

Case Study: TPMS

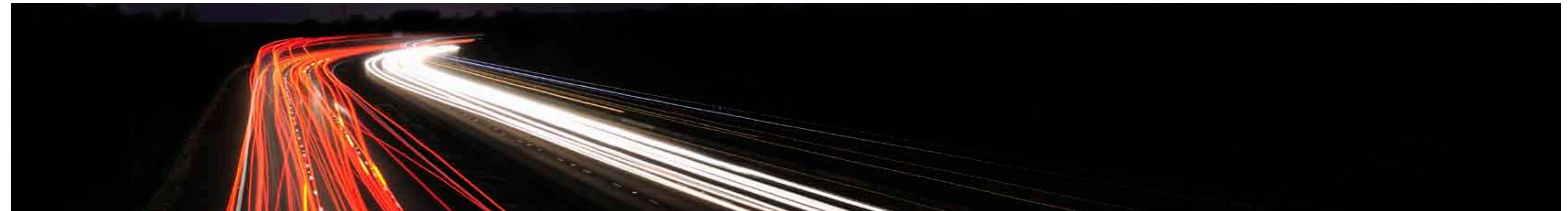
Highways Agency

The Highways Agency is an Executive Agency of the Department for Transport (DfT), and is responsible for operating, maintaining and improving the 10,000 km of motorways and major A roads in England on behalf of the Secretary of State for Transport.

The Highways Agency employs a range of electronic devices at the roadside to support its core aims of safe roads, reliable journeys and informed travellers.

These include text-based message signs, matrix signals, CCTV cameras and emergency telephones. There are also various detectors employed to count traffic (e.g. MIDAS loops) and monitor weather conditions. In total the Highways Agency manages more than 140,000 such devices, mostly on the motorway network.

Maintenance of these assets in each of the seven HA regions is the responsibility of a regional technology team. Each team manages a technology maintenance contractor (TechMAC) responsible for installing, monitoring and maintaining the electronic devices.



Technology Performance Management Service

The Challenge

In 2006 the Highways Agency awarded IPL a contract via competitive tender to take on the development and maintenance of their electronic asset database, NOMAD. HA recognised IPL's in-depth software development experience and unparalleled knowledge of HA traffic technology systems.

NOMAD holds detailed information on electronic assets such as matrix signals, telephones and CCTV cameras and also related infrastructure such as communications equipment and roadside cabinets.

This database was unreliable, with numerous outstanding faults, and did not provide the flexibility and reporting options required. IPL were asked to stabilise the system and develop a service around it to enhance the HA's ability to manage the performance of the assets and maintenance contractors.

The key requirements identified in consultation with the HA were:

- Create a stable, consistent platform for future development
- Develop a business intelligence capability based on a suite of performance reporting tools
- Implement a fault management function to identify root causes and alert maintenance staff to urgent issues
- Create a new web-based user interface suitable for access from anywhere by a range of HA and contractor personnel
- Develop and deploy a new handheld terminal to support work allocation and to update asset conditions at the roadside

The Solution

Technology deployed to meet the HA's requirements included:

- A ROLAP data warehouse designed using the Kimball star schema approach and implemented on SQL Server 2005 and running on dual hot standby servers
- A nightly ETL process to load the data warehouse from the NOMAD database using SQL Server Integration Services (SSIS)
- Implementation of cross-checks against other data sources to verify database content
- A suite of reports and business intelligence tools implemented using SQL Server Reporting Services (SSRS), SharePoint Services and Dundas Charts
- Analysis of fault logs from HALOGEN (the HA LOGging ENvironment) using Sidonis|StateWise®
- A web portal providing security and one-stop access to all reports, business intelligence tools and supporting information
- A Motorola MCS75 handheld terminal for use by maintenance contractors at the roadside
- Work allocation lists, trouble tickets and alerts are provided via web, email, text and the handheld terminal

The Highlights

IPL quickly produced tangible benefits, reducing both the backlog of faults and the rate of new incidents, whilst also delivering significant functional enhancements and improved data quality. In the first six months alone the fault rate dropped five-fold.

TPMS now provides the HA with a stable, consistent platform for monitoring the availability of roadside assets, the quality of the communications network and the performance of maintenance contractors against SLAs.

The fault management system analyses have vastly reduced the load on maintenance staff by reducing an average 40,000 fault logs per day down to 3,500 trouble tickets requiring attention.

As a result of the work carried out by IPL:

- HA managers are able now to pinpoint issues through the web interface which provides dashboards of KPI measures backed up by drill-down functionality (see right for a screen shot) and a range of standard reports.
- Managers can investigate further, or provide novel information to senior management, using the easy-to-use report builder.
- 500 HA users can rely on the system, backed up by IPL's comprehensive ITIL-aligned support service, to deliver the information they need.

About IPL

IPL is a software & IT services company specialising in the delivery of intelligent business solutions. We help our clients to exploit corporate information assets to yield tangible business benefits.

IPL's consulting is renowned for its quality and value. We consistently exceed our clients' expectations through a combination of imaginative thinking, managerial and technical expertise and many years of systems engineering experience.

IPL's track record in end-to-end software solutions development is exceptional. Our proven development methodology allows us to cut through technical complexity, manage risk and completely focus on delivery. We always deliver reliable, efficient and accurate systems to a precise schedule. IPL is certificated against three international standards:

- ISO27001:2005 (Information Security)
- ISO9001:2008/TickIT (Quality)
- ISO 14001:2004 (Environmental)

The company has a permanent workforce of 260, revenues of around £28M p.a. and 40,000 sq ft of secure office space in central Bath.



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