BASIC SECONDARY ASPECTS OF THE LIFE DYNAMAP PROJECT
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The main aim and outcome of the Dynamap project is the provision of dynamic noise maps able to detect and represent in real time the acoustic climate of road infrastructures.

SECONDARY OBJECTIVES OF THE DYNAMAP PROJECT

- **Reduction of costs**
- **Future development of the system applications**
- **Public response and user ability in consulting and managing the system**
EXPECTED COST AND BENEFITS OF THE DYNAMAP SYSTEM

COSTS AND BENEFITS CAN’T BE CONSIDERED SECONDARY ASPECTS FOR THE SUCCESS OF THE PROJECT, BUT BASIC SPECIFICATIONS TO BE FULFILLED TO REACH THE FINAL GOAL.

COMPREHENSIVE COSTS AND BENEFITS ANALYSIS
• Assess the feasibility and economic sustainability of the system on a large scale.

REAL TIME INFORMATION ON THE ACOUSTIC CLIMATE
• Noise mapping costs can be reduced and that benefits can be improved by providing updated real time information on the acoustic climate of road infrastructures at any place and time.

SUCCESS OF THE PROJECT
• Depends on the economic burden required to local and central authorities for implementing the system compared to costs and benefits associated to traditional noise mapping procedures.
Cost And Benefits Analysis

- demonstrate the feasibility and economic sustainability of the system;
- develop a standardized method for assessing costs and benefits based on the most recent results available in literature.
Refer to a static scenario prepared following the traditional noise mapping procedures and accomplished in three steps.

1. An estimate of the expected costs of the system will be given and compared to costs related to traditional noise mapping methods.

2. Benefits will be identified and quantified taking into account the effects associated to the efficiency of the two options in terms of rapidity of response, evaluation accuracy and impact on the population.

3. Cost-benefit analysis of the Dynamap system will be accomplished to assess the feasibility and economic sustainability of the Dynamap system on a large scale.
THE COSTS OF TRADITIONAL NOISE MAPPING ACTIVITIES

CEDR (the Conference of European Directors of Roads) Working Group Road Noise in 2013

Questionnaire referred to the first cycle of strategic noise mapping (END)

RESULTS: costs depend on the possibility of outsourcing or arranging in house activities

Noise mapping activities: average cost of €160.

Outsourced costs: average value of 604 € per kilometer

Noise mapping costs provided by eleven National Roads Administrations (NRA) for the first cycle of strategic noise mapping.
Expected costs of the Dynamap system

First estimate costs of dynamic noise mapping

<table>
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<th>Simple calculation refer to the expense that should be paid to prepare the pilot area of Rome</th>
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<td>Monitoring stations</td>
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*Final cost: less than a half of the average cost reported by CEDR*
PUBLIC RESPONSE AND USERS ABILITY IN CONSULTING AND MANAGING THE SYSTEM

**Directive 2002/49/EC**
Strategic noise maps and action plans are made available and disseminated to the public.

**Directive 90/313/EEC**
Give free access to environmental information.

**CEDR Project Group Road Noise**
Report on action plans
17 National Roads Administrations (NRA) - Consultation period of at least 8 weeks
Advertisements in newspapers (80%), websites (100%) and public hearing meetings (30%).
No useful feedback.

**LIFE HARMONICA**
Innovative tools to better inform the public
Creation of a simple, dimensionless noise index
Database on noise abatement actions published on an interactive platform to share useful information and experiences.
The communication approach foreseen in the DYNAMAP project

Software to dynamically update noise maps in real time → GIS file → Software application for real-time web presentation of the results to the public

This software application will be designed to plot colored geo-referred noise maps to be published on the system’s web site in a user-friendly format and also other environmental data, such as air quality, weather and traffic conditions, when available.

Different users categories:

- **low privilege**: general public, able to plot only noise maps
- **high privilege**: authorized stakeholders, able to see the time history of noise levels, some statistics and additional parameters linked to the sensors installed in each monitoring station.
ITERATIVE PROCESS TWO TEST SESSIONS

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<th>FIRST TEST TYPE</th>
<th>SECOND TEST TYPE</th>
<th>MONITORING OF ACTION PLANS</th>
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- to system’s operators
- aims at assessing users ability in managing the system.
- direct observation of system managing skills and the compilation of a technical evaluation form.
- stakeholders and the general public
- remote access to the system through the project website and compilation of a short questionnaire
- **Questionnaire:** questions on project tools capability of raising people awareness on noise through freely accessible information and communication from the website
FUTURE VISION ON SYSTEM APPLICATIONS

Two actions addressing how to upgrade the system by adding environmental sensors to the DYNAMAP monitoring stations and how to obtain information for traffic management and control from the sensors.

1° TASK
HARDWARE
how the DYNAMAP system should physically communicate with external devices

2° TASK
ANED ALGORITHM
inclusion of additional sensors to correlate noise measures and other sensed parameters more information to determine whether a set of high noise values are due to actual anomalous events

3° TASK
SOFTWARE
creation and publication of dynamic maps referred to additional environmental parameters, including the management of the access to the new environmental data sets
Main difficulties associated to the upgrade with additional environmental sensors, which should be the way to interface the DYNAMAP system with hypothetical added sensors?

To avoid future restrictions and reduce the probability of incompatibility, sensors front-end will be considered as part of the sensors themselves.

System will operate as an open structure

Sensors output will be treated just as simple electrical signals, making the system easily adaptable to a wide range of devices.
Traffic management and control based on information retrieved from sensors

Source of valuable information about the status of traffic

MITIGATION ACTIONS

Long Term

• most critical areas in terms of noise and atmospheric pollution can be identified and action plans to mitigate the noise impact can be addressed

Short Term

• detection of high traffic noise levels in certain areas at a specific moment

the construction of acoustic barriers and low-noise pavements, planting of trees to compensate for air pollutants, traffic calming policies and ITS systems for controlling and managing vehicles speed and traffic flow in real time

warning system based on the interconnection between the DYNAMAP system and electronic roadside informative boards
CONCLUSIONS

ECONOMIC SUSTAINABILITY

- Costs/benefits analysis
- Significant reduction in noise mapping costs and perceptible benefits

MANAGE THE SYSTEM AND INFORM THE PUBLIC

- Iterative process and a series of tests
- To check users’ ability in accessing information and managing the system

FUTURE APPLICATIONS

- Integrated and comprehensive overview of road infrastructure impact
- Connection to intelligent transportation systems (ITS)
Thanks for your kind attention

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