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Deliverable D2

Proceedings of Dynamap special session

LIFE – DYNAMAP

Dynamic Acoustic Mapping – Development of low cost sensors networks for real time noise mapping

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LIST OF KEYWORDS AND ABBREVIATIONS

Keywords

Dissemination

Dynamap Special Session

Events

Dissemination materials

Papers

Presentations

Stakeholders

Abbreviations

ANED : Anomalous Noise Events Detection

END : Environmental Noise Directive 2002/49/EC

ICSV : International Conference on Sound and Vibration

EXECUTIVE SUMMARY

This report describes the outcomes of the second special event, named LIFE Dynamap Special Session II, that was held in Hamburg, on August 24th, in the framework of the Internoise Conference 2016 (August 21-24, 2016).

This special event is part of Action D2.

The session was addressed to acoustic researchers and transport infrastructures operators and simple conference attenders. The purpose of the workshop was to inform about the progress of the project, solicit the interest of potential dynamic noise mapping users and gather useful suggestions and recommendations to ease the definition of the Dynamap system specifications.

The session was broken down into two parts. In the first part seven presentations were given by beneficiaries to provide a general overview of the LIFE DYNAMAP project. Presentations were focused on the main project actions and gave a clear picture of the state of the art on dynamic noise mapping, including a first estimate of costs and a focus on the Dynamap implementation phase.

In the second part of the session a panel discussion was arranged to stimulate the debate and collect observations and remarks from attendees. The panel discussion included two invited paper presentation of two similar project to share their experience. Presentations were given by Nico Faber (Antea Group, NL) and Gereb Gabor (British Antarctic Survey, UK).

About 100 persons attended the event. Brochures and other dissemination materials were also distributed to participants.

In this report the outcomes of the session are illustrated, including papers, presentations, questions from participants and answers from lecturers.

ACKNOWLEDGEMENTS

Special thanks to all Dynamap partners and stakeholders for their contribution and active participation in the Dynamap Special Session.

1. INTRODUCTION

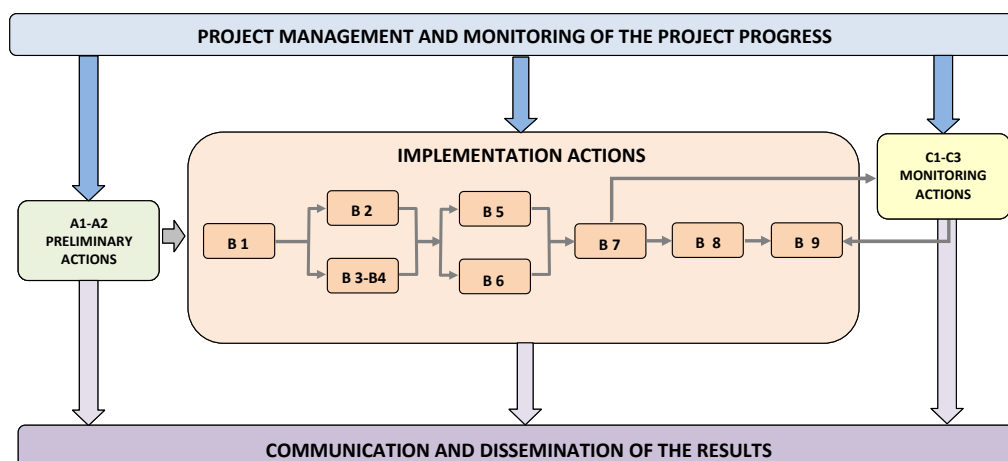
The LIFE DYNAMAP project is a complex five years long project aimed at demonstrating the feasibility of real time noise maps preparation and update using low cost sensors and a general purpose GIS platform. Scope of the project is the European Directive 2002/49/EC (END) relating to the assessment and the management of environmental noise. In particular the project refers to the need for noise maps to be updated every five years, as stated in the END. Nevertheless, the updating of noise maps using a standard approach is time consuming and costly and have a significant impact on the financial statements of the authorities responsible for providing noise maps, such as road administrations and local or central authorities.

To facilitate the updating of noise maps and reduce their economic impact, noise mapping can be automated by developing an integrated system for data acquisition and processing, able to detect and report in real time the acoustic impact of noise sources. The system will be composed of low-cost sensors measuring the sound pressure levels emitted by the noise sources and of a software tool based on a GIS platform able to perform real-time noise maps.

While this approach seems quite promising in areas where noise sources are well identified, such as those close to main roads, in complex scenarios, such as in agglomerations, further consideration is needed to make the idea feasible.

The project will be accomplished through four main steps:

1. Development of low-cost sensors and tools for managing, processing and reporting real-time noise maps on a GIS platform.
2. Design and implementation of two demonstrative systems in the cities of Milan and Rome. The first one will cover a significant portion of the agglomeration of Milan, while the second one will be located along the motorway A90 surrounding the city of Rome.
3. Systems monitoring for at least one year to check criticalities and analyse problems and faults that might occur over the test period. The test results will then be used to suggest system upgrades and extend implementation to other environmental parameters.
4. Provision of a guideline for the design and implementation of real-time noise mapping.



The four steps will be implemented through 14 main actions:

- **2 PREPARATORY ACTIONS (A1-A2)** to collect information on the state of the art of real-time noise mapping, analyse the road networks and locate the areas where the demonstrative systems will be implemented, gather information on the pilot areas.

- **9 IMPLEMENTATION ACTIONS (B1-B9)** to size the monitoring network, develop hardware and software, implement and test the system in the pilot areas, provide a guideline to real-time noise mapping.

- **3 MONITORING ACTIONS (C1-C3)** to assess public response and user ability in consulting and managing the system, evaluate costs and benefits, provide future visions on system applications.

Five more actions have been planned for dissemination and project management, including the arrangement of public events.

This technical report refers to the second Dissemination action “Action D2 – Dissemination activities – Special events”.

2. ACTION D2 – DISSEMINATION – SPECIAL EVENTS

In order to guarantee an effective deployment of the project's results, a series of special events have been scheduled in Action D2, as briefly reported in the following list:

- an informative workshop to promote the project, collate information and exchange opinions. The planned workshop, foreseen in Milan in the third quarter 2015, was replaced by a special session, named Dynamap Special Session I, arranged in the framework of the International Conference on Sound and Vibration (July 12-16, 2015). The workshop was addressed to representatives of agglomerations and road operators. The main purpose of this workshop was to inform groups of potential users about the project and solicit their interest on dynamic noise mapping. The workshop was focussed on issues directly linked to real time noise mapping and monitoring networks. A clear picture of the state of the art on dynamic noise mapping was given, including a first estimate of costs.
- A special session, named Dynamap Special Session II (Fig. 1), the subject of this report, on Noise Monitoring and Mapping with the aim of exchanging information, showing the innovative approach of the DYNAMAP project and collating useful remarks and comments from participants to improve and refine the project before its implementation phase. Invitations to the special sessions have been also extended to the main stakeholders to solicit their interest and support to the project. Written invitations have been also sent to the desk officer of the Commission and to the external LIFE project monitor. About 1500 attendees are expected at the conference. About 100 participants attended the Dynamap Special Session. During this special event information on the Dynamap system costs has been updated on the basis of real quotes. Local and national press has been also informed and invited to the event to raise awareness around the project. Information has been delivered through the official website and partners information channels.



Figure 1 – Dynamap Special session II panel discussion

- A training course on the Dynamap system. The course will be delivered to ANAS, AMAT and MILAN MUNICIPALITY operators to provide them the necessary skills to manage and maintain the system. The training course will cover several aspects of the developed system and will give all the necessary information on the system set-up and features. The course will be held

at the end of the first quarter of 2018. Fourteen people are expected to participate in the training course (10 for ANAS and 4 for MILAN MUNICIPALITY and AMAT).

- A Final Conference, to be held in Rome at the end of the project (last quarter of 2018). In the final Conference the results of the DYNAMAP project will be shown and the Guideline to real time noise mapping will be distributed to participants. Particular emphasis will be given to the cost-benefit analysis results (Action C.2) and a dedicated presentation on the Dynamap system costs will be planned in order to underline the advantage and the economic sustainability of producing dynamic noise maps. Part of the conference will be reserved to other LIFE projects presentations (see also Action E2 on Networking Activities). During the final conference LIFE+ beneficiaries will be invited to participate in the event and disseminate the results achieved in their projects. Invitations will be also extended to the main stakeholders to solicit their interest and support to the project. Written invitations will be also sent to the desk officer from the Commission and external LIFE project monitor. Information about the event will be sent to the LIFE communication team at least four weeks in advance for advertisement in LIFEnews and LIFE website. About 100 attendees are expected. Local and national press will be also informed and invited to the event to raise awareness around the project. Information will be also delivered through the official website and partners information channels.

Finally, Action D2 includes the participation of Milan Municipality and AMAT in two meetings of Eurocities - Working Group Noise to promote the Dynamap project and exchange information with other European local authorities on issues relating to the preparation of strategic noise maps. The first meeting attended was the WGN autumn meeting that has been held in Munich on September 14-15, 2016.

In fig. 2 is shown a preliminary plan of dissemination activities among partners, with the estimated number of the expected attendees per event.

Year	Quarter	Dissemination events and activities	Name of the Event/Journal/Magazine	Location of the event	number of attendants expected
2015	3	Dynamap Special Session I (Informative workshop)	ICSV 2015	Florence	50
2016	2	Dynamap Special Session	Internoise 2016	Germany	1500
	4	Workshop on Eurocities winter meeting	Eurocities meeting	EU	30
2018	1	Dynamap Training Course		Rome	14
	2	Workshop on Eurocities spring meeting	Eurocities meeting	EU	30
	4	Dynamap Final Event		Rome	100

Figure 2 - Plan of dissemination activities.

3. DYNAMAP SPECIAL SESSION II PROGRAMME

The Dynamap Special Session was broken down into two parts. In the first part seven presentations were given by beneficiaries to provide a general overview of the LIFE DYNAMAP project. Presentations were focused on the main project actions and gave a clear picture of the state of the art on dynamic noise mapping, including a first estimate of costs.

In the second part of the session a panel discussion was arranged to stimulate the debate and collect observations and remarks from attendees. The panel discussion included three presentations on stakeholders desiderata, benefits and drawbacks of being informed in real time.

The session was structured according to the following programme.



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DYNAMAP SPECIAL SESSION II

24 AUGUST 2016

Hall A2

Programme

- 10:20 Opening and Welcome
THE LIFE DYNAMAP PROJECT: AN OVERVIEW OF THE PROJECT AFTER TWO YEARS WORKING
Patrizia Bellucci
- 10:40 MILAN DYNAMIC NOISE MAPPING FROM FEW MONITORING STATIONS; STATISTICAL ANALYSIS ON ROAD NETWORK
Giovanni Zambon
- 11:00 IDENTIFICATION OF FAILURE MARKERS IN NOISE MEASUREMENT LOW COST DEVICES
Luca Nencini
- 11:20 ANALYSIS AND AUTOMATIC DETECTION OF ANOMALOUS NOISE EVENT IN REAL RECORDINGS OF ROAD TRAFFIC NOISE FOR THE LIFE DYNAMAP PROJECT
Joan Claudi Socorò
- 11:40 DEVELOPMENT OF A GIS BASED SOFTWARE FOR REAL TIME NOISE UPDATE
Andrea Cerniglia

12:00 Lunch Break

- 13:00 BASIC NOISE MAPS CALCULATION IN MILAN PILOT AREA
Paola Coppi
- 13:20 IMPLEMENTING THE DYNAMAP SYSTEM IN THE SUBURBAN AREA OF ROME
Laura Peruzzi
- 13:40 SMART NOISE MONITORING LEEUWARDEN F16 AIR FORCE BASE IN THE NETHERLANDS
Nico Faber
- 14:00 SOURCE-SELECTIVE NOISE MONITORING (ReSoNo) PILOT PROJECT IN BIRMINGHAM CITY
Gábor Geréb

12:20 Panel Discussion

Chairmen: Rosa Maria Alsina Pages

13:00 End of the Session Conclusion and farewell

4. RUNNING OF THE SESSION

The session opened with a brief welcome speech (Fig. 3) made by the project manager Patrizia Bellucci and proceeded with the first presentation, where a general overview of the project after two years working was provided (Fig. 4).



Figure 3 - Welcome to the Dynamap Special Session II.

The session moved on with presentations describing the procedure of the statistical cluster analysis of the road network in order to provide real time noise mapping from few monitoring stations and the control procedure to identify failure markers in noise measure from low cost devices.

Presentations about hardware and software development were also given. These include also an algorithm, named ANED (Anomalous Noise Events Detection), for the detection and removal of anomalous noise events. In the same issue a web GIS software for real time noise update has been illustrated and presented.

After the lunch break, the session moves on with presentations on issues related to project pilot areas, hardware and software development. The first regarded the calculation of the six basic noise maps for the Milan Pilot Area. At the end of the presentation questions on the relevance of some preliminary measure, in terms of measured equivalent sound level, were raised. The lecturer replied that the basic noise maps were compared with the noise levels from preliminary acoustic measure in order to calibrate the Acoustic Simulation Model used to retrieve the maps. The second presentation was about the first physical implementation actions for the Rome Pilot Area.



Figure 4 - Presentation of the Life Dynamap project after two years working.

The session ended with a Panel Discussion on the key aspects of the project before the implementation phase, with presentations given by Nico Faber (Antea Group, NL) and Gereb Gabor (British Antarctic Survey, UK) about their experience in Road traffic mapping project and monitoring and dynamic noise maps development.

The discussion was focused on improving the recognition of the different type of sounds, sharing labelled data and publishing the corpus of the projects.

According to stakeholders, the future of Dynamap should be focused on participation, in the design of some kind of application to collect the opinion of the people, such as the CITI-SENSE project that aims to change the behaviour of the people giving them feedback and making the information understandable. The need to explain different maps that can be drawn (strategic or dynamic) was underlined. The municipality has to know the strategic map, that, despite not being real, it is useful. The information gathered has to be used to change the impact for the citizens.

Other stakeholders think that the future of Dynamap should be focused on the measurement of other environmental factors, e.g. air pollution. The system should inform the public and the politicians, and this way make politicians move with new policies.

The information is not the same that the data, such as the project "Noise in Europe", which aim is to communicate to the public.

More applications examples were also given, like the idea of Dynamap working with IoT with adaptive façades that can close windows when the pollution noise is up (for instance). The technology to develop this example is already available.

Dynamap project could also be used to define quiet routes for bicycles and pedestrians, and could maybe be used along railways. All this information could be used to change the city urbanism, because all cities are always under construction.

The Panel Discussion involved in particular Gabor Gereb, Ed Nykaza, Itziar Aspuru and Henk Wolfert.

At the end, Marco Paviotti said that Dynamap should think about epidemiologists. They are interested in cheap devices to record. He also suggested that Dynamap project should be reproduced in other cities.