USER NEEDS INTERVIEW

Project acronym: INTRO
Project full title: Intelligent Roads
Proposal / Contract N°: FP6-012344
WP1 – Sub Task 1.1.3: User Needs

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	Dr. Thomas Linder		
Name of organisation	Autobahndirektion Südbayern Abteilung Betrieb und Verkehr		
Type of organisation *(tick as appropriate)*	**Public road authority**	Toll road operator (public / private / semi-public)	
	Police	Other (please state : _____)	
Geographical Responsibility *(tick as appropriate)*	National	Local	
	Regional (Bavaria)	Other (please state : _____)	
Responsibility for *(tick all that apply)*	**Motorways**	**Expressways**	Major roads (national or trunk roads)
	Secondary roads	Local roads and streets	Other (e.g. Tunnel, Bridge), please state: **Tunnels** _____)
Position of interviewee *(job title)*	Vice President		
Roles of interviewee	Senior Manager		
Responsible for *(number of persons approx.)*	500-600		

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	Problems in maintaining and repairing the road network. High over all traffic volumes and strong over stressing of the road network. The traffic flow is too high for road works to be interrupted or to be reduced lane wise during most hours of the day. Traffic is increasing, mainly heavy goods transports.	Traffic flow is not reducible		X			
1b	Reduced time gaps for the execution of immediately necessary or planned maintenance and repair measures of the road network.	Night time working and weekend operations for M&R maintenance and repair of the road network are more and more necessary.		X			
		Road closures and working at night time between 04.00 hrs and 07.00 hrs - as often practiced now - is critical concerning safety, efficiency and costs.		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	The overall financial situation for road operation and M&R is becoming worse. The ratio of using financial resources is now critical – a shift of funds more and more for the necessary maintenance and repair is clearly visible, now over 50% – and the renewing of pavements and building of new roads is not covered by the planned and finally available resources. The available resources can not be planned and show gaps by reductions (e.g. missing €800 million in 2006)	User financed road and infrastructure networks			X	X	In discussion, partially practiced in DE for Tunnels or Bridges
1d	Sometimes the building of a new road (out of political reasons) has priority compared with urgent M&R measures. The cross subsidizing of financial resources from road to rail and water (1,2 Billion €), the high operational costs of the tolling system (€0.6 billion) by using the financial resources of the LKW Maut, is resulting in only €1.2 billion remaining for road.						

* 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.

The ongoing measures are financed by national German public budgets (taxes) - but not sufficiently.

The budgets depend on politics and priorities.

Direct financing by users, may be all vehicles and road users, is in discussion.

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?

50% Building new roads

15% Operation

30% Maintenance and repair

5% ITS

the resources for building new roads are strongly decreasing and available money has to be used for M&R and renewing of pavements.

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

General wide area traffic control measures (Linienbeeinflussung) by VMS

Roadside information systems

Traffic radio is not a mayor factor (relevance, real time provision and accuracy of information is often missing)

Driver information systems (in vehicle) plays not yet a important role for safety, out of the same reasons as above mentioned.

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

Data integration and fusion (including FCD)

Use of data from ÖPNV (Public transport like buses, taxis,…)

Traffic information provided by the whole traffic network and its users would be important, not only by some measurement dots and than calculating line and section traffic patterns as today practised. To many errors are occurring.

Open Questions (continued)

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

1% to 3% (depending on situation and strategies)

The use of electronic toll tags to gather data would improve the data quality and is acceptable.

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

Heavy trucks and overloaded trucks and overloaded axles

(10% – 20 % overload now)

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

Bavaria operates 2 semi automatic weigh-stations with pre-selection (screening WIM) and a dynamic (slow motion) fixed installed axle scale for enforcement of overloaded trucks and axles on a postponed parking lot.

Systems are in operation since 1996 (first) and 2002 (second). A third system is in preparation.

Additional police and BAG control are executed, but these are not so efficient and require high efforts.

9 What do you understand by “Intelligent Roads”?

Efficient integration of all information resources for better quality, reliability and time relevance of traffic information. Improved traffic management including drivers warning and prevention of incident scenarios.

- Vehicle data
- Section related traffic data
- Monitoring data
- Sensor data
- Construction management data
- Special events
- Bus and taxi data

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** Visual inspection					
	2 An accident analysis committee tries to find out the reasons of higher accident patterns and black spot areas. If the skid resistance of a road section is to high, measures are initiated to improve skidding resistance including the renewing of the upper pavement layer. There is no real-time measurement network in operation now.					
	3 An R&D project is initiated: REACT					

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** not yet available by a measurement network or data by vehicle probes					
	2					
	3					

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** Fixed speed limits signs (80km/h) for wet road conditions and ice warning signs (partially by VMS) are installed and used.					
	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** Currently are no deterioration sensors installed in the road network. Every four years a complete check of the road status is done and the road network is classified accordingly.					
	2 A special inspection vehicle was built. Videos and pictures are also recorded if necessary.					
	3					

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** Not yet in practice or planned. Could be a good idea.					
	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** A traffic data collection network is installed, based on loop detectors, but mainly in the sections (Linienbeeinflussung) with traffic control and ITS equipment. Some WIM sites exist too. Data are provided every 60 sec. Automated measures are initiated by traffic control computers and dedicated algorithms. A weather detection system is installed and is operative. Some weather data are provided by the central radar weather service.					
	2					
	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** Exactly that is very important. Future objective.					
	2 Data integration and fusion (including FCD). Use of data from ÖPNV (Public transport like buses, taxis,…) Traffic information provided by the whole traffic network and its users would be important, not only by some measurement dots and than calculating line and section traffic patterns as today practised. To many errors are occurring.					
	3					

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** no real time system is in operation. A well established accident analysis procedure is used today					
	2					
	3					

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?

All or most approaches are important, but a complex interaction has to be considered.

B. What risks do you see?

Financing is not assured or possible.

Data fusion has to be established and is complicated.

Consistency and reliability of data and information has to be considered and achieved.

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