Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

in collaboration with NetworkRail

Enabling Track Asset Decision Support at Network Rail

Optimizing value from track assets through improved asset management decision making

The Situation

Network Rail, an organization of 35,000 employees, owns and operates Britain's rail infrastructure. With an estimated 1.3 billion journeys made on Britain's railways each year, it is essential that Network Rail maintain the level of service expected by the traveling public and the Office of Rail Regulation (ORR), its industry regulator. With an anticipated future increase in rail usage, both in terms of higher passenger numbers and more trains on the track, Network Rail must find new ways to optimize the management of its core assets to meet this increased demand.

Network Rail continually strives to deliver value for money to the ORR with a goal to reduce public subsidy and provide a railway fit for the future. The ORR's CP5 final determination identified a £1.7 bn saving to be made in Network Rail's spending plan for the day-to-day running of the network. The availability of new digital technologies provides the opportunity to equip the route-based engineering and asset management community throughout Network Rail with the tools, capabilities, and insight to deliver against the ORR's plans.

Network Rail is embracing new, digital technologies to improve how they run the UK Rail Infrastructure. An industry that was born out of the industrial revolution is now deploying these digital technologies to generate innovative insight to improve service delivery. In doing so, the industry is leading the way in complex engineering projects.

The Solution

To meet this challenge, Network Rail is implementing a number of industry leading engineering technologies to enable a step change in how they manage their core rail assets. They recognize that advances in data management and analytics applications offer the opportunity to deliver greater insight into the engineering community. For example, in the past, some of the problems were hidden beneath the track underground; however now, Network Rail has the ability to collect new data from ground-penetrating radars. When combined with conclusive asset condition data, this allows analytical techniques to be used to predict when issues would develop into faults.

Data

The complexity and diversity of engineering data had meant it was not possible to make much of this available to the engineering community in a clean, aligned, and real-time manner. With developments in information mobility, mobile technologies, and analytics solutions, Network Rail recognized the opportunity not only to make this data available but also to deliver greater insight on asset degradation, the effectiveness of past interventions, and predicted future actions.

Mobility

Network Rail is delivering a range of mobile devices and decision support tools to frontline staff through their Offering Rail Better Information Services (ORBIS) program. This will enable them to capture, maintain, and access quality, joined up data that will further improve their insight and ability to make lower cost interventions. New digital technologies provide frontline staff throughout Network Rail with capabilities and insight to a level that was previously unavailable. This will enable engineers to make better decisions that deliver maximum value from the infrastructure while ensuring maximum safety and improving the service.

Decision Support

As part of this program, Capgemini has worked with Network Rail and Bentley Systems to deliver a Linear Asset Decision Support solution to track assets.

This solution utilizes industry leading capabilities to consolidate Network Rail's complex engineering data and provide insight from that data to the engineer, enabling them to make better decisions on managing the track. Importantly, the Linear Asset Decision Support solution ensures this information is available when and where the engineers need it and in a visual format that is easy to interpret and act upon. The solution combines data from 14 asset information systems into a single digital solution, providing a consolidated and aligned view of all rail asset data. Engineers can view, manipulate, and analyze this data.

Network Rail is transforming how it manages its infrastructure assets. We are moving from paper-based working, time-based asset renewals, and a 'find and fix' approach to asset management to a proactive digitally enabled 'predict and prevent'. This requires insight into how different assets work and perform together as an asset solution, along with historical condition and workbank data that enable reliable analytical predictions to be made. The Linear Asset Decision Support solution developed and implemented by Network Rail's £330m ORBIS program does just that. Our track engineers across the country can now access critical asset-related data where and when they need it most, enabling them to better target the most appropriate type of work to the right place. Getting our asset interventions right the first time saves cost and helps us run an even safer, better performing railway.

Patrick Bossert
Director of Asset Information
Network Rail

Enabling the Business

To ensure that this enhanced engineering capability is translated into improved asset performance, and ultimately, improved service delivery, it was important to define the operating model required to embed the capability in the business. This operating model defines the overall business solution, including appropriate governance, data management, increased capability of the solution users, and the process changes to ensure improved decisions, which lead to business and engineering actions. Collaborative development and rigorous testing has resulted in over 800 UK-wide engineers using the solution to make better decisions on track management every day. The solution is available via mobile devices, providing engineers access to critical data where and when they need it the most.

The Result

With the deployment of a Linear Asset Decision Support solution, Network Rail engineers now have access to enhanced insight to ensure that they are doing the right work, in the right place, at the right time. By utilizing new, digital technologies in the Asset Management function, Network Rail is now able to make better decisions on how they manage their track assets, realizing hundreds of improved decisions every day.

Such improved decisions are resulting in more preventative track maintenance and renewal, resulting in fewer asset faults and failures. In addition, where issues do occur, better decisions are leading to more first-time fixes and fewer repeat faults across the asset estate. All of this is contributing to a reduced number of separate interventions and less intrusive work on the track asset. Importantly, this leads to increased asset availability, improved service for Network Rail customers, less disruption in train journeys for train operators and the traveling public, and a subsequent improved customer experience.

In addition to improved levels of service, the reduction in intrusive work on track and ability to pre-empt asset faults improves the safety of the railway for the traveling public and Network Rail employees. This is coupled with increases in the performance and value delivered from the rail assets due to lower costs through the asset lifecycle.

The ability to improve service, performance, and safety at lower total cost demonstrates the value that engineering organizations can deliver from embracing digital technologies. Network Rail has provided an innovative solution to a unique, complex problem and met with unprecedented success. The organization is leading the way in digital asset solutions and realizing clear, tangible, and significant business value as a result.

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

How Network Rail and Capgemini Worked Together

To deliver a solution that meets the needs of the business in such a complex area, it was critical that the design and deployment of the solution was business-led. Capgemini and Network Rail used a "Model Office" approach to harness the capabilities and expertise of the Subject Matter Experts from the business. This approach was centered on engaging a cross-section of business users to provide the depth of understanding required, design the best method to embed these new technologies, and confirm the best ways of working in the business. This collaborative approach delivered business-defined requirements and a business-designed solution.

Following an initial pilot to prove the concept and refine the solution design, a joint team from Capgemini, Bentley Systems, and Network Rail deployed the solution across the national network. SMEs from the business helped run the training of the solution, whilst the 'Continuous Improvement' stream worked jointly with the business to understand what the business needs from the solution with future enhancements.

Key to ensuring successful adoption of this solution was to manage the business change and the realization of the benefits. This was done by working closely with the regional route teams in Network Rail through design and deployment and providing hands-on local support in the period immediately after deployment.

About Capgemini

With almost 140,000 people in over 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2013 global revenues of EUR 10.1 billion. Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

Learn more about us at
www.capgemini.com

Capgemini UK
Global Public Sector
DCX

Approved by

Ari Koponen,
Vice President,
Distribution, Fortum

Tommy Holmkvist,
Account Manager,
Capgemini

In collaboration with

NetworkRail

Network Rail run, maintain and develop Britain's rail tracks, signalling, bridges, tunnels, level crossings, viaducts and 17 key stations.

For more information, please visit:
www.networkrail.co.uk

For more information on this project, please contact:

success.story@capgemini.com