Network Rail’s Fault Management system (FMs) made safe and simple.

Network Rail is responsible for running, maintaining and developing Britain’s tracks, signalling system, rail bridges, tunnels, level crossings, viaducts and 18 key stations. They handle around 28,000 freight and passenger train movements daily on the country’s rail network.

WHAT NETWORK RAIL NEEDED

Safety is critical to Network Rail. They need periodic monitoring of all failures connected to transport infrastructure assets, as well as detailed investigation of all failures which have a safety impact. This investigation helps prevent accidents by improving asset technology or reviewing maintenance schedules. Failure data also helps you monitor the wear and tear of infrastructure so that you can review and improve maintenance cycles.

Initially, Fault Controls was in charge of day-to-day fault management. Fault Controls is a single system used by multiple private infrastructure companies. These companies were also responsible for investigating basic safety-related failures. This was in turn reviewed by Network Rail. However, serious safety-related failures were investigated by Network Rail.

THE CHALLENGE

Network Rail required a single solution. That could be used by Fault Controls to manage day-to-day issues and by Network Rail to manage safety related failures and fault equipment and reference data. For this they needed a system to transmit sensitive, safety-related data between private networks that exist between Network Rail and private infrastructure companies.

Our challenge was to develop and implement Fault Management System (FMS) to provide a central repository of reference data managed by Network Rail. This data would then be used by the private infrastructure companies to log faults against. This would ensure consistent reporting of failures, and improve fault and trend analysis. This transition was not easy. It involved many disparate networks owned by the private infrastructure companies and Network Rail.

“FMS was a difficult technical implementation and had to support a number of major Network Rail organisational and cultural changes during the project lifecycle.

The solution and delivery model provided by CGI was flexible enough to enable us to achieve a number of late business requirements and transition the solution to support within our budgets.”

Steve Anderson, FMS project Manager
Network Rail
OUR ANSWER

For Network Rail, we developed a completely bespoke system. The FMS had a central system, that we developed based on Oracle forms and reports. Its second component was a local system using Visual Basic .NET, Crystal Reports and Microsoft SQL Server, developed by RailTech Solutions, who were managed by us. The local system talked with the central system every day by sending and receiving encrypted Extensible Markup Language (XML). The central system in turn released encrypted XML containing reference and equipment data received from Ellipse, which was managed centrally.

The transition was complex and on a massive scale, so we used a staged-deployment approach. This included the training of 100 to 150 fault control users split across 12 fault controls and a train-the-trainer programme to train an additional 60 safety investigation users. Somewhere along the line, all private infrastructure companies managing Fault Controls were nationalised and became part of Network Rail. This led to additional implementation challenges. But it also simplified local-to-central communication. They also needed to alter the source for asset data to utilise the Ellipse asset maintenance system. For that, we introduced a new interface to the system and restructured a number of core components of the solution.

A SUCCESS STORY

Network Rail now has a common source for safety and non-safety related asset data for fault reporting and asset maintenance. Needless to say, they have benefited from improved reporting and data quality. All of this in turn improves the speed of fault diagnosis and resolution. By introducing a new interface to the Ellipse asset maintenance system, there is improved association between fault reporting and asset maintenance history. Further, it is agile and supports any major re-organisational change of Network Rail, if any. For example, no system/functional changes were required to the FMS application to ensure its compatibility with the phase 2a programme (major Network Rail organisational change) and other Network Rail boundary changes.

“The project referenced in this case study was delivered by Logica, which CGI acquired in August 2012”.

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About CGI

With over 68,000 professionals in 40 countries, CGI fosters local accountability for client success while bringing global delivery capabilities to clients’ front doors. Founded in 1976, CGI applies a disciplined delivery approach that has achieved an industry-leading track record of on-time, on-budget projects. Our high-quality business consulting, systems integration and outsourcing services help clients leverage current investments while adopting new technology and business strategies that achieve top and bottom line results. As a demonstration of our commitment, our average client satisfaction score for the past 10 years has measured consistently higher than 9 out of 10.

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