



Motorway Traffic and Incident Management

SEA possesses in-depth experience in software and system development for improving traffic management, incident detection and operation of ITS schemes. Work performed for related motorway systems programmes also illustrates skills in concept design, future proofing and management of new-technology solutions.

Network ATM Supervisory Subsystem (NASS)

The primary objective is to reduce congestion and improve safety by means of better operation of tactical control systems through real-time traffic modelling. NASS is a tool for the tactical control of motorway and trunk road networks. SEA has defined the requirements for NASS and supported the Highways Agency during the pre-tender qualification (PTQ) exercise prior to issue of a formal invitation to tender. This included development of the PTQ assessment strategy and use of SEA's in-house tender assessment support tools to aid the evaluation of PTQ responses.

Network Algorithm Performance Prediction (NAPP)

The aim of the project was to tune and measure the performance of incident detection algorithms operating on motorway traffic using historic data. This was done in the context of various traffic conditions, such as low, medium and high traffic flows on hills, at junctions and on 'normal' motorway geographical situations.

Management of Incident Data Alerts (MoIDA)

This project evaluated new techniques for handling incident detection alerts for potential use in future MIDAS (Motorway Incident and Automatic Signalling System) systems. Techniques from the field of artificial intelligence (Bayesian Belief Networks and decision theory) were investigated to combine the outputs of multiple incident detection algorithms and formulate a strategy for setting speed restriction signs in response to these incidents and associated congestion. Bayesian belief networks are a method used for reasoning with uncertain information and are founded on the use of probability theory. They are used to model the performance characteristics of the incident detection algorithms under different conditions and to maintain an estimate of the current traffic state.

The project used historic MIDAS data from the controlled motorway section of the M25 and demonstrated that significant improvements in decision-making can be forthcoming if data is combined from different algorithms and sensor sites.

MIDAS2 Algorithm Technology Trial (MATT)

The trial measured and analysed the characteristics of congestion/incident detection algorithms under different traffic conditions to improve the overall detection performance of the system and reduce false alarm rates. The system produces incident/queue alerts, signal settings and operator alerts as output, which have been displayed and logged for analysis, used to measure performance of the MoIDA model and algorithms and to undertake a comparative assessment against the current MIDAS incident detection system.