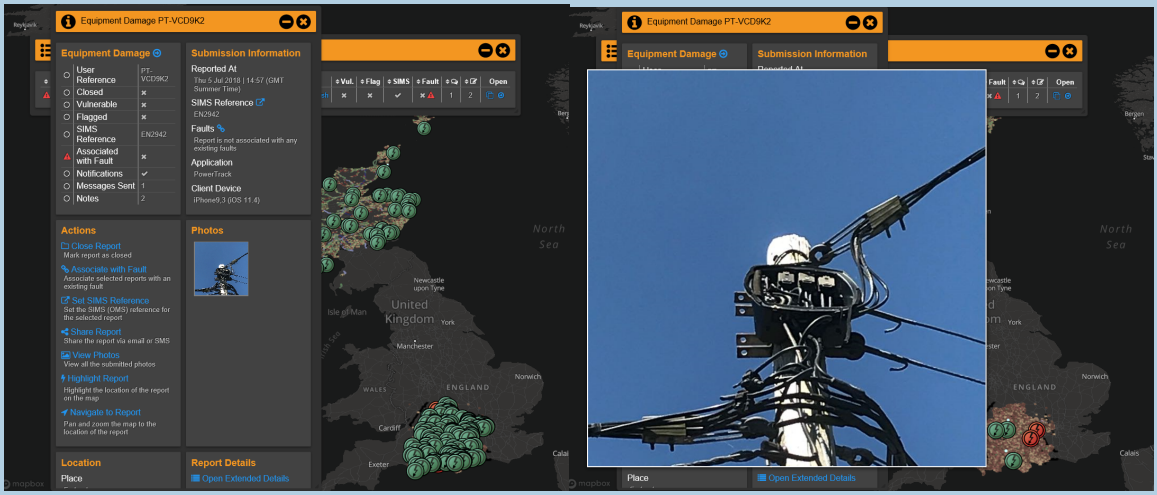

Fig 2: User interface showing a fault report as it appears on the DNO service centre desktop

As the images above show, photos, location, general and outage mapping are all included in the backend application. The application on mobile devices gives users the ability to complete forms reporting faults with photos and location information. The staff in Customer Contact Centres can view all this information on the backend desktop solution in a single user interface. Since go live the backend system has been enhanced, upon request of the internal users, to allow SSEN to manage higher volumes of users more efficiently. Objective 3 has been achieved.

Objective 4: To assess the efficacy of automatically matching known equipment locations with sent data to allow the fastest response by repair staff

The smartphone application is an extension of services already provided by our Customer Contact Centres, however it has provided greater accuracy due to the functionality to send photos, rather than relying on the description of sometimes complex assets. The back end centralised solution also provides a specific grid reference

to indicate a more accurate fault location. This additional functionality has further enhanced the existing practises to optimise fault dispatch economically, with limited scope for staff to be dispatched to the wrong location. Objective 4 has been achieved.

Success Criterion:
The success criteria identified at the outset of the project have been met and resulted in the successful delivery of a smartphone application to report network damage and update customers on fault progress.

1. **Develop new procedures and processes to make use of the data submitted by users, such that the fault report submitted is integrated into the company fault management system.**

During work on the app there were reviews, revisions and creation of new processes to assist with Power Track. This has now given the Customer Contact Centre personnel the means to more easily input data into the Supply Interruption Management System. The new processes complement existing phone-based processes and minimises disruption between communication media as far as possible. The application prompts the user to make a phone call if the initial submission requires further discussion with SSEN.

Processes relating specifically to Power Track in relation to storm procedures, fault despatch, customer call advising, and user guidance have been documented, implemented and reworked where necessary to successfully embed the adoption of the app into SSEN.

2. **Develop a publicity strategy to publicise the availability of the app**

Part of the publicity strategy involved advertising the Power Track app through SSEN's 'Winter Ready' Campaign to help prepare our staff and customers before poor weather. This campaign includes online based advertising through social media and other online channels. Before any forecast of poor weather, social media is frequently updated with reminders of Power Track download information.

3. **Evaluate the benefit from the utility in fault reporting using smart phones**

The capability to immediately identify a grid reference/location particularly has proven to have significant savings on the time it takes to search for faults. This, combined with increasing levels of automation, can help discrimination when fault finding by immediately suggesting the correct road routes to take. The functionality of sharing reports in the backend has reduced time resolving a fault and enhanced stakeholder satisfaction.

Details of how the Project is investigating/solving the issue described in the NIA Project Registration Pro-forma.
Details of how the Project is performing/performed relative to its aims, objectives and success criteria.

Required Modifications to the Planned Approach During the Course of the Project

Customer Information
The project duration was increased due to the business requirement to obtain customer information to enable assistance to be offered to vulnerable customers and provide details to Ofgem for the collection of customer satisfaction data. Originally this was not foreseen and required significant works from both Contractors and SSEN once the updated Customer Engagement Plan and Data Protection Strategy had been approved.

General Data Protection Regulation (GDPR)
Due to the new GDPR legislations, the project had several technical reviews due to its interaction with the public. This generated significant work and required alterations to the application, including allowing users to view a GDPR compliant privacy policy as part of terms and conditions of use.

User Support
Trust and understanding are two elements which were heavily discussed in the development of the project and which required modifications to the delivery of works. With efforts at minimisation of Customer Interruptions (CI) /Customer Minutes Lost (CML) there is a general level of trust required to be built with the user. This was established by ensuring all the background services were established with training for all staff expected to use the system as far as possible.
The General Advice section was significantly extended to enable video animations to build up public understanding of the application. In future, as usage rates increase, lessons and analyses into the types of reports which are being submitted will provide additional information to support the development of additional guidance videos/notes.

The Network Licensee should state any changes to its planned methodology and describe why the planned approach proved to be inappropriate.

Lessons Learnt for Future Projects

Smartphone Platforms
When scoping and specifying software-based products, effort should be taken to ensure cross platform adaptability. It was noted that this was a difficult and very time-consuming activity.

Internal Stakeholder Communications
Timing of internal communications could be improved. The development phase was focused on the creation and testing of the application. As a result, the communication with internal stakeholders, future users of the SSEN interface to the application, has not been at the forefront of the activities. It put an immense pressure on all parties involved to carry out the internal stakeholder engagement along with the preparations for the release of the app.

Measuring Success
At the initiation of the project there were limited metrics set for the success of the application. Through the course of the project it was agreed that the total number of downloads is a relevant point to success. In the future, all application-based projects will consider a rounded target setting to enable success to be quantified through the project.

Additional Benefits:
Management of electricity theft was highlighted as a potential benefit. For example, a member of staff installing equipment at LV as part of a connection, identified a non-metered electricity theft, they raise a damage report with photos. It has been suggested that this will be used for evidence of wrong doing.

Potential benefits relating to safety/hazard reporting were recognised after a number of staff members identified non-SSEN works taking place underneath an overhead line with no barriers in place to comply with HSE standard Guidance Note GS6 'Avoiding danger from overhead power lines' and were unable to stop to alert the operative to the risks because they were on the train. It was noted that there was no method of directly informing anyone of these non SSEN works of dangerous activities near SSEN assets. The application will be able to be used for this and this will include the ability to take photos and directly alert SSEN without a fault being in place. Internally, a staff version like Power Track is under development for internal reporting of network damage.

Further engagement could be made with Emergency Services to understand the barriers for their use of the app as well as understanding how SSEN can support operations to make Power Track a standard application for their use.

Recommendations on how the learning from the Project could be exploited further. This may include recommendations on what form of trialling will be required to move the Method to the next TRL. The Network Licensee should also state if the Project discovered significant problems with the trialled Methods. The Network Licensee should comment on the likelihood that the Method will be deployed on a large scale in future. The Network Licensee should discuss the effectiveness of any Research, Development or Demonstration undertaken.

The Outcomes of the Project

The project has successfully delivered an enhanced application with the overarching ability to allow two-way traffic between the front-end and the back-end systems. The mobile application, which is downloadable for free in all the major app stores, will now give a user the ability to report faults with photos, grid reference and descriptions.

In addition, users will have a seamless experience when reporting since mobile network connectivity issues will not result in them having to re-complete the fault reporting form. Instead, the form will get submitted once network connectivity is re-gained. The development phase was focused on the creation and testing of the application. As a result, the communication with internal stakeholders, future users of the SSEN interface to the application, has not been at the forefront of the activities. It put an immense pressure on all parties involved to carry out the internal

stakeholder engagement along with the preparations for the release of the app.

The benefits which were expected have been delivered through the development and promotion of the application. Greater benefit has been recognised during stormy weather due to the speed at which a fault location is identified.

When available, comprehensive details of the Project's outcomes are to be reported. Where quantitative data is available to describe these outcomes, it should be included in the report. Wherever possible, the performance improvement attributable to the Project should be described. If the TRL of the Method has changed as a result of the Project, this should be reported. The Network Licensee should highlight any opportunities for future Projects to develop learning further.

Data Access Details

See Network Innovation Competition (NIC) and Network Innovation Allowance (NIA) Data Sharing Procedure at { HYPERLINK "https://www.ssen.co.uk/InnovationLibrary/Distribution/" }

A description of how any network or consumption data (anonymised where necessary) gathered in the course of the Project can be requested by interested parties. This requirement may be met by including a link to the publicly available data sharing policy.

Foreground IPR

The mapping of SSEN data to the Common Information Model (CIM) is owned by Open Grid Systems. This if how the data is mapped to GIS elements into CIM but not the pre-existing applications that then implement these mappings.

A description of any foreground IPR that have been developed by the project and how this will be owned.

Planned Implementation

This project has been deployed for use by SSEN customers and staff. Both SHEPD and SEPD Control room and Customer Contact Centres have been trained in the use of the system and processes are available internally. The project has successfully been handed over by the SSEN Innovation Team to the key business stakeholders. The updated mobile application is now available to download on iOS and Android platforms.

Other Comments

These applications are now live for download on Android and iOS App Store:

- Android: https://play.google.com/store/apps/details?id=com.sse.powertrack
- iOS: https://itunes.apple.com/gb/app/power-track/id587346620?mt=8

Please note these applications will have reduced functionality outside SSEN Distribution or Transmission operational areas.

Standards Documents (Electricity projects only)

n/a