



European Experiences Meeting Report

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1 Introduction

The HA EU Watch Project is providing intelligence for the Highways Agency on ITS developments in Europe and is carried out by TRL on behalf of the HA. The project summarises key information for decision makers and practitioners on activities related to Intelligent Transport Systems (ITS) in Europe. The project covers specific areas of key interest to the HA. Currently these are:

- Galileo (including location-based services)
- Standards (including DATEX and location referencing)
- European ITS research projects
- European Commission activities

The European Initiatives Meeting took place on 31st March 2006 at Temple Quay House Bristol.

This report will provide a summary of the presentations that took place at the meeting and highlight interesting areas for future monitoring of progress. The presentations were divided into two sections. The first section gives an overview of the experiences of Phil Rowley following his two-year secondment to the French equivalent of the Highways Agency - Ministère des Transports, de l'Équipement, du Tourisme et de la Mer.

The second section outlines the traffic management of trunk roads in Germany and Austria as presented by Josef Kaltwasser, who is supporting the Highways Agency from Heusch/Boesefeldt GmbH.

2 Experiences from France

Phil Rowley (HA secondment)

2.1 Introduction

Phil Rowley began his presentation by explaining the aims of the secondment programme between the Ministère des Transports, de l'Équipement, du Tourisme et de la Mer (French equivalent of the Highways Agency) and the Highways Agency. The main aim of the programme is to develop closer links between the two organisations in order to share best practice and identify opportunities for collaborative working. Since 2003, there have been three French Ministry staff seconded to HA and one HA secondee (Phil) to France.

2.2 Organisation of traffic management and traffic information in France

During the two year secondment Phil developed an overview of how traffic management and traffic information is organised in France.

There are 11 Directions Interdépartementales des Routes (DIR) which are similar to the HA Regional Maintenance areas.

There are approximately 100 Directions Départementales de L'Équipement (DDE) which are regional offices of the Ministry of Works responsible for Asset Management and Traffic Management (on the non-concession network). The Cellule Départementales d'Exploitation et de Sécurité (CDES) which forms part of the DDE is responsible for route safety and management

The toll road operators - Sociétés Concessionnaires d'Autoroutes (SCA) - are responsible for approximately 7,500km of SDIR Network. There are 6 semi-public companies grouped into three regional operating units with 3 Private companies, 2 Tunnel management companies and 1 Bridge Management concession. The French are currently in the process of privatising the 6 semi-public toll operators.

Regional Traffic Information Centres - Centre Régional d'information et de Coordination Routières (CRICRs) - are similar in role to the UK National Traffic Control Centre (NTCC).

CRICRs collect all relevant information relating to traffic conditions and disseminate it to the media, road users, authorities and other bodies. They produce traffic management plans for times when heavy traffic is expected and coordinate during periods of crises – strikes, bad weather etc.

There are a number of other organisations involved including:

- National Police - Part of the Home Office, they are responsible for traffic enforcement in mainly the urban areas
- Gendarmerie - Part of the Ministry of Defence, they are responsible for traffic enforcement outside of the urban areas
- SETRA - The roads and motorway engineering department of the Ministry of Transport and Public Works
- CETE - Regional Ministry of Works Engineering centres
- Private Information providers - RDS-TMC suppliers, WAP and FM radio coverage suppliers

2.3 Traffic Management and Traffic Information Strategies

Phil then looked at the organisations' Traffic Management and Traffic Information strategies.

Le Schéma Directeur d'Exploitation Routière (SDER) creates a road hierarchy for the network and defines service levels for Network Patrols and their role in Traffic Management. A network of Centres d'Ingénierie et de Gestion du Trafic (CIGTs) – regional control centres for Patrols, Network monitoring and Traffic Management - has been developed to improve traffic management. There are still some regions which do not yet have a CIGT. CIGTs are not managed or co-ordinated at a national level.

Five levels of road classification exist from the 1,900km of top 20 strategic routes to the 17,000km of local roads. For each level of road classification the service level objectives have been adapted locally.

The Le Schéma Directeur d'Information Routière (SDIR) produces real time Safety & Traffic Information for the 20,000km of the strategic network. SDIR aim to make this information as accessible to as many road users and relevant organisations such as Maintaining Organisations, Emergency Services, Enforcement Authorities and Highway Authorities

The main priorities for 2006 are;

- Continuing deployment of automated data collection
- Prioritisation and deployment of 107.7 FM
- Continuing definition & implementation of CIGT/CRICR protocols
- Improve information exchange between national & de-centralised services
- Improvement of data quality in the information chain
- Continuation of A75 pilot
- Revision and re-launch of Bison Futé (Traffic information) website

During his secondment, Phil worked on a variety of projects to experience how the organisations operate. Some of these projects are outlined in the following sections.

2.4 The A75 Radio Pilot

The A75 Radio pilot was a one year pilot commencing 25th June 2005. The pilot sought to convert and send real time DATEX traffic information to Radio France to support journalists' broadcasts of real time traffic reports every 15 minutes. The 325 km route between Clermont Ferrand & Béziers is an important holiday route covering 6 départements and includes 2 stages of the Tour de France.

The main objectives of the pilot were:

- Establish a partnership with Radio France
- Define the technical specification for the information chain
- Carry out improvements during the pilot
- Communicate the pilot to the road users
- Evaluate

There were several partners involved in the pilot including:

- 2 Traffic Management Centres
- 3 Traffic Information Centres
- 2 Toll Operators (APRR & ASF)
- Radio France + 5 France Bleu stations
- French Ministry (DSCR + SETRA + CETEs)
- Millau Viaduct Concession

The challenge of the pilot was to lead a large number of partners towards a common goal whilst achieving the best split of responsibilities, for example between Traffic Information Centres and Traffic Management Centres. To reinforce this, a “contract” was established between all the partners to achieve a common understanding alongside training and support of operational teams. The pilot sought to ensure that the service experienced by the road user was accurate and reliable despite the many systems, networks and services being used.

Evaluation of the scheme using 5000 questionnaires found that:

- 65% had listened to the France Bleu broadcasts
- 55% changed their route or plans as a result of the broadcasts
- 55% were aware that traffic information would be available on France Bleu before they reached the A75
- 84% were aware that traffic information was available once they were on the A75
- 74% were happy with the frequency of broadcasts
- 77% thought the broadcasts were good quality

2.5 Satellite tracking of Hazardous goods transportation

The main objectives of this project were:

- to bring together the various parties involved or implicated in the transportation of hazardous goods; and
- to test the feasibility of a tracking system.

During 2003, a feasibility study was carried out to identify the main parties and their needs and design a preliminary system architecture. In 2004, Freight Management and Tracking Systems on the market were surveyed and two Transport operators were approached, Perguilhem (French) Tecniruta (Spanish). Eight institutions were also involved at this stage, these included emergency services, motorway companies, maintaining authority, Traffic Information Centre & Traffic Management Centre.

The pilot was evaluated in 2005 with the conclusion that more detailed mapping was needed and the load form process needed simplifying. A driver alert device was also required. The pilot was extended with more partners and the tracking system was modified.

The next steps to take place in 2006 are:

- Driver alert button to be incorporated
- Links to other tracking systems
- Real time traffic information to be linked to tracking system
 - Traffic flows
 - Incident information
- ERA NET link

2.6 SERPE

Phil introduced the Saisie d'Événements Routiers sur Postes Embarqués (SERPE) tool. This is an in-vehicle tool for capturing incident details with the aim of improving real time traffic information. The system produces event information in DATEX format suitable for transferring to RDS/TMC and internet sites. This automates the event log making it more efficient and enables better management of patrols with faster interventions. It also can also produces emails that can be sent to journalists.

The next steps are to roll out the system to more Traffic Management Centres and experiment using 40MHz Ministry radio network to transfer data. The project is also looking to add a camera to the onboard unit and develop more reporting functionality.

2.7 Real-time journey time project using Automatic Number Plate Recognition

The 47 km Pont de Claix to Bourg d'Oisans is an extremely busy route during the ski season with no alternative route available. Phil described his involvement in a project using an Automatic Number Plate Recognition (APNR) system with five cameras along the route to inform drivers of expected journey times using the existing VMS infrastructure. The information gathered was also broadcasted on the internet and radio.

The main objective of the scheme was to keep drivers better informed of the traffic circulation problems by providing reliable journey time information with the aim of reducing driver stress.

Research carried out following introduction of the scheme found:

- <10% of drivers didn't find the information useful
- <13% thought the information was incorrect
- 40% of drivers felt less stressed
- 40% were neither positive nor negative about the information

2.8 Summary

Phil summarised his experiences working for the Ministère des Transports, de l'Équipement, du Tourisme et de la Mer and concluded that collaboration opportunities existed. A good level of cooperation at an operational level between HA and French Ministry on traffic data exchange and cross channel projects existed whilst there remained an opportunity to work together on improving quality in the information chain.

3 German and Austrian Initiatives

Traffic Management and Information services - Dr Josef Kaltwasser (Heusch/Boesefeldt GmbH)

3.1 Introduction

Josef started by giving a basic overview of conditions and constraints for traffic management in Germany and Austria. Although there are different institutional backgrounds between Germany and Austria, similar system architecture and approach exists including cooperation on procurement standards.

The German trunk road network includes 12,000km of motorways (Autobahn) and 41,000 km of 'A' roads (Bundesstraßen). They are owned by the Federal State but are operated by 16 States (Länder) according to German constitution.

The Austrian trunk road network includes around 2,000 km of motorways (Autobahn) and 'A' roads (Schnellstraßen) managed by a private operation (ASFiNAG).

Both networks share common traffic management architecture. The specific characteristics of traffic management being:

- Hierarchical system architecture
- Fully automated detection and control
- Centralised processing intelligence

3.2 Network Roles and Responsibilities

Josef described the separate roles and responsibilities and system functionalities in detail. To illustrate the contrasts, two examples of traffic management from each country were highlighted.

The Traffic Centre in Hessen, Frankfurt, utilises traffic sensors to monitor traffic and automatically sets speed limits on matrix signs. Network management capability exists via variable direction signs (re-routing advice) and traffic information which is available via the web, WAP, TMC and spoken radios via data exchange with the Police network. Cooperative traffic management is being achieved between adjacent urban/inter-urban network managers. Approximately 1,200km of the trunk roads are monitored by 2,500 sensors with over 40 VMS locations which are covered by 16 sub-centres.

The Traffic Management and Information Centre in Vienna has set targets to reduce accidents by between 30%-35% whilst increasing traffic capacity by over 10%. The traffic management and traffic information function is handled in one place. There are 7 sub-centres with around 1000 detection sites, 650 gantries and 2000 matrix signs with 25 tunnel control centres. Data exchange currently exists between neighbouring countries.

3.3 Common hierarchical system architecture

Josef continued by examining the hierarchical system architecture common to both countries.

Traffic Control Centres (TCCs) are responsible for intelligent software and tools for area-wide traffic management (network control) including automatic rerouting, impact analysis of scheduled road work and events and the generation of TMC messages

Sub Centres are responsible for intelligent software for data completion and extrapolation up to a single node or section level, fallback strategies, forecasts etc. These centres are not staffed during normal operation.

Outstations are the dense monitoring infrastructures, using loops, radar and cameras (but no ANPR cameras). The Road Weather Information System (RWIS) detects road weather conditions such as fog, ice, rain etc.

3.4 Fully automated traffic control

A feature of both networks is the fully automated traffic control algorithm for automatic switching of matrix signs.

There is a pre-defined catalogue of sign-setting schemes.

Matrix sign settings are triggered by:

- traffic data
 - ⇒ congestion alert
 - ⇒ harmonisation: speed limit, HGV overtaking restrictions...
- environmental data
 - ⇒ skid hazard alert , fog alert
 - ⇒ speed limit, HGV overtaking restrictions
- operational conditions (e.g. tunnel)
 - ⇒ lane closure(s) due to maintenance work
 - ⇒ tunnel closure
 - ⇒ speed limit, HGV overtaking restrictions

There is a program for; traffic flow harmonisation; alert of slow groups of trucks; congestion; wetness alert and fog warning.

3.5 Traffic management systems

Traffic management systems in Germany and Austria have little or no roadside intelligence. Outstations are functionally restricted to collection, transmission and buffering of data (for communication links failure periods). All data is aggregated upstream towards sub-centres and onwards towards TCCs. Processing intelligence is centralised with actuator settings being promoted back (downstream) towards outstations. This facilitates context aware decisions.

3.6 Recent Developments

Josef concluded by looking at recent developments in two main areas.

1. Integrated urban / inter-urban traffic management:

- *Integrated Strategy Management* (Frankfurt)
Strategies are predefined ⇒
simple negotiation interfaces on system level

- Private Finance Initiative (PFI) projects with privatised operation
VMZ (Berlin), Ruhrpilot (Ruhrgbiet), VIB (Bavaria)

2. Improved geo-spatial services:

- Interoperability with other information via Open Geospatial Consortium Inc (OGC) standards
- Better than portals due to harmonised and seamless integration
- Successful pilots: GeoVIP (Hessen), GeoView (NRW)

Glossary

ANPR	Automatic Number Plate Recognition
DATEX	Data Exchange Network - system for exchanging traffic and travel information between traffic centres
Autobahn	German/Austrian motorway
Bison Futé	French traffic information website
Bundesstraßen	German 'A' Road
CDES	Forms part of the DDE is responsible for route safety and management
CETE	Regional Ministry of Works Engineering centres
CIGT	Centres d'Ingénierie et de Gestion du Trafic
CRICR	Centre Régional d'information et de Coordination Routières - Regional Traffic Information Centres
DATEX	Data Exchange Network - system for exchanging traffic and travel information between traffic centres
DDE	Directions Départementales de L'Équipement - Regional offices of the Ministry of Works responsible for Asset Management and Traffic Management on the non-concession network (France)
DIR	Directions Interdépartementales des Routes – similar to UK maintenance contractors
Länder	German States
Ministère des Transports, de l'Équipement, du Tourisme et de la Mer	French equivalent of the Highways Agency
NTCC	National Traffic Control Centre (UK)
OGC	Open Geospatial Consortium Inc
PFI	Private Finance Initiative
SCA	Sociétés Concessionnaires d'Autoroutes – Toll operators
SERPE	Saisie d'Événements Routiers sur Postes Embarqués - in-vehicle tool for capturing incident details with the aim of improving real time traffic information
SETRA	The roads and motorway engineering department of the Ministry of Transport and Public Works
SDER	Le Schéma Directeur d'Exploitation Routière - create a road hierarchy for the network and define a level of service for Network Patrols and their role in traffic management
SDIR	Le Schéma Directeur d'Information Routière- develop real time safety and traffic information
RWIS	Road Weather Information System
Schnellstraßen	Austrian 'A' road
TCC	Traffic Control Centre