

## **ANNEX 2**

### **UNA Questionnaires**



# HEAVEN

## User Requirements Questionnaire

### Part A



## A 1 Area Information

Please give some basic information about your city.

### 1.1 Total city area (km<sup>2</sup>)

	Berlin
City	
Demonstration Area	

### 1.2 Built environment (km<sup>2</sup>)

	Berlin
City	
Demonstration Area	

### 1.3 Population as of 1999 / projection 2010

	1999	2010
City		
Demonstration Area		

### 1.4 Household composition

	Berlin	Demo area
1 Person		
2 People		
3 People		
4 People		
> 4 People		

### 1.5 Geographic / historic / economic characteristics

Please check all boxes characteristic for your city.

	Berlin
Coastal area	<input type="checkbox"/>
River side	<input type="checkbox"/>
Flat area	<input type="checkbox"/>
Mountainous area	<input type="checkbox"/>
Island	<input type="checkbox"/>
Port	<input type="checkbox"/>
Industrial centre	<input type="checkbox"/>
Services centre	<input type="checkbox"/>
Administrative centre	<input type="checkbox"/>
Touristic centre	<input type="checkbox"/>
Part of large urban agglomeration	<input type="checkbox"/>
Historic town	<input type="checkbox"/>
Other ( <i>specify</i> )	<input type="checkbox"/>

## A 2 Traffic Conditions

### 2.1 What is the number of registered motor vehicles as of 1999 in your city?

	thousands
Motorcycles	
Autos	
Trucks	
Trucks with trailers	
Other ( <i>specify</i> )	

### 2.2 What is the fleet composition of the motorised vehicle traffic in your city?

Motorcycles	%
Passenger cars	%
– diesel	%
– with 3-way catalytic converter	%
– without 3-way catalytic converter	%
Light goods vehicles (< 3.5 tonnes)	%
Heavy goods vehicles (> 3.5 tonnes)	%
Buses	%
Other, e.g. alternative fuels ( <i>specify</i> )	%

### 2.3 Please provide information about your road network (please enclose a map)

#### 2.3.1 Length of road network

	Berlin	Demo area
Main road network	km	km
Secondary road network	km	km

#### 2.3.2 Average traffic volume on the road per day (in vehicle \* kilometres)

Berlin	vehicle * km
Demo area	vehicle * km

#### 2.3.3 Public transit network

	Berlin		Demo area	
	Length (km)	Traffic volume (vehicle * km)	Length (km)	Traffic volume (vehicle * km)
Heavy rail				
Underground railway				
Rail rapid transit				
Tramway				
Bus				

**2.4 Is there a permanent system for monitoring traffic conditions in your city?**

*If there is more than one system, please make a copy of this section and fill in separate responses for each one.*

YES  Since when? .....

NO

**2.4.1 Is this system also in operation in the demonstration area**

YES  Since when? .....

NO

**2.5 Who operates the system?**

Name of organisation:

Type of organisation:

Local Authority

Regional Authority

National Authority

Other

**2.6 What kind of data is collected by your system of monitoring or measuring traffic conditions and what data capture period (time between measurements) is used?**

	Real time: 30 sec -10 min	Every 5 minutes	Every 15 minutes	Every 30 minutes	Hourly	Daily	Monthly	Seasonally	Yearly
Speed									
Type of vehicle									
Road occupancy									
Stops									
Congestion									
Delay									
Level of service									
Other ( <i>specify</i> )									

**2.7 Please describe the dimension of the traffic monitoring system (number of measurement points, is the whole inner city monitored, are the suburbs included, etc.)**

**2.8 What method is used for data collection (induction loops, infrared, etc.)?**

**2.9 What model is used for traffic estimation ?**

**2.10 What percentage of people are using the following means of transport (average figures for workdays)?**

	Citizens in %
Private car	
Motorbike	
Bicycle	
City bus	
Regional bus	
Metro	
Railway	
Tramway	
Trolley - electric vehicles	
Taxi	
Other ( <i>specify</i> )	
<b>TOTAL</b>	<b>100%</b>

**2.11 What is the share of truck traffic in the city and in the demonstration area?  
(in vehicle \* km)**

	Berlin	Demo Area
Light Goods Vehicles (< 3.5 tonnes)	%	%
Heavy Goods Vehicles (> 3.5 tonnes)	%	%
<b>TOTAL</b>	%	%

**2.12 Please indicate the main competencies / responsibilities / involvement of each of the actors for transport and urban planning matters in your city.**

Where D = decision  
A = approval  
C = consultation  
R = full responsibility

	State	Regional authority	Local authority	Private sector
Urban traffic management				
Public transport systems				
City planning				
Land use policy				
Highways / motorways / ring roads				
Heavy rail				
Other ( <i>specify</i> )				

## A 3 Air Quality

### 3.1 Legislation regarding air quality

#### 3.1.1 Which legislative pollution limits exist for the different pollutants? Please specify these limits for the different authority levels (European, National, City legislation).

Pollutant	European	National	Local / City
	mg/m <sup>3</sup> or ug/m <sup>3</sup>	mg/m <sup>3</sup> or ug/m <sup>3</sup>	mg/m <sup>3</sup> or ug/m <sup>3</sup>
CO			
CO <sub>2</sub>			
NO <sub>x</sub>			
SO <sub>2</sub>			
PM			
HC			
Benzene			
Other ( <i>specify</i> )			

#### 3.1.2 Which legislative demand exists regarding time resolution of measurement for the different pollutants on the different authority levels? (none, weekly, daily or per hour, other)

Pollutant	European	National	Local / City
CO			
CO <sub>2</sub>			
NO <sub>x</sub>			
SO <sub>2</sub>			
PM			
HC			
Benzene			
Other ( <i>specify</i> )			

#### 3.1.3 Which legislative demand exists regarding spatial resolution of measurement for the different pollutants on the different authority levels? (none, city level, district level, street level, other)

Pollutant	European	National	Local / City
CO			
CO <sub>2</sub>			
NO <sub>x</sub>			
SO <sub>2</sub>			
PM			
HC			
Benzene			
Other ( <i>specify</i> )			

### 3.2 Is there an air quality monitoring system operating in your city?

If there is more than one system, please make a copy of this section and fill in separate responses for each one.

YES  Since when? .....  
NO

#### 3.2.1 Is this system also in operation in the demonstration area?

YES  Since when? .....  
NO

### 3.3 Who operates the system?

Name of organisation:

Type of organisation:

Local authority   
Regional authority   
National authority   
Private company (trust status)   
Public / private partnership

#### 3.3.1 What are the annual costs for the system (In Euro/annum)?

.....

### 3.4 Is its operation financially supported by:

Local authority   
Regional authority   
The state   
The European union   
Private funding   
Public / private partnership

### 3.5 What was the main reason for setting up an air-quality monitoring system?

Major environmental problems   
Sensitive local authority   
Public awareness - Pressure groups   
Legislation, is the system installed because of Europ./National law   
Data needed for political decisions   
Information for the citizens   
Other (*specify*)

### 3.6 What kind of data are collected in relation to area covered?

- GENERAL / MACROSCOPIC
- Regional
  - The whole city / urban area
- AREA / TYPE SPECIFIC
- Road side locations
  - Areas of special interest:
    - City centre
    - Residential area
    - Industrial area
    - Peripheral area
    - Green zone
    - High density traffic area
    - Various locations

### 3.7 What is the data capture period? (Time between measurements)

Pollutant	Every 1 minute	Every 2 minutes	Every 4 minutes	Every 15 minutes	Hourly	Daily	Monthly	Yearly	Random	Other (specify)	
SO <sub>2</sub>											
NO <sub>x</sub>											
CO											
SO <sub>x</sub>											
PM											
HC											
Benzene											
Other (specify)											

### 3.8 Please describe the measuring system and the model of pollution sensors used (number of measurement points, is the whole inner city monitored, are the suburbs included, etc.?).

**3.9 What are the alarm levels for the pollutants / elements measured? (might be identical with legislation as specified in 3.1)**

Pollutant	Berlin
	mg/m <sup>3</sup> or ug/m <sup>3</sup>
CO	
CO <sub>2</sub>	
NO <sub>x</sub>	
SO <sub>2</sub>	
PM	
HC	
Benzene	
Other ( <i>specify</i> )	

**3.10 Who sets the alarm levels for the pollutants / elements measured?**

Name of organisation:

Type of organisation:

- Local authority
- Regional authority
- National authority
- University / research institute
- European commission

**3.11 Are the collected data used for:**

**3.11.1 Public awareness raising by:**

- Public display
- Periodic press releases
- Periodic reports and information leaflets
- Public campaign (e. g. car-free Sunday)
- Other (*specify*)

**3.11.2 Record keeping and statistical analysis**

- Keeping local record
- Local data integrated into a regional / national data base

### 3.11.3 Modeling / forecasting

Model(s) used:

Organisation / authority carrying out the work:

Output:

## A 4 Noise Quality

### 4.1 Legislation regarding noise quality

4.1.1 Which legislative noise limits exist? Are these different for certain areas in your city or do they vary for day time/night time? Please specify these limits for the different authority levels (European, National, City legislation).

	European dB	National dB	Local / City dB
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			

4.1.2 Which legislative demand exists regarding time resolution of measurement of noise on the different authority levels? (none, weekly, daily or per hour, other)

	European	National	Local / City
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			

4.1.3 Which legislative demand exists regarding the spatial resolution of measurement for noise for the different authority levels? (none, city level, district level, street level, other)

	European	National	Local / City
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			
<b>Day Time</b>			
Residential areas			
Commercial areas			
Other ( <i>specify</i> )			

#### 4.2 Is there a noise quality monitoring system operating in your city?

If there is more than one system, please make a copy of this section and fill in separate responses for each one.

- YES  Since when? .....
- NO

##### 4.2.1 Is this system also in operation in the demonstration area?

- YES  Since when? .....
- NO

#### 4.3 Who operates the system?

Name of organisation:

Type of organisation:

- Local authority
- Regional authority
- National authority
- Private company (trust status)
- Public / private partnership

##### 4.3.1 What are the annual costs for the system (In Euro/annum)?

.....

#### 4.4 Is its operation financially supported by:

- Local authority
- Regional authority
- National authority
- The state
- The European Union
- Private funding

#### 4.5 What was the main reason for setting up a noise-quality monitoring system?

- Major environmental problems
- Sensitive local authority
- Public awareness - Pressure groups
- Legislation, is the system installed because of legal constraints
- Data needed for political decisions
- Information for the citizens

**4.6 Are these data collected used for:**

**4.6.1 Public awareness raising by:**

- Public display
- Periodic press releases
- Periodic reports and information leaflets
- Public campaign (e. g. car-free Sunday)
- Other (*specify*)

**4.6.2 Record keeping and statistical analysis**

- Keeping local record
- Local data integrated into a regional / national data base

**4.7 Which acoustic sources cause the most noise exposure in your city?**

- Road traffic
- Commercial and industrial premises
- Rail transport
- Other (*specify*)  .....

Remarks:

.....

**4.8 Which type of noise level indicator is usually used in your city to indicate noise exposure?**

Noise source	L <sub>eq</sub>	L <sub>1</sub>	L <sub>50</sub>	L <sub>95</sub>			remarks
Road traffic							
Rail transport							
Commercial/industrial premises							

Remarks:

.....

**4.9 Does your city have generally accepted regulations for measuring or for calculating noise?**

Noise source	calculating	measuring	remarks
Road traffic			
Rail transport			
Commercial/industrial premises			

Remarks:

.....

#### 4.10 What topographic parameters are taken into account in assessing noise effects?

Noise source	unhindered propagation	attenuation by buildings	attenuation by the ground	shielding	reflection	other misc. parameters
Road traffic						
Rail transport						
Comm. / ind. prem.						

Remarks:

.....

#### 4.11 Which threshold values do you use in evaluating noise effects?

Noise source / period of ass. <sup>1)</sup>	threshold values <sup>2)</sup>			
	residential area	mixed use area	other	other
<b>Road traffic / day time</b>				
period of asses 1: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 2: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 3: .....hrs	..... dB	..... dB	..... dB	..... dB
<b>Rail transport / day time</b>				
period of asses 1: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 2: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 3: .....hrs	..... dB	..... dB	..... dB	..... dB
<b>Road traffic / night time</b>				
period of asses 1: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 2: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 3: .....hrs	..... dB	..... dB	..... dB	..... dB
<b>Rail transport / night time</b>				
period of asses 1: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 2: .....hrs	..... dB	..... dB	..... dB	..... dB
period of asses 3: .....hrs	..... dB	..... dB	..... dB	..... dB

Remarks:

.....

<sup>1)</sup> Periods of assessment are for example day time: 6 – 22 hrs, night time: 22 – 6 hrs.

<sup>2)</sup> Differentiate the threshold values if required according to the type of use of the area(s).

## A 5 Air and Noise Quality Monitoring and Traffic Management

### 5.1 How has your city proceeded with regard to air and noise quality measures?

- planning individual measures
- developing a city-wide concept for noise abatement

Remarks:

.....

### 5.2 Individual measures

*Please briefly describe the measures and the framework conditions for their implementation.*

Measure 1

Measure 2

Measure 3

*Please continue on a separate page if you would like to add further information.*

**5.3 City-wide concept: air quality and noise abatement measures have been planned for which sources?**

- Road traffic
- Rail transport
- Commercial and industrial premises

Remarks:

.....

**5.4 City-wide concept: would you please detail the planned measures for air and noise quality improvement?**

Measures	planned	implemented
traffic reduction, traffic avoidance (e. g. strengthening and improving local shopping centres in district areas)		
concentrating traffic on appropriate routes		
redirecting traffic (e. g. on to by-pass roads etc.)		
designated routes for goods vehicles		
re-classification/classification or de-classification for a better defined road network		
support for environmentally preferable modes of transport (e. g. local public transport, cycling and walking)		
parking management concepts		
traffic calming (e.g. create 30 kph zones)		
noise-reducing road surfaces		
underpasses, cuttings / troughs, building over roads		
sound attenuation barriers and structures		
Other ( <i>specify</i> )		

Comments and description of the city wide concept

**5.5 What measures do you take if alarm levels for air and noise pollution are reached?**

Measure	Berlin
Restrict access of private cars to problem areas	
Allow access to only public transport	
Ban access of any motor vehicle	
Inform car drivers about restrictions	
Inform the public about pollution levels	
Inform drivers to reduce activities	
Revise long term policy objectives	
Other ( <i>specify</i> )	

Comments and description of measures

- 5.6 Looking into the future, what is planned with respect to traffic management and air and noise pollution? What might be some of the constraints in implementing/enforcing such policies or measures?**

# **HEAVEN**

## **User Requirements Questionnaire**

### **Part B – DSS Users**

## 1 User Identity

### 1.1 Please give details about your organization/authority.

Name of organization /authority:

Function/responsibilities:

Address:

Phone:

Fax:

E-mail:

### 1.2 In which policy field(s) are you/is your department mainly working (more than one answer is possible):

- Traffic
- Environment
- Health
- City planning
- Other (*specify*)

### 1.3 What is the geographical scope of your organisation?

- District level
- City level
- Regional level
- National level
- International level

### 1.4 At what frequency are you/is your organisation presently dealing with questions of traffic related pollution (noise and or air quality)?

- Every day
- Several days a week
- Several days a month
- Several days a year
- Never

**1.5 What is the role of you/your department when decisions on traffic and/or environment policies are being made?**

- No role
- Informing the decision makers
- Advising the decision makers
- Making the final decision

**1.6 What is the role of you/your department when short-term decisions in crisis-situations for traffic and/or environment are being made (for example banning or re-routing traffic)?**

- No role
- Informing the decision makers
- Advising the decision makers
- Making the decision

**1.7 When the HEAVEN DSS is realised at what frequency will you/ your organisation be using the system?**

- Continuously
- Every day
- Several days a week
- Several days a month
- Several days a year
- Less, namely.....
- Never

**2 General**

**2.1 What are the main objectives you are planning to realise with the system? (1 - 5, 1 = the most important, 2 = very important, 3 moderately important, 4 less important, 5 least important)**

Objective	Rate 1 - 5
Information system on pollutants for the administration	
Information system on noise for the administration	
Information system on pollutants for the citizens	
Information system on noise for the citizens	
Health information system	
Help for modelling the environmental effects of long term transport policies	
Help for modelling the environmental effects of temporary transport policies/measures	
Support for policy makers on future transport policies	
Decision support system for administrations in order to facilitate their daily work	
Others (please specify)	

Additional Comments:

**2.2 What requirements do you as a primary user have for the information, monitoring and Decision Support System?** (1 - 5, 1 = the most important, 2 = very important, 3 moderately important, 4 less important, 5 least important)

### 3 DSS Information component

#### 3.1 Environment

**3.1.1 Which pollutants have to be measured by law and which pollutants should be measured by the monitoring system?** (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Pollutant	Law	Desired (please rate 1 – 5)	Remarks
CO – carbon monoxide			
NO <sub>x</sub> – nitrogen oxides			
HC – hydrocarbons			
CO <sub>2</sub> – carbon dioxide			
PM – particulates			
SO <sub>x</sub> – sulphur oxides			
Benzene			
Other ( <i>specify</i> )			

**3.1.2 Which noise indicators have to be calculated by law and which are needed? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Pollutant	Law	Desired (please rate 1 – 5)	Remarks
Noise levels			
Number of people affected by noise			
Number of apartments affected by noise			
Other ( <i>specify</i> )			

**3.1.3 How important is it for you that the system automatically provide information on critical pollution levels? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Critical Pollution levels	Rate 1 - 5	Remarks
Limits for pollutants		
Limits when measures will be implemented automatically		
Other ( <i>specify</i> )		

**3.2 Spatial Resolution**

**3.2.1 At which spatial level does information on pollutants have to be provided and which level is desired? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of spatial resolution	Law	Desired (please rate 1 – 5)	Remarks
Single streets			
City areas/districts			
City			
Region			
Other ( <i>specify</i> )			

**3.2.2 At which spatial level does information on noise have to be provided and which level is desired? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of spatial resolution	Law	Desired (please rate 1 – 5)	Remarks
Single streets			
City areas/districts			
City			
Region			
Other ( <i>specify</i> )			

### 3.3 Time Resolution

**3.3.1 How often does information on pollutants have to be updated (real time information?) and how often is an update desired? (1 - 5, 1 = very important, 2 = important, 3 = moderately important, 4 less important, 5 not so important)**

Level of time resolution	Law	Desired (please rate 1 – 5)	Remarks
CO – carbon monoxide	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
NO <sub>x</sub> – nitrogen oxides	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
HC – hydrocarbons	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
CO <sub>2</sub> – carbon dioxide	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
PM – particulates	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
SO <sub>x</sub> – sulphur oxides	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
Benzene	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		
Other ( <i>specify</i> )	hourly basis		
	6 hour basis		
	12 hour basis		
	24 hour basis		
	Other ( <i>specify</i> )		

### 3.3.2 Are there different needs in regard to time resolution for the different pollutants?

If yes please specify.

--

### 3.3.3 How often does information on noise need to be updated (real time information) and how often is an update desired? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Level of time resolution	Law	Desired (please rate 1 – 5)	Remarks
hourly basis			
6 hour basis			
12 hour basis			
24 hour basis			
Other ( <i>specify</i> )			

### 3.3.4 Is there a need for generating global statistics (e.g. average or min/max values) on pollutants and noise? If yes, what time resolution is necessary? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important).

Level of time resolution	Rate 1 - 5	Remarks
Daily impacts		
Monthly impacts		
Seasonal impacts		
Annual impacts		
Other ( <i>specify</i> )		

## 3.4 User interface

### 3.4.1 What is the most useful way to display the information (based on your activities)? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

User interface	Rate 1 - 5	Remarks
Data on pollutants, etc. on request		
Visualisation of pollutants / noise levels on maps		
Other ( <i>specify</i> )		

### 3.4.2 What telematic devices would you use to inform the public about traffic conditions?

Device	
Radio data system - traffic message channel (RDS - TMC)	<input type="checkbox"/>
Variable message sign (VMS)	<input type="checkbox"/>
Internet	<input type="checkbox"/>
Mobile phone	<input type="checkbox"/>
Kiosks	<input type="checkbox"/>
Video text	<input type="checkbox"/>
Data collected from computer controlled operation system (public transit)	<input type="checkbox"/>
Radio broadcast	<input type="checkbox"/>
Other ( <i>specify</i> )	<input type="checkbox"/>
	<input type="checkbox"/>

### 3.5 Additional requirements

#### 3.5.1 Which of the following additional requirements are needed? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Additional requirements	Rate 1 - 5	Remarks
Online help		
Access to data records (data on historical pollution levels, etc.)		
Possibility to integrate meteorological information		
Traffic Situation		
Traffic Forecast		
Other ( <i>specify</i> )		

Additional Comments:

## 4 Decision Support System

### 4.1 General focus of the Decision Support System

#### 4.1.1 Are you planning to use the system as a Decision Support System for:

	yes	no	optional
Policy makers as a support tool to model the environmental effects of long term transport policies			
Policy makers as a support tool to model the environmental effects of temporary measures to reduce traffic			
Decision Makers to help them to decide on the most suited temporary transport measures			
Decision maker to optimise transport flows (Traffic Management)			
Public administration to help them in their daily work, better information flows, etc.			
Other ( <i>specify</i> )			

Additional Comments:

### 4.2 Detailed requirements on functions of the Decision Support System

#### What are the most useful functions you desire (based on your activities)?

*Rate these functions in order of importance (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important). Feel free to attach additional descriptions of desired functions.*

Objective	Rate 1 - 5
Information on historical data in order to compare existing levels with historic levels	
Alarm levels and alarm functions	
Automatic generation of optimal traffic measures when emission levels are reached	
Modelling functions in order to evaluate the environmental effects of long term transport policies	
Health information systems	
Others ( <i>please specify</i> )	

Additional Comments:

**4.2.1 Information on historical data in order to compare existing levels with historic levels (identify long term developments in the city, compare actual with average levels, set up prognosis, view tendencies, identification of ranges of pollutant concentration)**

Objective
Description of function (what kind of information shall be provided)
Expected Impact / Benefits

**4.2.2 Alarm levels and alarm functions [alarm levels: exceeding pollution limits (1h – 48 h), alarm functions: later documentation or real time warnings, prognoses: when limit values have been reached]**

Objective
Description of function (what kind of alarm functions shall be provided)
Expected Impact / Benefits

**4.2.3 Automatic generation of optimal traffic measures when emission levels are reached**

Objective
Description of function
Expected Impact / Benefits (Can such functions help to implement optimal traffic measures)

#### 4.2.4 Modelling functions in order to evaluate the environmental effects of long term transport policies

Objective
Description of function (what pollutants should be modelled etc.)
Expected Impact / Benefits (Can such models assist in developing long term transport policies)

#### 4.2.5 Health information systems

Objective
Description of function (What kind of information shall be provided to the citizens)
Expected Impact / Benefits

#### 4.2.6 Other

Objective
Description of function
Expected Impact / Benefits

#### 4.2.7 Other

Objective
Description of function
Expected Impact / Benefits

## 5 Expectations

How do you think the Decision Support System can facilitate and improve the quality of your work?

## 6 Air and Noise Quality Monitoring and Traffic Management

### 6.1 Do you think that there is a major environmental problem related to air quality in your city?

- Definitely yes
- Probably yes
- Indifferent
- Probably no
- Definitely no

### 6.2 Do you think that there is a major environmental problem related to noise in your city?

- Definitely yes
- Probably yes
- Indifferent
- Probably no
- Definitely no

### 6.3 To what extent does the public consider air quality to be an important issue in your city?

- Extremely important
- Very important
- Moderate
- Of little importance
- Not important

### 6.4 To what extent does the public consider noise to be an important issue in your city?

- Extremely important
- Very important
- Moderate
- Of little importance
- Not important

**6.5 What do you consider as the main source of air pollution in your city?**

*In order of importance (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important).*

	Berlin
Motor vehicle traffic	
Air Traffic	
Industry	
Other	

**6.6 What do you consider to be the main source of noise pollution in your city?**

*In order of importance (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important).*

	Berlin
Motor vehicle traffic	
Air Traffic	
Industry	
Other	

**6.7 What are the main traffic problems identified in your city?**

*List in order of importance.*

**6.8 Are these problems identified with a specific area / part of the city?**

	Berlin
City centre	<input type="checkbox"/>
Main road axes	<input type="checkbox"/>
Port	<input type="checkbox"/>
Industrial area	<input type="checkbox"/>
Indifferent / same all over	<input type="checkbox"/>
Other	

## 6.9 What are the main reasons for these traffic problems?

In order of importance (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important).

	Berlin
Insufficient parking space	
Insufficient road infrastructure	
Insufficient traffic lights	
Insufficient public transport systems	
Intense use of the private car	
Absence of strict pollution regulations	
Insufficient law regulations for urban planning	
Insufficient policing of illegal parking	
Sand gritting in winter and grit removal	
Delivery of goods	
Other ( <i>specify which</i> )	

## 6.10 To what extent do you think that the following traffic management measures would improve air and noise quality in your city?

On a scale of 1 - 5, where:

- 1 = Extremely
- 2 = Very much
- 3 = Moderate
- 4 = Very little
- 5 = Not at all

	Berlin
Parking control	
Access control	
Park and ride	
Lorry ban	
Traffic calming	
Pedestrianisation	
Cycle routes	
<b>Bus priorities</b>	
Light rail transit system	
Road pricing	
Urban traffic control (UTC) system	
Intelligent telematics	
Vehicle emissions standard	
Limiting times of deliveries	
Other ( <i>specify which</i> )	

**6.11 What policies/actions based on information on air quality are at the moment performed by your organisation?**

	Yes
None	<input type="checkbox"/>
Road pricing	<input type="checkbox"/>
Access control	<input type="checkbox"/>
Re-routing	<input type="checkbox"/>
Inform road-users	<input type="checkbox"/>
Inform citizens	<input type="checkbox"/>
Speed restrictions	<input type="checkbox"/>
Congestion management etc.	<input type="checkbox"/>
Other ( <i>specify</i> )	<input type="checkbox"/>

**6.12 What future plans for policies/actions based on information on air quality does your organisation have for the coming three years?**

	Yes
None	<input type="checkbox"/>
Road pricing	<input type="checkbox"/>
Access control	<input type="checkbox"/>
Re-routing	<input type="checkbox"/>
Inform road-users	<input type="checkbox"/>
Inform citizens	<input type="checkbox"/>
Speed restrictions	<input type="checkbox"/>
Congestion management etc.	<input type="checkbox"/>
Other ( <i>specify</i> )	<input type="checkbox"/>

**6.13 Which policies/strategies/actions will be facilitated by the proposed DSS?**

- 1 = for sure
- 2 = quite likely
- 3 = maybe
- 4 = not very likely
- 5 = not

	Rate 1 - 5
Road pricing	
Access control	
Re-routing	
Inform road-users	
Speed restrictions	
Congestion management etc.	
Other ( <i>specify</i> )	

**6.14 Which policies/strategies/actions are likely to be implemented/tested within the project lifetime (till end of 2002)?**

- 1 = for sure
- 2 = quite likely
- 3 = maybe
- 4 = not very likely
- 5 = not

	Rate 1 - 5
Road pricing	
Access control	
Re-routing	
Inform road-users	
Speed restrictions	
Congestion management etc.	
Other ( <i>specify</i> )	

Comments

# **HEAVEN**

## **User Requirements Questionnaire**

### **Part C – Users of the DSS information platform**



## 1 User Identity

1.1 If you are a representative of an organization / interest group, please fill in the questions in this section (1.1)

### 1.1.1 Name of organisation:

Address:

Phone:

Fax:

E-mail:

### 1.1.2 What is the major focus of your organisation?

- Freight traffic
- Individual traffic
- Environment
- Health
- Urban planning
- Economics / business
- Other (*specify*)

.....

Comments

### 1.1.3 What is the geographical scope of your organisation?

- District level
- City level
- Regional level
- National level
- International level

**1.1.4 For what purposes could you imagine using the DSS system?**

**1.2 If you are an individual citizen – not representing a specific organisation -, please fill in the questions in this section (1.2)**

**1.2.1 Personal Details:**

Address:

Phone:  Fax:

E-mail:

Age:  Sex:

**1.2.2 Do you regard yourself as an expert in one of the following issues?**

Issue	Expert	Good knowledge	Some knowledge	Poor knowledge
Freight traffic				
Individual traffic				
Environment				
Health				
Urban planning				
Economics / business				

### 1.2.3 Which of the following characteristics describe your personal situation?

Characteristic	Yes	No	Indecisive
Frequent Car Driver			
Resident of an area with great pollution problems			
Resident of an area with great noise problems			
Member of a risk group (e.g. Asthmatic)			

### 1.2.4 For what purposes could you imagine using the DSS system?

## 2 DSS Information system

What requirements do you have for the information and monitoring system? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

### 2.1 Environment

#### 2.1.1 Which pollutants should be measured by the monitoring system / Which pollutants would you like to get information on?

Pollutant	Rate 1 - 5	Remarks
CO – carbon monoxide		
NO <sub>x</sub> – nitrogen oxides		
HC – hydrocarbons		
CO <sub>2</sub> – carbon dioxide		
PM – particulates		
SO <sub>x</sub> – sulphur oxides		
Benzene		
Other ( <i>specify</i> )		

**2.1.2 Which noise indicators are necessary?** (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Pollutant	Rate 1 - 5	Remarks
Noise levels		
Number of people affected by noise		
Number of apartments affected by noise		
Other ( <i>specify</i> )		

**2.1.3 How important is it for you that the system automatically provides information on critical pollution levels?** (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Critical Value	Rate 1 - 5	Remarks
limits for air pollutants		
qualitative information on current situation (e.g. good, poor, dangerous)		
threshold levels for noise		
Other ( <i>specify</i> )		

Comments:

**2.2 Spatial Resolution**

**2.2.1 At which scale should information on pollutants be provided?** (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Scale of resolution	Rate 1 - 5	Remarks
Single streets		
City areas/districts		
City		
Region		
Other ( <i>specify</i> )		

**2.2.2 At which scale should information on noise be provided? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Scale of resolution	Rate 1 - 5	Remarks
Single streets		
City areas/districts		
City		
Region		
Other ( <i>specify</i> )		

**2.3 Time Resolution**

**2.3.1 How often should information on pollutants be updated? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of time resolution	Rate 1 - 5	Remarks
hourly basis		
6 hour basis		
12 hour basis		
24 hour basis		
Other ( <i>specify</i> )		

**2.3.2 How often should information on noise be updated? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of time resolution	Rate 1 - 5	Remarks
hourly basis		
6 hour basis		
12 hour basis		
24 hour basis		
Other ( <i>specify</i> )		

**2.3.3 Is there a need for generating global statistics (e.g. average, min/max values) on pollutants? If yes, what level of time resolution is needed? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of time resolution	Rate 1 - 5	Remarks
Daily impacts		
Monthly impacts		
Seasonal impacts		
Annual impacts		
Other ( <i>specify</i> )		

**2.3.4 Are there different needs with regard to time resolution for the different pollutants? If yes, please specify?**

--

**2.3.5 Is there a need for generating global statistics (e.g. average, min/max values) on noise? If yes, what level of time resolution is needed? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Level of time resolution	Rate 1 - 5	Remarks
Daily impacts		
Monthly impacts		
Seasonal impacts		
Annual impacts		
Other ( <i>specify</i> )		

**2.4 User interface**

**2.4.1 What kind of equipment would you like to use to obtain the information? (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)**

Information Source	Rate 1 - 5	Remarks
Home PC Internet		
Office PC Internet		
Public access terminal		
Public displays		
Text message mobile phones (SMS, etc.)		
Radio		
Television		
Teletext		
Other		

**2.4.2 How often would you use this information?**

Usage	
Hourly	
Daily	
Weekly	
Monthly	
Irregular	

**2.4.3 How would you like the information to be displayed?** Please rate from 1 – 5 each of the given interfaces, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important.

User interface	Rate 1 - 5	Remarks
Data on pollutants, etc. on request		
Visualisation of pollutants on maps, graphics, charts		
Visualisation of pollutants on graphics		
Visualisation of pollutants on charts		
Periodic report		
Other ( <i>specify</i> )		

## 2.5 Additional requirements

**2.5.1 Which of the following additional requirements are needed?** (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important)

Additional requirements	Rate 1 - 5	Remarks
Access to data records (data on historical pollution levels, etc.)		
Dictionary of addresses (points of contact and their responsibilities)		
Information on implemented temporary traffic measures		
health information		
Traffic situation		
Traffic forecast		
Emission Forecast		
Noise Forecast		
Detours etc.		
others ( <i>specify</i> )		

Additional Comments

**2.5.2 What kind of temporary traffic measures do you think could be implemented in your city that would improve the environment and also be economically viable?**

**2.5.3 How would the receiving of environmental information influence your habits?**

# **HEAVEN**

## **User Requirements Questionnaire**

### **“ CITY “**





**4. To what extent does the public consider air quality and noise to be an important issue in your city?**

	Air quality	Noise
Definitely yes	<input type="checkbox"/>	<input type="checkbox"/>
Probably yes	<input type="checkbox"/>	<input type="checkbox"/>
Indifferent	<input type="checkbox"/>	<input type="checkbox"/>
Probably no	<input type="checkbox"/>	<input type="checkbox"/>
Definitely no	<input type="checkbox"/>	<input type="checkbox"/>

**5. What is the main source of air pollution and noise in your city?**

*In order of importance (1 - 5, 1 = very important, 2 = important, 3 moderately important, 4 less important, 5 not so important).*

	Air quality	Noise
Motor vehicle traffic		
Air Traffic		
Industry		
Other		

**6. How do you assess traffic related air quality and noise in your city?**

Air quality monitoring	<input type="checkbox"/>
Noise monitoring	<input type="checkbox"/>
Traffic monitoring	<input type="checkbox"/>
Emission modelling	<input type="checkbox"/>
Dispersion modelling	<input type="checkbox"/>
Noise modelling	<input type="checkbox"/>
Traffic modelling	<input type="checkbox"/>
Others, please specify	<input type="checkbox"/>

**7. Do you consider traffic demand management strategies (TDMS) as a means to improve the urban environment?**

	Air quality	Noise
Definitely yes	<input type="checkbox"/>	<input type="checkbox"/>
Probably yes	<input type="checkbox"/>	<input type="checkbox"/>
Indifferent	<input type="checkbox"/>	<input type="checkbox"/>
Probably no	<input type="checkbox"/>	<input type="checkbox"/>
Definitely no	<input type="checkbox"/>	<input type="checkbox"/>

**7.1 If yes, could you specify which TDMS with environment-related components do you consider or are already in use?**

Measures	considering	In use
1.	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>

**8. Which departments/entities are involved in the preparation of traffic and environment-related decisions?**

Traffic department	<input type="checkbox"/>
Environmental department (air quality)	<input type="checkbox"/>
Environmental department (noise)	<input type="checkbox"/>
City planning department	<input type="checkbox"/>
Police	<input type="checkbox"/>
Others, please specify	<input type="checkbox"/>

**9. Do you use a decision support system?**

yes  No

**9.1 If yes, which information is used by the system**

	On-line	Off-line
Traffic monitoring	<input type="checkbox"/>	<input type="checkbox"/>
Air quality monitoring data	<input type="checkbox"/>	<input type="checkbox"/>
Noise monitoring data	<input type="checkbox"/>	<input type="checkbox"/>
Traffic modelling	<input type="checkbox"/>	<input type="checkbox"/>
Emission modelling	<input type="checkbox"/>	<input type="checkbox"/>
Dispersion modelling	<input type="checkbox"/>	<input type="checkbox"/>
Noise modelling	<input type="checkbox"/>	<input type="checkbox"/>
Others, please specify	<input type="checkbox"/>	<input type="checkbox"/>

**9.2 If not, are you interested in adopting a DSS?**

yes  No

**10. Please indicated yes or no after considering the following statements:**

The DSS should provide near real-time traffic data

yes  No

The DSS should assist decision-makers in deciding on the most suitable temporary transport measures for responding to traffic-induced pollution.

yes  No

The DSS should be used as a support tool to model environmental effects of long-term transport policies.

yes  No

The DSS should support the comparability of data (especially of local situation in relation to city situation).

yes  No

The DSS should provide street-level (and/or street segment) spatial resolutions.

yes  No

The DSS should synchronise traffic and environmental data to avoid time consuming investigations with various authorities (e.g., road traffic authorities, police, etc).

yes  No

The DSS should integrate alarm levels to allow for quick reaction to precarious environmental and health situations.

yes  No

The DSS should display maps and graphs to illustrate near real-time pollution level concentrations.

yes  No

The DSS should have a health information platform to inform citizens about health impacts of air and noise pollution.

yes  No

The DSS should be used to protect sensitive areas (hospitals, kindergartens, etc.) from negative impacts of traffic.

yes  No

**11. Are you interested in further information about the HEAVEN DSS?**

yes  No