Shrinkage and Leakage Forum

23rd November 2022



The DPLA project is funded by Ofgem and Innovate UK through the new Strategic Innovation Fund (SIF)

What is the Strategic Innovation Fund?



SIF Innovation Challenges

Whole systems

Data & digitalisation

Heat

Transport

The aim of the Ofgem Strategic Innovation Fund is to decarbonise gas and electric energy distribution and transmission networks and benefit the consumer.



Eligibility Criteria (including but not limited to)

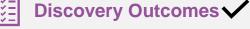
- 1) address the Innovation Challenge set by Ofgem;
- 2) have clearly identified potential to deliver a net benefit to gas or electricity consumers
- 3) involve network innovation;
- 4) not undermine the development of competitive markets;
- be innovative, novel and/or risky;
- include participation from a range of stakeholders;
- 7) The process an agile approach to innovation

What role does DPLA play?

DPLA Objectives

- Reduced gas leaks → lower methane emissions → better environmental performance
- Greater accuracy → improved reporting → optimised maintenance and repair capital investment
- Reduced shrinkage → lower customer bills → customer satisfaction





- Verified the feasibility of the DPLA concept from a technical, conceptual, regulatory and economic angle
- Identified potential technology options and deployment modes
- Cost benefit analysis demonstrating the economic benefits of the DPLA

Alpha Progress

- Technology providers shortlist
- Assessed vendors' digital leakage analytics platform development to support the submission of an RFI
- Performed a change impact assessment and strategy
- To assess regulatory options for roll out
- To refine the cost benefit analysis











Merging physics-based models, machine learning-based models and analytics, and novel leak sensors creates a first-class leak detection platform

Digital Platform for Leakage Analytics Architecture External data and analytics fed into cloud-hosted leakage analytics platform Data about gas network **Network operational** In-field leak detection assets, topology, and data: Pressures. Leak-sensing tech attached to drones, maintenance schedules flows, temperatures helicopters, and trucks have machine-learning **Cloud Environment** analytics inbuilt which detect and localise leaks1 User interface to present Real-time network mapping Leak detection, Further analytics to provide characterisation, localisation insights for external reporting Hybrid hydraulic model outputs combines physics-based **Machine learning analytics** Expert system performs analytics on Dashboard displays key model outputs to deliver insights e.g., outputs, such as GIS maps of model of gas network and driven by the hybrid hydraulic machine learning-based model and by network data isolating network areas experiences detected leaks, calculated models which account for realregular leaks, and calculating the leakage emissions, leaks in combine to detect and time network data and correct most need of engineer characterise points of leakage expected reduction in leakage for new for missing values asset replacement scenarios intervention across the network ¹ Sensor data will also be fed into the machine learning models during a training phase for DPLA to improve model database and understanding of 'leak signatures'











DPLA has the potential to accelerate decarbonisation, bring value to the consumer and deliver reporting and operational improvements









Increased Accuracy













Next steps: Beta phase... and beyond

Beta Application 22nd March 2023

Beta Funding Announcement June 2023 Beta Phase
July 2023 – up to 2028

Roll out to BAU Post Beta phase



Scale of the Beta Phase

- Multi-year, large-scale projects
- Expecting several multi million £ programmes
- Build, operation and/or demonstration of the concept



DPLA Beta High-Level Objectives

- Build and test a minimum viable product
- Demonstrate several methane detection technologies
- **Test the scalability** of the technology across different regions and pressure tiers
- Develop a suitable regulatory framework to drive faster emission reductions











Thank you

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