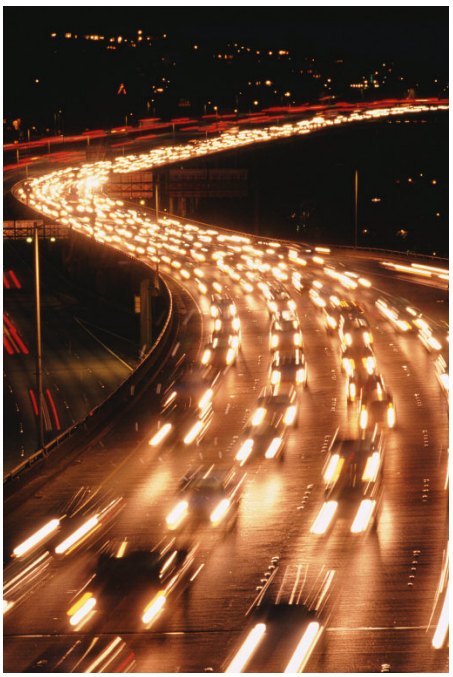
Making better use of the core road network

Project Brief: Next Generation Systems and Standards Development

Faced with the need to provide world class road travel information and traffic management the Highways Agency looks to its future Network Architecture



BUSINESS OBJECTIVE

Under its new role as a Network Operator, The Highways Agency is developing a vision for the next 20 years. A major component of that vision was the commissioning of a study to define the future Network Control Architecture.

In recognition that telematics will play a vital role in supporting the demands on transportation across the English core network of roads, it was considered that IPL could provide both the strategic consultancy and the technical input required by the Highways Agency on this multi-faceted study.

IPL'S CONSULTING SUPPORT

Although IPL's detailed knowledge of the existing National Motorway Communication Systems (NMCS2) was an important prerequisite to the study, the approach also needed to take into account a number of other factors, as follows:

- The content of the 1998 Transport White Paper
- The development of Road Transport and Traffic Telematics (RTTT) on a global scale
- The influence of European transport initiatives
- Intermodal and Integrated Transport factors
- Highways Agency future requirements and existing legacy systems
- The impact on other transport related bodies, projects and initiatives.

Reinventing the wheel was never an option. The project demanded an early appreciation of the transport industry state-of-the-art. Accordingly, the following topics were investigated across the USA and Europe:

- Architectures
- Methodologies
- Services and Applications
- Technology
- Integrated Transport
- Migration options

One key output from this investigation was the recognition of the importance of the Keystone Architecture Required for European Networks (KAREN) project. An initial activity undertaken by the Pan European KAREN project team was the compilation of Services and User Needs and this activity proved a valuable input into the Network Control Architecture study.

Many factors needed to be considered before the Network Control Architecture could be documented, i.e. political, organisational, geographical, and technological, together with another important venture that the Highways Agency was embarking upon: the Traffic Control Centre (TCC) project.



The formulation of the architecture comprised a number of discrete reports addressing the key architectural components, as follows:

- The Network Control Architecture
- The Enterprise Model
- Requirements Analysis
- The Functional Architecture
- Ancillary Architectural Components
- The Optimum Network Architecture
- The Migration to the New Architecture
- The choice of Scenario in Migrating to the New Architecture

Although the Functional Architecture was a cornerstone of the architecture, other architectures needed to be considered:

- The Information Architecture
- The Data Communications Architecture
- The Physical Architecture

The Information Architecture was defined with respect to data and information flows relative to the business of the HA.

The Data Communications Architecture took into account overall strategies, roadside devices, roadside network, area network, the Transport Information Highway (TIH), emerging standard protocols such as National Transportation Communications for ITS Protocol (NTCIP) and the general requirements of availability, reliability and security.

The Physical Architecture addressed the Area and Roadside Networks together with the Local (Control Office) Systems.

MANAGING THE PROCESS

In order to assist in the definition of user requirements a number of workshops were held with senior Highways Agency staff.

IPL and the client worked in partnership on the project with regular progress meetings and full visibility of progress in accordance with IPL's Consultancy Services Group standards and procedures, part of IPL's ISO9001-certificated Quality Management System.

THE OUTCOME

The definition of the Network Control Architecture resulted in IPL instigating a number of trials in order to validate many of the architecture recommendations. A high proportion of these trials proved successful and others are ongoing and form part of the future planning of the Highways Agency.

FURTHER INFORMATION

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