

Network Rail

Driving the energy revolution

The UK rail industry was reviewing the electricity used in moving trains on its network. New government legislation had come at a time when there was intense financial pressure, coupled with climate change concerns, like never before. Network Rail had to reduce carbon and improve the accuracy and billing of its electricity usage. This was a directive by the Office of the Rail Regulator (ORR), the UK government rail body.

Specifically, Network Rail had to provide train operators with the option to be billed based on metered EC4T (electric current for traction) consumption. It had to be able to receive data from up to 2,500 electric trains before the April 1, 2011, deadline and have a facility to recharge for the £250 million in energy consumed by these trains. Every one percent of electricity saved would reduce carbon to the equivalent of taking 20,000 cars off the road.

Network Rail had one of the three highest electricity bills in the UK so it was looking to reduce consumption.

THE CHALLENGE

Network Rail negotiated the use of £8.7 million of funding to help train operators install meters on electric trains that would provide accurate billing. It funded separately the billing system to process the data from the meters. The project aimed to help the railway become more energy efficient, immediately. Plus, the company could easily integrate OTM with other systems that would help it continue to increase its energy efficiency in the future.

Network Rail had specific objectives for the project, including the following:

- Implement a train based meter billing system by April 1, 2011
- Offer incentives to train operators to reduce their energy consumption
- Introduce a bureau service to collect, validate, distribute and enhance raw metered data with geographical and operational information
- Enlist aid for resolution of disputes and shortcomings of metered data
- Ensure minimum ongoing IT integration and support would be required.

CASE STUDY

TRANSPORT & LOGISTICS

Network Rail is the largest non-regulated electricity consumer in the UK. It spends £300 million on electricity with £250 million on rail traction alone, which is recharged to operators with little or no focus on carbon reduction.

“Logica [now part of CGI] was chosen because their integrated approach was essential to make sure we delivered value for money to our customers. The OTM solution enables us to become more energy efficient.”

Diane Booth, head of environment policy, Network Rail

THE SOLUTION

Deadlines were tight. Network Rail needed people with unique subject matter knowledge to help it achieve a swift project take-off at lower cost and reduced risk. Having shaped the requirement for OTM solutions, we provided timely guidance. A Network Rail consulting paper (2008) by Chris Beard, an energy expert at CGI and author of *Smart Metering for Dummies*, became the operational guide for the UK rail industry.

Our solution had three components:

- Externally hosted OTM service: to collect and validate meter reading data from train operators and export it to Network Rail.
- Data store (hosted within Network Rail): to hold meter readings in a format suitable for billing.
- Updated track access billing (TABS): A solution for billing train operators for track usage that manages £2.5 billion per annum of track access charges. Network Rail can now compare train access charges with meter readings.

The solution we delivered is based on Network Rail's strategic technology platform, Oracle database. We used a commercial off-the-shelf technology that's proven in the industry. The solution was not only reliable but reduced Network Rail's cost and time and required no technical support.

We delivered the final OTM solution to Network Rail on March 27, 2011, ahead of the regulator's deadline. Our approach to system design and development was flexible. This allowed for changes in requirements and priorities as it became clear which operators would be the first to adopt on-train metering.

By implementing as much functionality as possible as early as possible, we reduced risk by driving out shortcomings in the proposed billing rules ahead of the planned implementation date. This flexibility meant Network Rail could implement the solution in time to collect meter readings and provide metered charges from April 1, 2011.

THE RESULTS

The service is helping Network Rail reduce the carbon used by the GB's rail network. Billing for electricity usage is spot-on. Operators fitting meters to their entire fleet are billed for their trains' electricity consumption during the invoice period. So, they no longer receive an estimated bill that may have to be adjusted at the end of the financial year through the “wash-up” process. Instead, operators know exactly how much the total cost of electricity consumption is and can manage their cash flow better.

Key benefits

Network rail is now able to do the following:

- Make savings simply by introducing guidelines for drivers
- Monitor usage on a journey by journey basis
- Reduce the carbon used by the UK's rail network
- Bill more precisely for electricity usage

Because of the move to metered billing, operators are now able to monitor usage on a journey by journey basis and make savings simply by introducing guidelines for drivers. Under the previous estimated billing process, any gain made by one operator would have been shared across all other operators in the same area. Once meters are fitted, an operator will receive the full benefit directly. This also allows the operators to more accurately report and manage their carbon footprints.

Now, Network Rail is more easily able to monitor usage against the energy purchased. It has the ability to do the following:

- Identify electricity losses on the line
- Monitor inefficiencies on the track
- Introduce a green timetable
- Advise on Great Britain's rail behavior

It has the potential to save millions of pounds in electricity every year and reduce carbon more significantly than any consumer in the UK. It is in a great position to build a sustainable railway.

WHY CGI?

CGI has introduced smart transport schemes that support millions of users and has brought real-time travel information to public transport. We are known for our technological know-how and delivery record. Companies upgrading legacy systems and those adding new functionality make us their first-choice systems integrator.

Our integrated approach to transport and logistics helps clients achieve their business objectives. We also help them to move through the maze of regulations, bookings, and fees and tariffs with greater assurance.

CGI has been at the forefront of the smart metering revolution ever since it was just an idea. Now, smart meters—and, to a lesser extent, smart electricity grids—are used around the world. We have helped create this smart world by working closely with energy retailers around the world. We help them find smarter ways to drive energy efficiency, while benefiting from more lucrative business models.

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

For more information, please contact us at info@cgi.com or visit www.cgi.com.

With 69,000 professionals operating in 400 offices 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.