

# Case Study

## UK Rail Engineering

### Background

UK Rail Engineering is a multidisciplinary rail infrastructure contractor in Kirkby. The company faces limited track access, staff shortages, budget constraints, and complex communication. By tackling these issues, they aim to deliver safe, efficient, high-quality projects.

### Challenge

UK Rail Engineering, despite its technical strength and experience, faced challenges in operational efficiency, data management, and regulatory compliance. Manual reporting was time-consuming, site inspections lacked consistent digital capture, and increased infrastructure demands required more scalable, automated solutions.

UK Rail Engineering partnered with Liverpool John Moores University's Horizons team to explore digital technologies and automation to improve the efficiency, accuracy, and resilience of rail operations.

Delivery Partner



The collaboration sought to enhance service delivery, streamline workflows, and develop innovative digital products.

A diagnostic review identified key challenges, including the insufficient use of digital tools for inspections and reporting, a high number of time-consuming administrative tasks, and increasing regulatory demands for real-time data.

There is also an increasing need to explore new technologies such as AI, LiDAR, and predictive maintenance to diversify current services and remain competitive in the evolving rail sector. These challenges underscore the necessity for a structured digital transformation plan and practical demonstrations of these new technologies.

## Solution

The Horizons team evaluated UK Rail Engineering's workflows, digital readiness, and regulations, finding automation and AI opportunities to improve processes.

The team proposed AI vision tools, thermal imaging, predictive maintenance systems, and digital reporting platforms.

They analysed the feasibility of automating data capture and AI-supported reporting to boost consistency and reduce manual input.

A new digital service was also developed to improve inspection and monitoring for more accurate and timely reporting.

Recommendations for operational improvements focused on AI tools and automation, providing a clear plan for modernising operations and integrating scalable digital solutions.

## Impact

The collaboration has accelerated UK Rail Engineering's digital transformation, enhancing operational efficiency, service quality, and strategic positioning. Key outcomes include adopting AI-supported inspection systems to improve accuracy and reduce manual workload, allowing team members to focus on other tasks, and automating reporting for more consistent site inspections, supporting a more positive market position.

Looking ahead, the Horizons team will continue supporting UK Rail Engineering's digital transformation by identifying areas for further technological enhancement, piloting new digital tools, and facilitating ongoing staff training. The long-term plan is to integrate advanced technologies, streamline processes, and strengthen competitive advantage in the evolving rail infrastructure sector.