

SIF Project Registration

Date of Submission

Apr 2022

Project Reference Number

10027191

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Project Title

Predictive Safety Interventions

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10027191

Project Licensee(s)

SGN

Project Start

March 2022

Project Duration

2 Months

Nominated Project Contact(s)

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Project Budget

£58,729.00

Project Summary

Our project addresses Challenge 2: Data & Digitalisation, along with Challenge 1: Whole System Integration.

SGN is moving towards data-led operational management to drive improved safety and productivity. Our data strategy is based on the concept of building digital twins of operations as they actually occur in the field. We have already deployed FYLD to 68,000 jobs over the past 18 months, which has vastly improved our data set. Worker buy-in is critical to achieving high-quality data sets. Therefore, our goal is to deliver more wins that benefit our workers, SGN as an organisation and our customers.

SGN has shown its capability to adapt to new, data-led ways of working in its initial deployment of FYLD. The entire business has deployed FYLD to proactively manage fatigue whilst concurrently driving down network operation costs. In addition, 750 operatives in its repair, replacements and connections business unit now use FYLD as their primary work management platform. The next logical step in our data transformation and AI journey is to harness FYLD data to predict job sites with a high risk of safety incidents or injuries and drive more productive field force operations.

FYLD has developed significant expertise in terms of AI and building deployable machine learning models. Additionally, we have a world-renowned AI expert Distinguished Professor & Executive Director of Data Science at the University of Technology, Sydney Dr Fang Chen as a core advisor to the business. Dr Chen has a proven track record of deploying predictive analytics models to the utilities industry and has collaborated extensively on the commercialisation of such systems with the CEO of FYLD, Shelley Copsey, during their years working together at Australia's national research agency CSIRO.

SGN and FYLD innovation partnership is two years old, with a further three-year term being agreed. We are well placed to deliver this project together, given our past success in safety and productivity outcomes for SGN's field force operations.

FYLD has gained substantial traction in the utilities industry supply chain, including with Morrisons, Ferrovial, Lanes Group and Galliford Try, as well as being part of the HS2 supply chain after successfully securing a place on its coveted Accelerator Program. Potential users of our innovation include the SGN supply chain and beyond, given the safety and productivity outcomes FYLD delivers today, combined with the step-change in worker safety outcomes we are targeting with this project.

Nominated Contact Email Address(es)

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Problem Being Solved

Utility companies face the problem of plateauing safety performance. We aim to make a step-change in worksite safety through leveraging operational site data and Artificial Intelligence (AI) while simultaneously achieving productivity gains. The project forms part of the building blocks of SGN's data strategy and deployment of next-generation, user-driven, digital products.

The safety of worksites across the utilities industry has plateaued for five years, and workplace deaths actually increased in 2021. Sixty members of the public also lost their lives due to workplace incidents. These trends are concerning, particularly noting the impact of Covid on workforce management and a shift to remote operations. In the 12 months to March 2021, SGN recorded 2,506 field workforce incidents and near misses. Fieldworkers operate in dangerous environments daily, with the potential for life-changing consequences when hazards are not thoroughly identified and controlled. Shutting job sites down impacts productivity and causes job backlogs to rise. In addition, network operators face the damaging consequences of poor customer satisfaction.

FYLD has already made significant steps to improve the safety and productivity of field teams by capturing substantial volumes of unstructured data (voice, video, imagery, text) about workforce operations and using this data to generate AI driven point in time risk assessments. The next phase of development is to harness that data for predictive analytics about safety and operational events, enabling SGN to make proactive interventions. It will involve the redesign of major operational processes with data led cost-benefit analyses.

This project is the first step towards that vision. During the Discovery Phase, we will:

- Identify all relevant data sets held that could contribute towards predictive capability for safety interventions, including proprietary data (job hazards, controls, incidents, operational job delivery), other network data (to be identified), and third-party data (weather, geospatial);
- Apply Machine Learning techniques to merge disparate data sets where possible;
- Seek to identify correlational or causal factors in respect of safety incidents and other data held; and
- Build an MVP model based on our learnings to validate whether we can deploy a predictive safety intervention into production systems.

Our goal is to build an operating system that lets SGN manage safety through a proactive intervention system that could genuinely lead to a zero-harm outcome for workers. Additionally, SGN will continue to build confidence in its ability to deploy predictive models to drive large scale operational efficiencies.

Project Approaches And Desired Outcomes

The Big Idea

SGN and FYLD will build a prototype Artificial Intelligence model that leverages operational data captured by FYLD over the past 18 months at SGN, incident and injury reports from SGN, and broader proprietary and non-proprietary data to demonstrate that we can predict work sites with a high risk of safety incidents and drive proactive interventions.

During its first 12 months of deployment at SGN, worksites using FYLD saw a reduction in incidents and injuries of 20%. We have collaboratively demonstrated that decades-old norms in respect of site safety management must be challenged in a data-led world. This can only be accomplished by transforming work processes completely rather than creating a digital version of the same system. We have built substantial knowledge of how to truly drive data transformation for field operations by deploying a real-time safety buddy, as we do today, and also harnessing the information on hand to predict and prevent harm. Whilst we have yet to commence developing the algorithms for a predictive safety model, the concept is well socialised at SGN and we have a strong understanding of what we are seeking to achieve.

Once the prototype is built, and our hypothesis is proven, we expect that the product will be commercialised through FYLD. Our Discovery process will lead to a deeper understanding of the potential commercialisation strategy in more detail. The partners will then collaborate on IP ownership that ensures that all stakeholders are well rewarded for their financial contributions and efforts. Deployed across network operators and beyond, this new module as part of the broader FYLD solution provides significant opportunity towards delivering the desired outcomes of Challenge 2, data and digitisation of the industry, with substantial productivity gains. This has been clearly proven at SGN, with over 16,000 hours of information about why jobs do not proceed as planned captured with multiple initiatives underway leveraging this data to redesign processes and procedures. It also addresses Challenge 1, in respect of whole of system integration, as it enables alliance style project delivery models to be deployed and managed transparently on a single platform -- for this reason, FYLD will be a key enabler of how SGN interfaces with its contractors into the future and we will explore how it may lead to better work coordination with other utilities where we have co-located assets.

Innovation Justification

The primary method for managing risk in field workforce operations is through filling out paper forms or digital versions of paper forms. Digital form builders are alternative solutions that may enable the deployment of tailored paper forms to manage site safety. However, FYLD transforms this process by undertaking initial site safety risk assessments utilising video and voice pushed through AI engines. A similar approach of capturing and analysing unstructured data is utilised by FYLD for the productivity features of its platforms, and it integrates seamlessly into a field worker's day.

When the FYLD concept was conceived in 2019, global consultancy BCG conducted extensive research on competitive solutions. BCG found that this solution was completely unique, with no competitive products identified. They could find no other product that captures unstructured job data (voice, video, imagery) and, in a real-time manner, deploys analytics to ensure job sites are safe and operating efficiently.

This project aims to harness the data FYLD gathers and optimise processes and procedures to enable more remote operations and increased spans of control. While it may take some time to achieve this, it is a core part of SGN's operational cost reduction strategy. Accordingly, by introducing this system, SGN is moving towards a single operational management system in place of multiple existing systems. FYLD will, therefore, be core to the retirement of other operational systems deployed in the early days of SGN's digitisation strategy, such as asset photo capture applications and incident capture systems. The enhanced features and capability of FYLD derived through this project will facilitate another step change in fieldwork safety and productivity rather than an incremental step achieved by doing business-as-usual more efficiently.

SGN also intends to roll FYLD out to manage its supply chain, as it provides a "whole of job" view, regardless of labour source. This unique attribute, found in FYLD, offers a valuable way to coordinate work on sites containing both SGN and other utility company assets. We believe that this attribute can be exploited in the coming 12-24 months to deliver better cost structures for customers. Together, these steps form a crucial part of SGN's integration with the energy system.

Project Plans And Milestones

Project Plan And Milestones

This eight-week project has two key milestones:

Milestone One, Project Initiation

- Establish that the data sets can be linked within reasonable confidence bounds by gathering relevant data sets and applying machine learning techniques.

Milestone Two, Project Delivery

- Demonstrate that, through continued work (Alpha & Beta project phases), the prediction of high-risk sites is possible with a to be determined (>50%) level of confidence using techniques like basic regression analysis.

Route To Market

FYLD is a stand-alone, well-funded company. At the time of submission of this application, it has just secured its Series A capital raise of £10m to expand its early traction and the ongoing commercialisation of its technology. No further investment is required by FYLD to deliver or commercialise this project.

The Parties will agree on a commercialisation strategy for the IP during the Discovery Phase. This strategy will depend on an exploration of the capability of our solution and the development of our understanding of what would be required to deploy the predictive model. FYLD does provide a vehicle for this commercialisation if so desired by the PARTIES.

Utilities and other organisations with field force operatives, either in the UK or abroad, can license the FYLD technology on commercial terms. FYLD is interested in further preferential pricing deals for any utility that partakes in the project.

Costs

Total Project Costs

58729

SIF Funding

58729

This project has been approved by a senior member of staff

Yes