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NIA Project Annual Progress Report Document

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Jul 2023

Project Reference Number

NIA2_NGESO029

Project Progress

Project Title

DER Visibility

Project Reference Number

NIA2_NGESO029

Project Start Date

March 2023

Project Duration

0 years and 5 months

Nominated Project Contact(s)

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Scope

There is an increasing volume of service providers connected to distribution networks which are seen as key enablers in unlocking flexibility on the network. Whereas previously they have had a relatively small impact, we are now seeing this growing rapidly. Although there is some data on DERs, a lot of the information is siloed or in formats that are not easily implemented into existing processes. One of the key challenges is increased DER operational visibility being made available to industry stakeholders.

The proposed project will be split into two phases; the first phase will consist of engaging industry stakeholders internally and externally to understand what sources of DER data are currently available, where the data is stored, data security requirements and how easily accessible it is. It will also look at potential use cases for the data and how different industry organisations could use it. If then deemed that there is sufficiently accessible data, the second phase of the project will look at potential ways to aggregate the data and develop a tool that could be used across the industry to increase the visibility of DER data such as utilisation, locations, power outputs etc. It also looks to develop a forecasting tool to highlight when and where new DERs could be used for flexibility on the network.

Objectives

- Analyse the various data sources, their granularity, accessibility and security requirements.

If deemed that the appropriate data sources are accessible, Phase 2 will:

- Develop a tool to map the DER's by both geographical and grid location, forecast the likelihood of more appearing in various locations, and approximating when they will be connected to the grid, power outputs, utilisation, and accessibility.

Success Criteria

The following will be considered when assessing whether the project is successful:

- A set of core documents as defined by the deliverables including initial Phase 2 project plan with use-stories, use-cases, roadmap, risk assessment, proposed solution architecture and WP breakdown.
- A good understanding of the Phase 2 requirements and feasibility is reached.

- Agreement to proceed with Phase 2 of the project.

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

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Project overview:

Significant growth of Distributed Energy Resources (DERs) is currently underway and forecast to increase into the near future. This project is seeking to address the limited visibility and data pertaining to DERs (e.g., Power outputs, locations) delivered over two phases. The project is primarily focused on Distributed Energy Resources, defined as grid scale assets connected to distribution networks, sized 1MW or above. Consumer energy resources are also considered, although they will constitute the secondary aspect of the project.

Project Plan:

The project is being delivered in two phases:

Phase-1 Feasibility study, delivered through 4 work packages detailed below.

WP1: Understanding the sources and formats of currently available data

A data mapping exercise carried out to understand the current sources of DER data. This involved engaging a range of stakeholders across ESO and the industry to ensure that all possible data sources are identified and mapped.

WP2: Understanding the volume, velocity and variability of the data needed to achieve the core user-stories, and related data access methods and standards

In depth discussions carried out with key stakeholders to further understand the sources of available data including, access, methods and security standards that will need to be implemented for Phase-2 or future projects.

WP3: Understanding the relevant technology mappings and the likely system architecture needed to implement the core user stories

Work carried out to initiate mapping out a solution to aggregate and present data in a format accessible to the ESO. Additional work to that carried out to date will be required to gain a fuller understanding and Phase-2 will be focused on making this data available in an accessible format for the ESO. More extensive engagement with licensed entities will be required to make this data available for wider network licensees. This has proved challenging with limited availability of key external stakeholders.

WP4: Establishing a clear understanding of the Phase-2 feasibility and requirements

WP4 planned to detail feasibility of developing a software tool in Phase-2. As planned initially, we are now reviewing all the data compiled through WP1 to WP3 to inform the decision whether to proceed with Phase-2.

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

The project has proceeded broadly in line with the scope of the original plan. Due to the broad nature of DER data available as well as to ensure a Phase-2 scope is realistic and deliverable, the project has adopted the scope parameters as asset size 1MW or above and the time frame as 2 – 8 years.

Phase-1 has delivered use cases for DER data grouped across 4 categories – data, system, visualization, and modelling. These use cases have been prioritized using the MOSCOW framework. However, the project was presented with key challenges which manifested with stakeholder availability, data quality and availability as well as technology platform requirements for developing a proof of concept in Phase-2. These challenges are attributed to unstructured and siloed data availability. Technology platform requirements

present a challenge due to ongoing concurrent change programmes underway as well as the data attributes itself. Progress has been made with key internal stakeholders to secure support of technical expertise required to progress development of the proof-of-concept application in Phase-2, which is also reflected in identifying additional resource requirements for the next phase.

Lessons Learnt for Future Projects

This project is the first of its kind to undertake a whole system DER data visualization and evaluate the feasibility of using ML/AI methods to produce value added actionable insight for the ESO and wider network entities. Phase-2 will build upon the work done in Phase-1 and address the challenges through securing requisite data architecture/engineer technical and project management expertise to ensure Phase-2 is resourced appropriately to deliver its objectives.

In addition to the foundational use case, several other use cases have been identified, some of which may be progressed as individual projects.

Note: The following sections are only required for those projects which have been completed since 1st April 2013, or since the previous Project Progress information was reported.

The Outcomes of the Project

The project is still ongoing and making good progress towards achieving the defined success criteria.

- Developing set of core documents including data management plan to address security and GDPR obligations.
- Producing a robust understanding of Phase-2 requirements with an informed decision to proceed with Phase-2 to follow after ensuring technical and project resources availability.

Data Access

Details on how network or consumption data arising in the course of NIA funded projects can be requested by interested parties, and the terms on which such data will be made available by National Grid can be found in our publicly available “Data sharing policy related to NIC/NIA projects” and www.nationalgrideso.com/innovation.

National Grid Electricity System Operator already publishes much of the data arising from our NIC/NIA/SIF projects on the Smarter Networks Portal (www.smarternetworks.org) and National Grid ESO Data Portal (data.nationalgrideso.com). You may wish to check these websites before making an application under this policy, in case the data which you are seeking has already been published.

Foreground IPR

The following foreground IPR is expected to be generated in the course of the project:

- A data map to identify and map the current sources of DER data.
- Core user-stories, and related data access methods and standards information.
- The most efficient solutions for aggregating the data (presenting it in a useful format that can be accessed by the ESO and wider network licensees).