USER NEEDS INTERVIEW

Introduction



The objective of this interview is to collect the views of road managers and operators on:

- intelligent systems currently used to operate their road network
- solutions needed for the future.

Identity



Name of interviewee	a. Wim Giesselbach b. Bert de Wit		
Name of organisation	Ministry of Transport and Public Works Rijkswaterstaat (National Road Administration) a. Netherlands Road Traffic Management Centre b. Road and Hydraulic Engineering Institute		
Type of organisation *(tick as appropriate)*	**Public road authority**		
Geographical Responsibility *(tick as appropriate)*	National		
Responsibility for *(tick all that apply)*	**Motorways**	**Expressways**	**Major roads (national or trunk roads)**
			Other (e.g. Tunnel, Bridge), please state: **Tunnels, bridges,**
Position of interviewee *(job title)*	a. Process Manager Traffic Guidance b. Head Department for Infrastructure Construction and Maintenance Consultancy		
Roles of interviewee	a. Further development of pro-active traffic management b. Manager (department head)		
Responsible for *(number of persons approx.)*	a. b. 35		

Open Questions

1 What are the main problems you currently face in managing your network (traffic and infrastructure)?
Give proposals and classify them by priority. For each problem: What measures are you taking, have taken in the past, are planning to take in the future?

Priority	Problem description	Measures	Finished	Ongoing	Planned *(definite)*	Planned *(not yet definite)*	Time scale*
1a	Inter vehicle distance						
1b	Air quality	Enforced "speed blanket" – Now on 1 road section, in 2005/2006 at 4 more sections		X	X		

* Be as precise as possible, e.g.: *"Measure started in 2002 and ongoing", "Measure definitely planed to start in 2006", "Aim to implement around 2008 but not definite"*, etc

Open Questions (continued)

1

Priority	Problem description	Measures	Finished	Ongoing	Planned *(definite)*	Planned *(not yet definite)*	Time scale*
1c	Accurate traffic prediction	Service Level Agreements with providers: < 5 min with > 94% accuracy			X		2006
1d	Tunnel safety	Combination of several preventive measures like detailed monitoring, guidance to emergency exits	X	X	X		

* Be as precise as possible, e.g.: *"Measure started in 2002 and ongoing", "Measure definitely planed to start in 2006", "Aim to implement around 2008 but not definite"*, etc

Open Questions (continued)

2 How will planned measures be financed? (Direct financing from own funds / BOT (Build Operate and Transfer / PPP (Public Private Partnership), etc.

Direct financing from own funds

Purchase data from third parties (e.g. GSM-location based traffic monitoring information)

3 What is the approximate split of spending between road building, road maintenance and installation of new equipment on existing roads? / How has this split evolved?

Road building - road maintenance - traffic management: 59% - 36% - 5% (planning for 2006)

4 If you could choose one ITS or traffic management solution to improve safety, what would it be?

In-car: dynamic adaptive cruise control (ACC).

5 If you could choose one thing to improve predictability of journeys (reliability of journey time information), what would it be?

A smart knowledge system. At this moment the reliability of the traffic info is the major challenge. Quality improvement is required.

Open Questions (continued)

6 What degree of traffic control could you accept? (concerning speed enforcement, use of electronic toll tags to gather data, etc)

Speed enforcement if of major importance. Vital for:

- safety
- air quality
- noise

At this moment many sites for speed enforcement via "trajectory control" = average speed measurement on a road section (time-out versus time-in).

7 What causes the most damage to the your road network today?

Ravelling of asphalt = loss of road surface aggregate. Caused by traffic load (freight traffic) and aging of bitumen.

8 What system(s) or process(es) do you currently use to reduce this damage?

- Research on new asphalt materials (incl. test-sites)
- Research on thin asphalt layers (incl. test-sites)
- Project "Overloading" (preventive and repressive enforcement with Weigh-in-Motion-systems)

9 What do you understand by “Intelligent Roads”?

a. (Wim Giesselbach):
"Dynamic offering of an acceptable, comfortable, safe, and reliable road, that facilitates me on the basis of my social needs with maximum traffic flow and safety".

b. (Bert de Wit):
"A road that warns the road authority by itself about its condition(s), and the measures required".

Targeted Questions

→ For each Item (which corresponds to a technical task in INTRO), please state what measures you are taking at the moment / have taken in the past / are planning to take in the future (tick appropriate box)

10 **Surface safety monitoring** *(INTRO WP2)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
A. Stopping distance and skid resistance	**1** Measuring via road surface friction testing (all national road sections every 2 years)		X			
	2 Project 'Belonitor' (reward-monitor): field test for rewarding car drivers for keeping safe inter-vehicle distance		X			
	3 Changing attitude via bill-boards at road side. **4** Safe road design		X X			

The INTRO project aims to develop models to link stopping distance to dynamic micro-slip data and to static skid-resistance measurements. This is to better understand these relationships for two pilot phases (information to drivers and to road authorities). This information could for example be used in winter to recommend variable speeds according to the measured conditions.	**Comments (if any):**

Targeted Questions (continued)

10 **Surface safety monitoring** *(INTRO WP2)*

Problem description	Your measures	Finished	Ongoing	Planned *(definite)*	Planned *(not yet definite)*	Time scale*
B. Real time information for maintenance data	**1** RWIS (Road Weather Information System)		X			
	2 Monitoring of all road characteristics on all national roads every 2 years. All data is stored in central database.		X			
	3 Visual road inspections/surveys on daily basis		X			

The INTRO project aims to conduct a pilot demonstration of information on slippery roads to road maintenance authorities. This is to enable them to differentiate between ice/snow that needs clearing and bad surface conditions that need repaving. Data will be processed and displayed using a GIS (Geographical Information System) interface. The test will take place using probe cars near Vienna, Austria.	**Comments (if any):**

Targeted Questions (continued)

10 **Surface safety monitoring** *(INTRO WP2)*

Problem description	Your measures	Finished	Ongoing	Planned *(definite)*	Planned *(not yet definite)*	Time scale*
C. Real time information to drivers regarding road surfaces	**1** Stimulating ACC (Adaptive Cruise Control) via tax-benefits. Has no link with road surface condition yet. Has proven cost-benefit ratio.				X	
	2					
	3					

The INTRO project aims to provide road surface-related information (mainly stopping distance) to drivers via an appropriate in-vehicle HMI (Human-Machine Interface). This will be based on data from floating cars with an on-board micro-slip measurement system (which provide this data to a central server), and also from static road surface data (for floating cars without micro-slip data).	**Comments (if any):**

Targeted Questions (continued)

11 **Pavement conditions and infrastructure production** *(INTRO WP3)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
A. Intelligent pavements (pavement management, lifecycle and deterioration sensors)	**1** Pavement Management System (neural network), consisting of: • monitoring all road characteristics • behaviour models • planning system		X			
	2 Weigh-in-Motion-system and Road Weather Information System		X			
	3 2-Yearly visual inspections for ravelling and cracks via camera's on ARAN (Automatic Road Analyser Survey Vehicle (now human).			X	X	

The INTRO project aims to improve the management of the maintenance of the network (pavements and bridges) through smart methods of predicting the deterioration process and actual condition. The aim is to measure pavements in unobtrusive ways and make the information accessible at low cost. This includes a demonstration of sensor methods including in-situ sensors (such as loops, cameras and weigh-in-motion).	**Comments (if any):**

Targeted Questions (continued)

11 **Pavement conditions and infrastructure production** *(INTRO WP3)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
B. Remote pavement sensing from vehicles	**1** High-speed road characteristic survey vehicles		X			
	2					
	3					

The INTRO project aims to demonstrate the use of data provided by sensors fitted to standard vehicles ("probe vehicles") for improving the monitoring of pavement condition, and hence maintenance. This will concentrate on monitoring comfort and safety of the ride, as well as road defects such as rutting.	**Comments (if any):**

Targeted Questions (continued)

12 **Traffic and safety monitoring** *(INTRO WP4)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
A. Data sensing for road, weather and traffic including Probe Vehicle / FCD (Floating Car Data) Technology	**1** Nation wide Road Weather Information Systems		X			
	2 FCD on basis of GSM location data		X			
	3					

The INTRO project aims to establish key traffic indicators, and to develop methods to calculate or estimate them using existing data sources for sensor-based measurement of traffic parameters. This includes analysis of data quality from using conventional single data sources and how this influences derived data (traffic flow, density, speeds, travel time, etc)	**Comments (if any):**

Targeted Questions (continued)

12 **Traffic and safety monitoring** *(INTRO WP4)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
B. Data fusion of data from different sources for providing a comprehensive picture of network conditions	**1** Combining road monitoring info with data from RWIS				X	2007-2008
	2 Pavement Management System (neural network), consisting of: • monitoring all road characteristics • behaviour models • planning system		X			
	3 Relation between road material characteristics and road surface characteristics				X	2008-2010

The INTRO project aims to design and develop a data fusion module accepting and combining information and data from traffic detectors and other sources, for assessing the traffic conditions on the road network and detecting critical traffic situations. This task involves fusion of travel time data and traffic data, link travel time correction, etc.	**Comments (if any):**

Targeted Questions (continued)

12 **Traffic and safety monitoring** *(INTRO WP4)*

Problem description	**Your measures**	**Finished**	**Ongoing**	**Planned** *(definite)*	**Planned** *(not yet definite)*	**Time scale***
C. Safety indicators for monitoring traffic condition ***(inter-vehicle distance, speed variance, etc)***	**1** Inter-vehicle distance				X	
	2 • homogenise traffic flow (is not dynamic yet) • test with dynamic road marking • dynamic use of % freight traffic		X	X	X	
	3 Tunnel safety: exact locating of every individual vehicle in tunnel				X	

The INTRO project aims to develop methods allowing relevant safety indicators to be estimated using traffic parameters. This will help traffic managers and drivers have a real-time overview of the safety level on different parts of the road network. This will be done by analysing accidents (only accidents linked to traffic conditions or road surface) on 6 sections of road network across Europe and using this data to build and validate models of safety indicators.	**Comments (if any):**

Targeted Questions (continued)

13 **General**

A. Which out of the above are in your opinion the most important/most useful approaches?

- In-car applications
- Real-time car sensing monitoring
- Intelligent tyre

B. What risks do you see?

Compensating behaviour

14 **This is the end of the interview. Do you have any other comments?**