CASE STUDY

Bellrock Technology

Bellrock Technology helps a world leading energy company better understand the condition of their nuclear reactors using their powerful AI tool, Lumen® which is securely hosted and powered by UKCloud.

About Bellrock Technology

Bellrock Technology's story began in 2009 when a team at the University of Strathclyde began developing an artificial intelligence (AI) based solution to meet the challenges of delivering data science research. The university worked with many industrial partners and the team became frustrated that its models, often commissioned at great expense, could not be more easily delivered to help improve day-to-day decision making. That artificial intelligence-based solution became Lumen. Bellrock Technology spun out of the university in 2012 and has been working with commercial organisations to deliver data science faster and more efficiently ever since.

The Challenge

Bellrock Technology's client, a world leading energy company, owns and operates 14 advanced gas-cooled nuclear reactors (AGRs) in the United Kingdom, with safety of the AGR's at the forefront of all priorities. To ensure the safety of the reactors, large quantities of data is gathered from the reactor cores to better understand their condition. The challenge the client faced was in analysing that data, as the reactors are ageing and previous handling, processing, and storage of historical data was inefficient. To extract value from the data, the energy company needed a solution that provided appropriate and effective digital tools and apparatus.

To provide visualisation of how data from certain channels would look, the energy company would take the raw data, copy it into a spreadsheet and run macros to align it, which often failed. The entire end-to-end process was manual, slow and difficult to derive actionable results from. The energy company was not able to maximise benefits or value from the information they held and therefore were unable to readily produce a complete view of the reactors' condition.

"Between the development of databases and analytics that are stored in Lumen, our ability to access and make the best use out of the data we collect has massively improved. Lumen goes a long way to fixing a challenge we face whereby, as time goes on, more data is collected, stored and used in more different ways, and keeping it all easily accessible, usable and linked becomes more important and more difficult.

In particular I think it's to the credit of Bellrock Technology that Lumen is able to bring together different data sets, stored in different formats and databases and made by a range of different suppliers, then have that data seamlessly feed either into visualisations or into completely separate models developed by yet other suppliers."

Data Engineer - Energy Client

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The Solution

Bellrock Technology deployed Lumen and immediately began to migrate the inspections and monitoring data to UKCloud, specifically Private Cloud for Oracle in addition to compute and storage services. Using AI, the Lumen platform was able to connect all of their client's data stores, enabling the analysis and subsequent visualisation with a single click of a button, negating previous process complexities. Lumen was able to integrate various standalone platforms so that the energy company accumulated data from a variety of sources into one place, enabling both visualisation and analysis.

Bringing the data together allowed internal teams to operationalise the innovation and extract real value back to the engineers and end users, for them to see the results and manipulate data in real time. Importantly, Lumen has helped automate the construction and delivery of reports, allowing the visualisation of problems, abnormalities, and maintenance issues to be highlighted on a single dashboard.

Benefits

Data is now easily accessible, searchable, and able to be filtered. External suppliers are also able to access the data to support the team without manual interference thanks to UKCloud's assured and secure platform. Furthermore, owing to UKCloud's ability to ensure data sovereignty, the energy company is able comply with strict export control environments, meaning sensitive data doesn't leave the UK.

Lumen's innovative AI technology also negates the need for large software teams and data specialists to deploy and integrate analytics tool into production, therefore reducing the associated costs of doing so. It also reduces the man hours spent deploying people on the ground as the energy company can now run intuitive, valuable dashboards to monitor reactor conditions.

In addition to bringing together existing data and models, the system also allows for the development and future deployment of models. The overall benefit is that the team can now maximize the use of data to better understand the plant condition both securely and in a central location.

> "Working with UKCloud as a partner allows Bellrock Technology to deliver our product Lumen to our clients whilst addressing and managing export control requirements. The relationship with the team at UKCloud ensures that they are receptive, responsive, and engaged in what we are delivering to our respective expanding client base. The partner community within the UKCloud network allows us to investigate collaboration to work with other public sector organisations to deliver value from their data and drive meaningful insights at pace to shape the future."

Dave McConachie,
CCO, Bellrock Technology

Lumen dashboard UI