

# Case Study: Managed Motorways

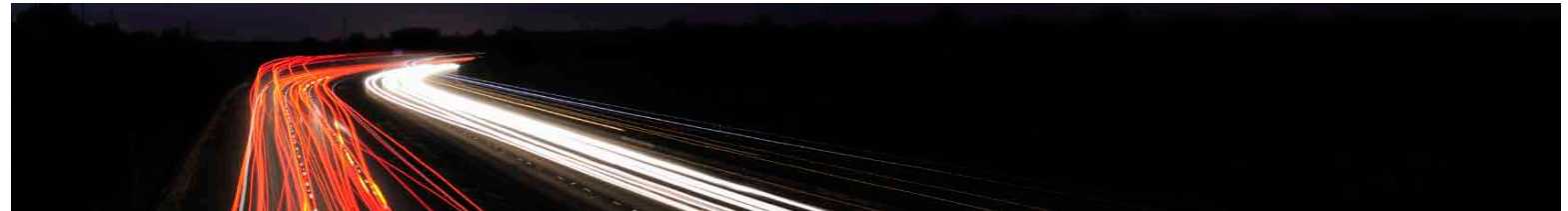
## What is Managed Motorways?

Managed Motorways is a holistic approach to managing traffic and congestion on inter-urban roads using technology to improve traffic flow, for throughput and predictability of journey times.

Traffic flows and speeds are measured in each lane to provide a live report of traffic flow. A central system constantly analyses traffic flow to determine an ideal traffic speed. Advanced LED based signing is used to set mandatory speeds above each lane; speeds that are then enforced by digital cameras.

The traffic flows are reported to operators in Regional Control Centres who are able to control the hard shoulder as a dynamic running lane when traffic flows are high. This allows traffic speeds to be maintained even during peak periods. It is important that the hard shoulder is opened and closed with due care and systems are used to present operators with the images of the hard shoulder while managing both the rate of opening and the signing required. The systems automatically manage the closure of the hard shoulder, using predefined signing.

Using systems ensures that opening is both rapid and safe.



## Active Traffic Management and Managed Motorways

### The Challenge

IPL, as part of a consortium led by Mouchel, won a contract to manage the development and deployment the Active Traffic Management (ATM) pilot scheme on the M42 east of Birmingham.

The timescales were very short, only 3 years from a blue sky idea to a fully operational scheme. In addition a new idea, opening the hard shoulder, with obvious safety implications had to be turned into reality while improving road safety.

This was a high profile scheme with high risks to be delivered by a range of partners with different skills and business cultures.

### The Solution

The timescale meant that a wholly new technical solution was impractical. Existing CCTV and MIDAS systems with additions to the HA Traffic Management system, in particular a new Hard Shoulder Management (HSM) system, were used to take operators through the complex opening and closing procedures.

An innovative safety case was built covering both new and existing hazards. This defined the systems as having to meet IEC61508 SIL1 as well as a number of safety requirements which were tested as part of commissioning.

The interface for operators was carefully designed to ergonomic principles to ensure safety requirements were met and that the operator task was as simple (and quick) as possible.

At every stage thorough reviews were undertaken to minimize the possibility of an accident and reduce the risk and impact of failure.

### Highlights

The ATM pilot was delivered on time and has continued running successfully since. The extensions to ATM have been renamed as Managed Motorways and extended onto the M6 with future implementations planned around the country. A report on the ATM scheme concluded that journey times had been reduced by up to 25%, fuel consumption down by 4% and emissions down by 10%.

It also has an excellent safety record, with no reported traffic accident deaths and the number of incidents reducing from 5.2 to 1.5 per month.

It has proved reliable, and as experience has been gained the manual supporting processes, added initially as a precaution, have been removed

There has been a progressive rollout of the solution to cover nearly 100km of motorway within the West Midlands. Despite this the entire hard shoulder in these areas can be opened within 10 minutes. The procedure is simple and requires minimal training with specialist training courses having been replaced by short familiarisation sessions.

As new road geometries and operational regimes have been requested, for example Through Junction Running, only minor changes have been needed to systems. The resulting system is so flexible and robust that a parallel project, to develop a new technical solution was halted as not being cost effective.

## 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:

- ISO 27001:2005 (Information Security)
- ISO 9001:2008/TickIT (Quality)
- ISO 14001:2004 (Environmental)

The company has a permanent workforce of 270, revenues of ca. £29M p.a. and 40,000 sq ft of secure office space in central Bath.



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