



SIBYL

(Seismic monitoring and vulnerability framework for civil protection)

Agreement number: ECHO/SUB/2014/695550

Deliverable DF4: Report on technical and professional outreach

Version December 2016

Project start date: 01.01.2015 End date: 31.12.2016

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SUMMARY

The present deliverable reports on the technical and professional dissemination activities of the project, with a particular emphasis on communicating the outcomes of SIBYL to technical and professional communities, in particular Civil Protection Authorities.

1. INTRODUCTION

SIBYL aimed to develop an operational framework for Civil Protection (CP) authorities to rapidly and cost-effectively assess the seismic vulnerability of the built environment. The framework will provide information on how to advise decision makers as to the most appropriate actions within pre- and post-event situations. It will cover cases where there is a need for short-notice vulnerability assessment during a pre-event period (triggered, for example, by the occurrence of foreshocks), and the monitoring of the built environment's dynamic vulnerability during a seismic sequence. The framework will be flexible enough to be employed over multiple spatial scales, and its modular structure will ease its applicability to other natural hazard types. The demonstration of the developed methods to CP personnel, with the accompanying training, was undertaken with the aim of encouraging the integration of the framework into their operational protocols. Furthermore, members of the CP community were invited to project meetings in order to obtain feedback as to the general progress of the project, and how relevant the products and results were to their needs.

This deliverable presents the dissemination and exploitation plan of the project results, focusing on communicating the SIBYL's products to the Civil Protection and other disaster management practitioners. The activities are divided into their different forms, namely project meetings, workshops and professional communication (e.g., conferences, publications). Naturally, there is some cross-over in the activities aimed at a professional audience and the general public, hence there will be some overlap with deliverable DF3 "Report on public outreach events/activities".

2. OBJECTIVES

The primary objective of the dissemination activities within SIBYL are to make the results and products arising from the project known to as wide a audience as possible, but focusing on the CP communities. Such activities are essential to ensure the lasting legacy of practice-oriented projects such as SIBYL. The general procedure for these activities is as follows:

- Dissemination of knowledge about the products arising from SIBYL to the relevant communities;
- Involvement of technical and professional communities in the actual development of the products;
- Transfer of knowledge and lessons learned from previous events and research projects;
- Demonstration activities (exploratory applications of the tools and methods).

3. DISSEMINATION ACTIVITIES

3.1. Project website

The project website (<http://www.sibyl-project.eu/>) provides information to the wider public about the SIBYL project. It is the principal platform for communication, public awareness and dissemination of results. The public website (Fig. 1) has been developed and hosted by Helmholtz Centre Potsdam GFZ and is continuously being updated. It is expected to be available for at least 2 years.



Figure 1. SIBYL homepage with list of events, news and access to different sections of the website.

3.2. Associated Civil Protection Partners

The CP representatives involved in the project were exposed to the developed methodologies and tools throughout its duration, in particular during the project meetings, field campaigns and at other occasions that allowed the demonstration of the capacity of the framework and its components. The aim of their involvement was to provide recommendations on the civil protection needs and feedback on the developed tools and their potential expansion.

On behalf of AUTH, the CP contact person is Christos Mamarikas, Deputy Director of Macedonia and Thrace Civil Protection Directorate¹. The contact CP bodies in Germany were the Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (BBK ², Ms. Katharina Gerlach) and the Bundesanstalt Technisches Hilfwerk (THW³, Mr. Florian Weber and Mr. Peter Goergen). The

¹ <http://www.pkm.gov.gr>

² http://www.bbk.bund.de/DE/Home/home_node.html

³ https://www.thw.de/DE/Startseite/startseite_node.html

contact person for the Italian CP was Dr. Mauro Dolce: during the preparation of the L'Aquila workshop, Dr. Dolce actively collaborated in the involvement of the authorities of L'Aquila City (Dr. V. Fabrizi, head of the office for reconstruction, and Dr. F. Rotili, a member of his staff). More details as to their response to the project's outcomes will be given below.

3.3. *Demonstration of tools to civil protection and other disaster management practitioners*

3.3.1 TECHNICAL KICK-OFF MEETING

The first technical planning meeting of the project was held in Potsdam on the 28th January, 2015. In addition to the consortium members, Mr. Florian Weber of THW attended, and had the following general comments:

- He suggested focusing on residential buildings
- Pointed out that THW, especially for its operations outside Germany, would be interested in the generalization components of the project, and in the combination of top-down and bottom-up analysis for residential areas.
- He appreciated the interactions between the consortium scientists and CP representatives interested in the technical developments within the project.

3.3.2 MID-TERM MEETING

The mid-term meeting for the SIBYL project was held in Thessaloniki, Greece, hosted by the Aristotle University of Thessaloniki, from the 15th to 16th of February 2016. Representatives of all partners attended, as well as members of the Civil Protection Authority of the Aristotle University and the Decentralized Administration of Macedonia and Thrace, the Institute of Engineering Seismology and Earthquake Engineering (ITΣAK) and the Technological Educational Institute of Central Macedonia, Serres. The first day involved presenting the results of the work that had been carried out during the past year, while the second day was concerned with demonstrating some of the tools and methods developed for the project, including a visit to the instrumented administration building of the university. Overall the meeting was a success, with the input from the civil protection of particular value.



Figure 2. Attendees of the SIBYL project mid-term meeting in Thessaloniki, Greece.

3.3.3 CIVIL PROTECTION WORKSHOP

As part of the dissemination and capacity building efforts within the SIBYL project (Task E Training and capacity building), a workshop on the various tools being developed within the project was held in l'Aquila, Italy, from 30th to 31st May, 2016. Members of the Italian, Greek and German civil protection agencies attended, as well as representatives of the local municipality and university. It was, in fact, the first time during the course of the project that civil protection representatives from all three partner-countries participated in a project meeting and shared their experience and vision of the problems under consideration.

The workshop was a success with the participants showing interest in the products and the ongoing developments within the project. Furthermore, the input from the attendees was of particular value.

3.3.3 FINAL MEETING

The final meeting of the project was held in Potsdam on the 7th December 2016. In addition to the consortium members, the meeting was attended by the project officer from EC-ECHO in Brussels and representatives from the German CP bodies, THW and BBK. The CP representatives provided valuable insights into how Civil protection within Germany is organized, i.e., a very decentralized system where responsibility is essentially in the hands of local fire services and municipalities.



Figure 3. Presentation and demonstration of the tools: GFZ REM system (Max Pittore, GFZ) and GFZ RRV system (Max Pittore, GFZ)

3.4. *Participation in meetings with other research programs*

The communication and knowledge transfer between relevant parallel on-going projects was facilitated through the fact that some of the SIBYL partners participated in other projects and by mutual participation in dissemination events. More specifically, AUTH and AMRA also participated in the FP7 project STREST⁴ (www.strest-eu.org), which took place in parallel with SIBYL.

3.5. *Scientific publications*

Aiming at the dissemination of the research results produced within SIBYL, peer reviewed papers will be published in scientific journals and conference proceedings. The papers

⁴ www.strest-eu.org

published during the duration of the project or have been submitted for publication or are under the final preparation stage, are listed in Table 1.

3.6. Presentation of the project's products at professional and academic meetings, conferences and relevant university post-graduate programs

The results of the project are communicated to the scientific and technical communities through the participation of SIBYL partners in key international scientific conferences and meetings related to the project. In addition, results from SIBYL were exploited for teaching purposes by TU-BERLIN, including both lectures and thesis topics. Table 1 includes a list of all these activities.

3.7 Other activities

Prof. Pitilakis (AUTH) took part in several high level meetings where the goals of SIBYL were presented. These meetings were:

- Meeting of the Comité Européen de Normalisation for the revision of Eurocode8 (Paris, France March 2016) where various topics related to the objectives and output of SIBYL should be taken into consideration.
- Meeting with EC officers (H2020) regarding future calls (Brussels, Belgium, March, 2016) where a project following-from SIBYL could be submitted.

In addition, several videos have been created, providing general information on the project's objectives, the undertaken activities, the developed methodology and the obtained results. They are available together with the reports and deliverables on the website of the project.

Table 1: Publications, presentations and university post-graduate programs that were produced as part of the SIBYL project.

Authors	Title	Journal or Conference
Iervolino I., Giorgio M, Chioccarelli E.	Markovian modelling of seismic damage accumulation	Earthquake Engineering and Structural Dynamics, 45:441-461, doi: 10.1002/eqe.2668
Tyagunov S., Petryna Y.	In-situ data collection for structural modelling and assessing seismic vulnerability of existing buildings. International Workshop "New advances in seismic risk assessment and disaster mitigation"	May 23-24, 2016, Tashkent, Uzbekistan
Tyagunov S., Petryna Y.	An operational framework for rapid and low-cost vulnerability assessment of existing building stock in seismic areas.	1 st International Conference on Natural Hazards and Infrastructure: Protection, Design, Rehabilitation, 28-30 June 2016. Chania, Greece. Paper 126.
Tyagunov S., Petryna Y.	Structural Health Monitoring and Vulnerability Assessment of Buildings in Earthquake Prone Areas.	8 th European Workshop on Structural Health Monitoring (EWSHM), 5-8 July 2016, Bilbao, Spain. Paper 410, 10 pp.
Tyagunov S., Petryna Y.	Seismic Vulnerability Assessment of Existing Buildings. International Conference "Actual Problems in Modern Seismology".	12-14 October, 2016, Tashkent, Uzbekistan
Petryna Y.; Mostböck A.; Bindi D.; Petrovic B.:	Dynamische Vor-Ort-Untersuchungen an typischen Gebäuden in Zentralasien.	In: Verein Deutscher Ingenieure (Hrsg.) 5. VDI-Fachtagung Baudynamik 2015. 2244. Düsseldorf: VDI-Verlag, 2015, S. 527-542; ISBN/ISSN 978-3-18-092244-7
Fleming, K., Parolai, S., Iervolino, I., Pitilakis, K. and Petryna, Y.	The Seismic monitoring and vulnerability framework for civil protection (SIBYL) Project: An overview and preliminary results	EGU General Assembly 2016, held 17-22 April, 2016 in Vienna Austria
Pittore. M., Boxberger, T., Fleming, K. and Parolai, S.	On the application of rapid environmental mapping methodologies (REM) to seismic risk understanding and vulnerability monitoring	41 st IAHS World Congress "Sustainability and Innovation for the Future", 13-16 th September, 2016, Albufeira, Algarve, Portugal.
TU-Berlin, Education	Materials of the project were included in specific lectures for students in Bachelor and Master Courses at TU Berlin.	
TU-Berlin, Education	10 Bachelor and Master Theses and Student Projects were based on the SIBYL topic and materials of the project.	
AUTH, Education	2 Master theses were based on the SIBYL project .	
Karapetrou S., Fotopoulou S., Manakou M., Thomaidis I., Yfantidou E., Pitilakis K.	Building-specific vulnerability assessment of RC buildings using short term field monitoring data	In preparation
Boxberger, T., Fleming, K., Pittore, M., Parolai, M., Pilz, M. and Mikulla, S.	The Multi-Parameter wireless sensing system (MPwise): description and application	In preparation

4. FINAL COMMENTS

As seen by this report, significant effort was expended in making the aims and results of the SIBYL project known to the relevant professional community, especially CP bodies. Of particular value were comments from the CP representatives that attended the meetings and workshop, and which will help in the future development of the next series of research proposals.