

AI in the project profession:  
Examples of current use and roadmaps to adoption

## Network Rail: Laying the groundwork for AI adoption with a data-first strategy

### Introduction

Disruptive technology and accelerating change have become the norms in organisations. Advancements that feel relatively recent are already becoming embedded into business-as-usual activity. Artificial Intelligence (AI) is one such advancement; it is already being used and having real-world impacts across the project profession. To help project, programme and portfolio management (P3M) professionals

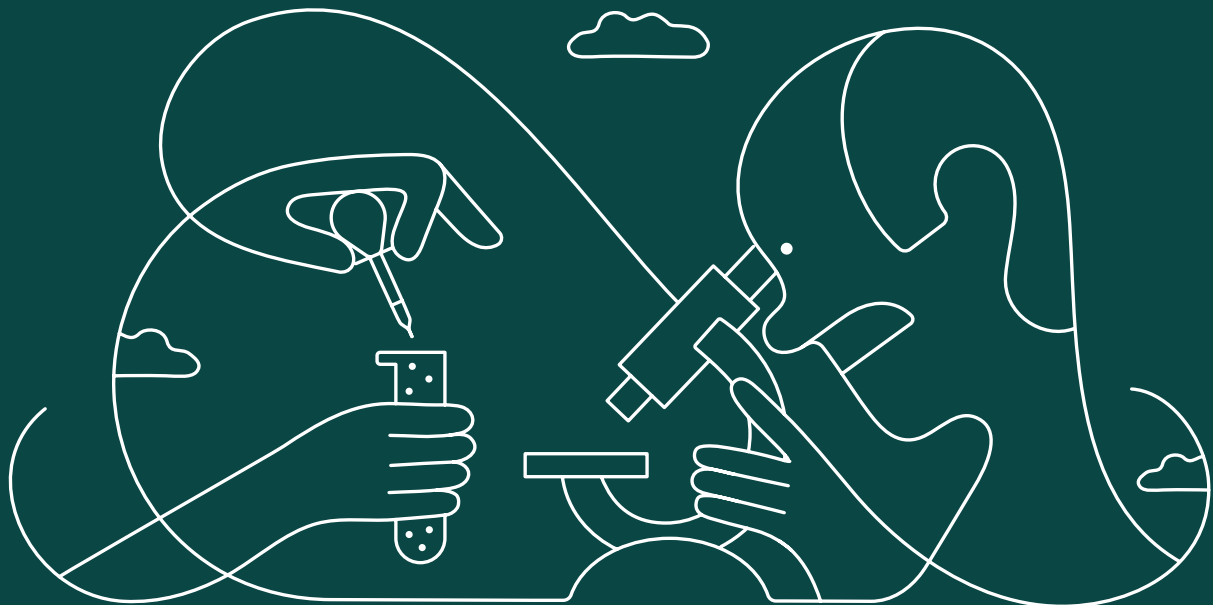
understand the implications of this change, the Association for Project Management (APM) has produced a series of case studies showing how organisations are adopting and using AI in their operations.

This case study focuses on Network Rail, the public body that manages Britain's railway infrastructure, and specifically its Wales & Western Region.

## About Network Rail

Network Rail is the publicly owned company responsible for the ownership, operation, and development of Britain's railway infrastructure, which includes over 20,000 miles of railway track, 30,000 bridges, tunnels and viaducts, and thousands of signals, level crossings and stations that make up most of Britain's railway infrastructure. The company's mission is to provide a high-performing, reliable railway infrastructure that meets the needs of its customers, stakeholders, and the wider economy. To achieve this goal, Network Rail invests billions of pounds in infrastructure improvement projects every year, focusing on enhancing capacity, improving passenger experience, and increasing safety across the network.

In their pursuit of innovation and continuous improvement, the Advanced Analytics team in the Wales & Western Region of Network Rail embraced the opportunity to adopt a data strategy. The implementation of this data strategy has led to significant gains in project performance, time savings, and cost reductions – paving the way for further AI integration within the region's project delivery.



## Identifying the need for a data strategy

To harness the power of cutting-edge technologies such as AI in the railway industry, it's essential that underlying data infrastructure is robust, contemporary, and capable of handling complex analytics workloads. Without adequate data structures in place, implementing AI solutions becomes challenging, if not impossible.

Simply put: no data, no AI.

The Advanced Analytics team of Network Rail's Wales & Western Region set out to undertake a holistic inspection of the data landscape relating to three key areas of project management: project controls, reporting and analytics.

They discovered:

- Existing systems and tools had become antiquated and fragmented over time.
- Incidents of data unnecessarily stored in multiple systems without proper integration.
- Examples of complex processes that could be simplified to free up more resources.

"We worked closely with our project teams to understand their needs to create and deliver positive change tailored to their exact requirements. This was important to us, as we wanted to avoid an overly complicated approach that could become a potential barrier for engagement."

**Pragya Raina, Senior Business Reporting Analyst, Network Rail (Wales & Western)**



## How the data strategy came together

The Advanced Analytics team spearheaded the development of an innovative approach to programme controls, reporting and analysis within the organisation. This ambitious project aimed to consolidate data from various corporate systems into a unified data model – a common view, enabling seamless data analysis between disparate platforms.

## Responsible parties

The team consisted of three experienced project specialists and analysts who led the initiative. They used data engineering principles to develop the integration layer that connected different systems and processes, ensuring that data could be transferred seamlessly between them. They applied data science principles to ensure stringent data quality checks and validation rules were put in place to maintain the accuracy and consistency of data throughout the process. They also collaborated closely with project teams to understand their unique requirements in full.

## Detailed activities

Stringent data quality checks and validation rules were implemented throughout the development of the integration layer to maintain the accuracy and consistency of data.

As part of this approach, customisable dashboards with interactive visualisations (charts, graphs, and trend analysis tools) provided project teams with real-time insights. These intuitive interfaces empowered users to quickly identify patterns in the data, supporting the decision-making process.

The adoption of open-source technologies was a significant part of this effort. The team automated processes using these tools, streamlining complex procedures and freeing up valuable resources for more strategic tasks. Additionally, they organised regular training sessions for project teams, fostering buy-in and effective adoption among users. These sessions covered various aspects of the new data strategy, including dashboard usage, data visualisation techniques, and data analysis best practices.



## The approach

The team adopted a 'pull' rather than a 'push' approach. This meant working to make existing systems more effective and adapting them to the specific needs of both the project and the teams. This involved identifying bottlenecks or inefficiencies in current workflows and finding ways to streamline processes or automate repetitive tasks. It also meant being responsive to feedback from team members and making adjustments as needed, rather than insisting on adherence to a rigid set of rules.

The pull approach emphasised collaboration, flexibility, and the empowerment of teams to find solutions that work best for them. By focusing on making systems effective rather than mandating their use, the team was able to create an environment where project team members felt valued and were more likely to be engaged and motivated.

"We wanted to avoid a 'big bang' approach. Instead, we worked in an iterative manner: we started with small-scale implementations shaped by subject matter experts from project teams. This not only reduced time but also built trust in the solution and new technology."

**Yamini Kumar, Programme Controls Manager (Analytics), Network Rail (Wales & Western)**





## Impacts and benefits

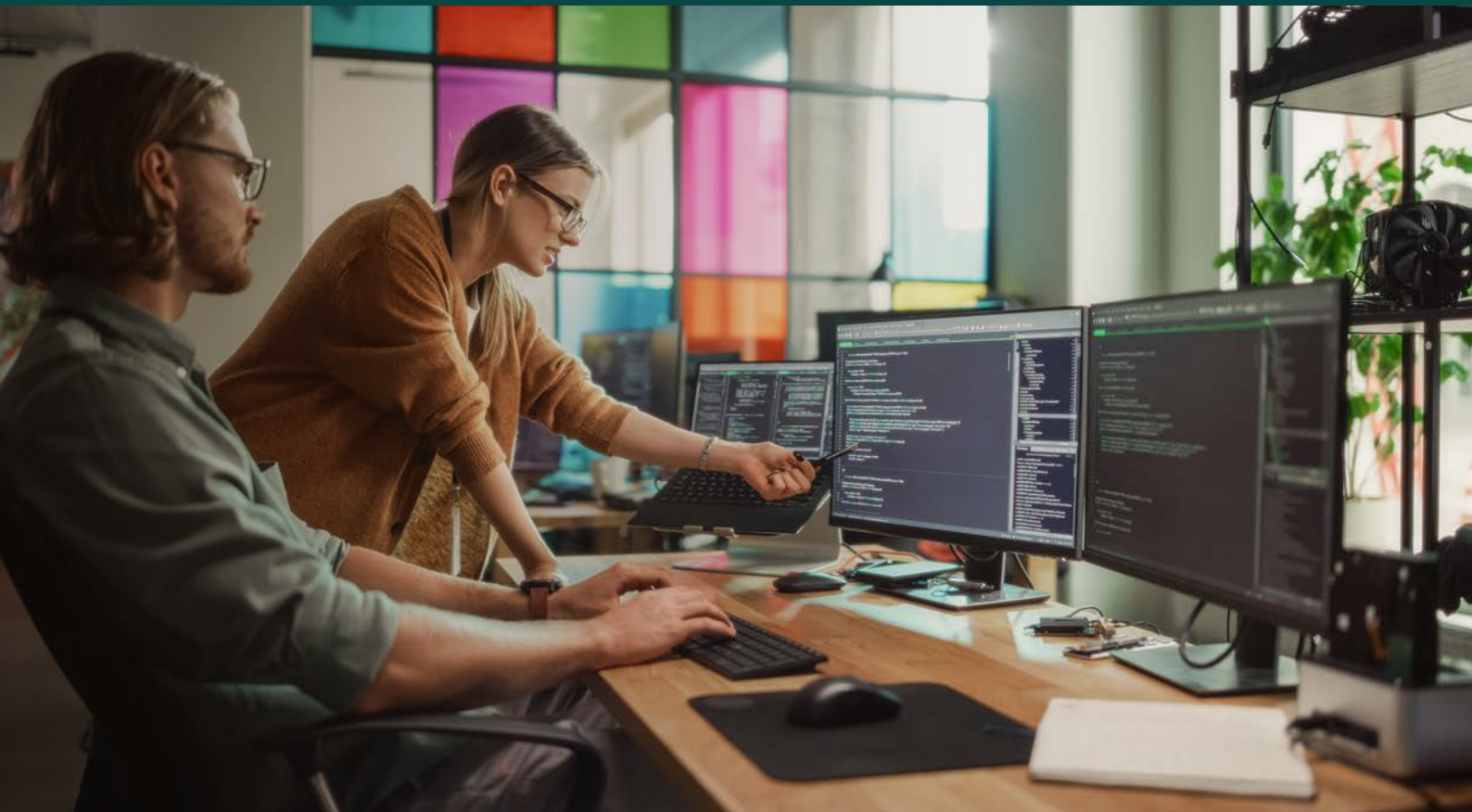
The new data strategy has significantly transformed project management processes, contributing to enhanced performance and setting the stage for AI adoption. By streamlining systems and tools, the initiative recouped over 29,000 annual hours for the project teams. Project teams can now devote meeting time to discussing project issues instead of dealing with data-related issues.

Key improvements include increased accessibility of information, reduced redundancy in tasks, automated data analysis, and advanced insights. For instance, transitioning from manual Microsoft Excel report generation to automated reporting yielded savings of approximately 12,000 annual hours.

The data-first strategy also:

- Eliminated the need to log in to several systems.
- Reduced the time for downloading and interpreting data.
- Minimised handling of errors or inconsistencies.

The full technical solution was developed in-house and generated time-savings equivalent to circa £3 million reduction in annual costs. The resulting innovations can also be further enhanced, without reliance on external organisations, saving a further estimated £1 million in annual costs.



## What was learned

To make the greatest gains, it was not enough to simply layer powerful software on top of existing business processes. The team needed to develop better processes and build capability for both data infrastructure and skills.

As a result, they established a purpose-driven approach to data management by:

- Defining the right questions to ask of the project teams.
- Deploying a series of central reports based on these key questions.
- Establishing a core technical team to support the development of analytical capability.
- Implementing training programmes and resources for the wider teams to build their analytical skills and understanding, enabling them to undertake their own analysis.

## Concluding thoughts

“Our team’s expertise in data analysis has enabled us to identify trends and patterns that might have gone unnoticed, allowing project teams the ability to take corrective action early on. Our work has given us a more nuanced understanding of project data, helping us to optimise resources, improve efficiencies, and ultimately deliver better outcomes for our stakeholders.”

**Yamini Kumar,**  
**Programme Controls Manager**  
**(Analytics)**

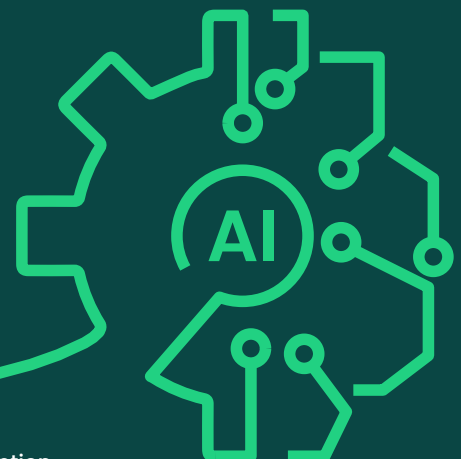
“Every project irrespective of its scale should involve end users from the beginning and engage with them throughout. Projects of this nature should be designed with extensibility in mind. This allows solutions to be easily extendable with minimal effort and maximum return on investment. One never knows when a small-scale project needs to extend from a local to regional or national scope.”

**Pragya Raina,**  
**Senior Business Reporting Analyst**

“In essence, data and AI can be thought of as an evolution of tools that have supported human endeavour throughout history – from the abacus and calculator to the more sophisticated technologies we use today.

“As with these earlier tools, it’s essential to recognise that the use of data and AI is most effective when employed in conjunction with human intuition, creativity, and ingenuity. By embracing this perspective, we can harness the power of data and AI to achieve better outcomes for our projects and organisations as a whole.”

**Milla Mazilu,**  
**Head of Advanced Analytics, Network Rail**  
**(Wales & Western)**



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succeed, society benefits

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