

SIF Discovery Close Down Report Document

Date of Submission

Oct 2023

Project Reference Number

NGED - SIF - 10060736

Project Progress

Project Title

Planning Regional Infrastructure in a Digital Environment (PRIDE)

Project Reference Number

NGED - SIF - 10060736

Lead Funding Licensee

NGED - National Grid Electricity Distribution

Project Start Date

April 2023

Project Duration

3 Months

Nominated Project Contact(s)

Jenny Woodruff

Project Summary

SIF AIMS

PRIDE creates a digital twin of regional infrastructure including energy systems, data for properties, etc., to support decision-making. It provides advanced visualisation capabilities and supports embedded scenario-based modelling. Decarbonising major energy demands is therefore accelerated as the digital twin supports the selection of options that are faster and/or better overall value for money to deploy.

THE INNOVATION

PRIDE will assess use cases to support decision-making and rank their potential impact under different governance structures. We will determine where:

- use case requirements are already met
- minor enhancements are required
- entirely new datasets/models are needed

We will develop a plan for an enhanced prototype to be developed in the Alpha phase. The potential for integration with the National Grid Virtual Energy System (VES) will be assessed.

EXPERIENCE AND CAPABILITY

Advanced Infrastructure is an enterprise SaaS partner for DNOs and local governments. The company leads the digitalisation of the Energy System Catapult methodology for Local Area Energy Planning in the form of the LAEP+ tool. The partner has delivered multiple projects under the Government Design Principles and developed tools for data management, visualisation and zoning and API integrations with network capacity assessment. The partner has worked on past NIA RESOP and InnovateUK PfER LEO projects.

The WMCA's Energy Capital provides specialist knowledge of place-based energy innovation and stakeholder involvement in whole

energy systems, where giving cities and localities a stronger role within the UK's current energy regulation offers significant potential for added value, while supporting net zero transition. The WMCA has completed the prior work needed to inform the development of PRIDE within the context of whole system planning and delivery and has a detailed understanding of local needs.

NGED brings experience of automated network modelling and forecasting future load profiles from EPIC, the energy efficiency modelling within DEFENDER and the understanding of local flexibility from Equinox and FutureFlex.

NG ESO's VES development provides background experience for creating and managing digital twins.

USERS

The project's outputs are designed to support decarbonisation investment decision-makers. PRIDE addresses their needs by developing tools for the use cases of greatest value under different organisational structures. PRIDE paves the way for a Beta phase trial using the tool to assess local engagement and governance process, bringing together decision-makers and utilising the WMCA's Net Zero Infrastructure Delivery Panel governance structure. This would provide valuable evidence for the ESOs future system operator work and Ofgem's local governance programme.

Problem Being Solved

PRIDE tackles the problem of regional infrastructure investment decisions failing to take local impacts and opportunities into account. For example, if transport infrastructure is planned without reference to the electricity network capacity then costs will be increased. A platform that enables sophisticated scenario-based modelling can help identify potential synergies and quantify business cases.

Summary Key Findings

The PRIDE project was successful at securing Alpha Phase funding. As such this end of phase report is not a SIF governance requirement but is being completed in order to be able to close down the project on the ENA portal.

The key findings of the project are included in the End-of-Phase and Show-and-Tell presentations available via the ENA Portal.

Planning Regional Infrastructure in a Digital Environment (PRIDE) | ENA Innovation Portal (energynetworks.org)

Work Package 1 examined the Use Cases for the tool that were solicited from local authority staff and other related stakeholders via two workshops. This suggested 17 Use cases that could broadly be grouped as having Local Authority benefits, Private Sector benefits, network benefits and wider benefits. These were then compared for their complexity and size of benefit.

Work Package 2 researched the options for governance structures that would enable the benefits of a Regional System Operator to be gained and that could reflect the Regional System Planner role. The detailed results from this work package are available on the ENA portal as "WP2 Organisational structures.pdf"

Work Package 3 looked at the data requirements to support the use cases. We explored the alignment between the ESO FES modelling, the NGED DFES modelling and the LAEP+ modelling. Interviews with modelling teams suggested that a common approach would be preferred that allows for top-down strategic planning to be interoperable with bottom-up project delivery.

User needs

The understanding of Local Authority user needs was improved by holding two workshops, as part of Work Package 1, focussing on the potential use cases for the platform to support. These also highlighted some of the issues around resourcing Local Area Energy Plan production and updates.

The user needs were further examined as part of Work Package 3 which considered the data requirements.

Impacts and benefits

As this was a Discovery Phase project, the outputs of the project feed into the Alpha phase rather than creating wider impacts and benefits. The greatest impacts and benefits are expected to occur following a Beta phase if the project is successful at gaining approval for that stage.

Risks, Issues and Constraints

Some of the higher impact risks from the Discovery phase are unlikely to persist to the Alpha phase.

For example the risks that;

- Use cases selected for further system development do not reflect stakeholder needs.
- Different use cases would be needed to support different organisational structures.

Have already been managed by the success of the Discovery phase.

Risks that persist to the Alpha phase include;

- Lack of NG ESO resource.
- Third party data provision is too expensive to support.
- Data and Digitalisation team unable to provide relevant data in required timescales.
- GDPR prevents valuable information being included in the digital twin for individual customers.
- LV network model data quality is insufficient to support use cases e.g. missing services, phase data etc.

Mitigations have been considered for these such as anonymization of data, giving notice far in advance etc.

The potential issues and barriers to the project are listed below.

Issues Identified

- **Political:** DESNZ not providing leadership and clear instructions as to who is responsible for LAEP and what funding mechanisms.
- **Political:** WMCA capacity to stakeholders such as District, Borough and County Councils. Extracting further control from on-going devolution discussions.
- **Technical:** Evolving digital twin & digital spine landscape is not consistent between licensees and other data providers. Ofgem not mandating LTDS in CIM format until 2026.
- **Technical:** Limited vectorisation of electricity network data meaning that even if all other issues are resolved data may not exist in a usable format.
- **Commercial:** Multiple solution providers creating fragmentation in the market. Solutions developed for individual use cases may establish market dominance undermining more complex integrated solutions. Lack of interoperability between platforms may reduce the benefit of collaborative working.

Barriers Identified

- Contracts (These take a long time to negotiate which can be costly and is unlikely to be completed in the time allowed for project mobilisation.)
- Timeline/Project Length (This was an issue for the discovery phase which needed to be longer.)
- Concurrent Projects (The number of concurrent projects resulted in resources being overbooked or unavailable for kick off meetings, shows and tells, end of phase meetings etc.)
- Complexity of organisational structures needing multiple touch points at different levels.
- To set the scene.
- Dig into the detail.
- Enabling granularity of information.
- To allow validation.

It was found that Face to Face workshops produced better quality outcomes.

Working in the open

Two separate workshops were held to gather views about the potential use cases that PRIDE could support. The first was relatively early, had a more limited audience and was held virtually but the face to face workshop, led by Regen, was found to better enable getting into the detail of the issues. The Show and Tell presentation was open to all interested parties.

Costs and value for money

The Discovery Phase costs funded by the SIF were in line with the project budget with a total of approx. £131k funding against a total cost of approx. £145k. The legal costs associated with agreeing contracts were higher than expected and these additional costs have been borne by NGED. The project exceeded the minimum contribution requirement and provided value for money for customers.

Special conditions

PRIDE Discovery Phase met all of the special conditions that were given in the project direction. For reference the special conditions are given below.

Condition 1

The Funding Party must not spend any SIF Funding until contracts are signed with the Project Partners named in Table 1 for the purpose of completing the Project.

Table 1. Project Partners

NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED

ADVANCED INFRASTRUCTURE TECHNOLOGY LTD

WEST MIDLANDS COMBINED AUTHORITY

Condition 2

The Funding Party must report on the financial contributions made to the Project as set out in its Application. Any financial contributions made over and above that stated in its Application should also be reported and included within the Project costs template.

Condition 3

The Funding Party must participate in all meetings related to the Project that they are invited to by Ofgem, UKRI and BEIS during the Project Phase.

Documents uploaded where applicable

Yes